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NATIONAL VIETNAM VETERANS READJUSTMENT STUDY

Research Triangle Institute

Contractual Report of Findings from the National Vietnam Veterans Readjustment Study

Volume I: Executive Summary, Description of Findings, and Technical Appendices

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REFLECTING ON THE MORE THAN FOUR YEAR LIFE OF THE NATIONAL VIETNAM VETERANS READJUSTMENT STUDY EVOKES IN US A KALEIDOSCOPE OF MEMORIES AND THEIR ASSOCIATED EMOTIONS. CONDUCT OF THE READJUSTMENT STUDY HAS IN SOME WAYS RECAPITULATED THE VIETNAM ERA. THE STUDY WAS CONDUCTED UNDER CONTRACT NUMBER V101(93)P-1040 FROM THE VETERANS ADMINISTRATION (VA). TO ACHIEVE THE OBJECTIVES SET FORTH IN THE CONGRESSIONAL MANDATE, THIS STUDY WAS CARRIED OUT BY STAFF FROM A CONSORTIUM OF ORGANIZATIONS. THE NEED FOR BROAD-BASED INPUT INTO THE DESIGN AND OPERATION OF THE STUDY RESULTED FROM THE CONFLEUNCE OF SEVERAL FACTORS: THE SCIENTIFIC COMPLEXITY OF THE STUDY'S SUBJECT MATTER: THE POTENTIAL POLITICAL AND PROGRAMMATIC IMPLEMENTATIONS OF THE FINDINGS: AND THE INTENSE AND GENUINE EMOTIONAL INVESTMENT OF SOME IN THEIR BELIEFS ABOUT VIETNAM VETERANS, DESPITE THE SOMETIMES NON-SYSTEMATIC BASIS OF THOSE BELIEFS. THE EXECUTIVE SUMMARY IS PROVIDED IN THREE PARTS. IN PART A, HIGHLIGHTS OF SOME MAJOR FINDINGS ARE PROVIDED IN BRIEF SUMMARY FORM. IN PART B, STUDY FINDINGS FROM THE VARIOUS CHAPTERS OF THE REPORT ARE INTEGRATED TO ADDRESS DIRECTLY THE SPECIFIC ISSUES RAISED IN PUBLIC LAW 98-160, THE ENABLING LEGISLATION FOR THE NATIONAL VIETNAM VETERANS READJUSTMENT STUDY. PART C PROVIDES A CHAPTER BY CHAPTER SUMMARY OF THE ENTIRE REPORT, WHICH IS FOUR VOLUMES.

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NATIONAL VIETNAM VETERANS READJUSTMENT STUDY

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CONTRACTUAL REPORT OF FINDINGS FROM THE NATIONAL VIETNAM VETERANS READJUSTMENT STUDY

Conducted for the Veterans Administration
Under Contract Number V101(93)P-1040

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DEDICATION

This report is dedicated to the Vietnam veterans who participated in the study. These veterans both represent and symbolize all of the men and women who served during the Vietnam era. Their willingness to invest the time and emotional energy required to tell their stories in the interest of increased understanding of the consequences of war demonstrates their courage, maturity, and concern for their brothers and sisters. We are deeply grateful for their participation.

ACKNOWLEDGMENT

Reflecting on the more than four year life of the National Vietnam Veterans Readjustment Study evokes in us a kaleidoscope of memories and their associated emotions. Conduct of the Readjustment Study has in some ways recapitulated the Vietnam era, in that it has at various times been vexingly difficult, frighteningly chaotic, overwhelmingly sad, and powerfully gratifying.

From the beginning we were firmly committed to the premise that to achieve the objectives set forth in the Congressional mandate, decisions concerning the many important technical aspects of the study would have to be made on the basis of broad consensus among experts working in the many relevant technical fields. The need for broad-based input into the design and operation of the study resulted from the confluence of several factors: the scientific complexity of the study's subject matter; the potential political and programmatic implications of the findings; and the intense and genuine emotional investment of some in their beliefs about Vietnam veterans, despite the sometimes nonsystematic basis of those beliefs.

The research team's insistence on broad input and full discussion of issues prior to formulation of decisions reflected our commitment to the principle that the well-being of the study was more important than the narrow self-interest of any of the participating parties. Adherence to this principle made the research team shameless in the pursuit of advice and counsel from experts in the many areas in which expertise was required for the design and conduct of the study. As a result, we are indebted to the large number consultants, collaborators, and colleagues from whose advice both the study and the research team have benefitted greatly. Also as a result of this pursuit, we believe that the credibility of the entire enterprise has been substantially enhanced.

Consequently, we want to acknowledge the important roles played by many persons and organizations in the conduct of the Readjustment Study. Our acknowledgments must begin with recognition of the wisdom and courage of the U. S. Congress for enacting the legislation mandating the study. Also, we appreciate the patience of Congress in tolerating the delays that have accompanied the evolutionary development of the research design.

The study was conducted under contract number V101(93)P-1040 from the Veterans Administration (VA). We are very grateful to the VA for providing the substantial resources required to conduct a national epidemiological study. We are also grateful to the VA for establishing the mechanisms needed to assure that primacy was given to scientific considerations when decisions were made about major design features of the study.

Although responsibility for the scientific aspects of the study rested with the co-principal investigators, the work was carried out by staff from a consortium of organizations. These included the Research Triangle Institute (RTI); Louis Harris and Associates, Inc. (LHA); the Graduate Center of the City University of New York (CUNY); the Langley Porter Psychiatric Institute at the University of California, San Francisco; the Hispanic Research Center at San Diego State University; and Equifax, Inc. We also want to acknowledge the participation of a number of persons in leadership roles at these organizations: Dr. James Chromy of RTI for providing overall leadership and management participation; Messrs. Donald King and Michael Weeks of RTI for managing the survey data collection effort; Mr. James Batts of RTI for managing the data processing component; Mr. Frank Potter of RTI for managing the sampling component; Dr. Lisa LaVange of RTI for managing much of the statistical data processing; Dr. John Boyle, Ms. Esther Fleischman, and Ms. Alice Stackpole for managing the survey operation at LHA; and Professor Charles Kadushin for managing the participation of CUNY.

Because the work was carried out under a Federal contract, its conduct was overseen administratively on behalf of the Government by a number of Federal officials. These included Drs. Nathan Denny, Arthur Blank, Thomas Murtaugh, and Terence Keane. Each of these individuals was a collaborator in the research, and each made important contributions to the study in his own unique way.

The study was also formally overseen on behalf of the Government on an ongoing basis by two groups. From its inception, the scientifc aspects of the study were overseen by an independent Scientific Advisory Committee, chaired by Dr. Stanislav Kasl of the Yale University Medical School. The charge of this Committee was to review study plans and progress, and to make recommendations to the Government concerning the study's scientific aspects. The Committee met regularly with the research team over the

course of the study, and worked with us on the difficult design, operational, and analytical challenges that the study presented. The collegial nature of the interactions between the research team and the Committee, which is a tribute to Dr. Kasl's leadership style, served as an effective catalyst toward the ultimate improvement of the research. We are indebted to the Committee for providing a forum in which ideas and their consequences could be thoroughly and dispassionately considered, and for the many creative suggestions and sound decisions that the Committee made.

The second group that provided ongoing oversight was the VA's Technical Advisory Group (TAG), chaired by Dr. Terence Keane. The TAG was comprised of administrators of some of the Federal programs to whose missions the Readjustment Study mandate was most relevant. The TAG's charge was to oversee the administrative aspects of the research and to receive and act on the scientific advice provided by the Scientific Advisory Committee. As such, the TAG had the treacherous task of trying to implement the Committee's scientific advice while simultaneously negotiating the fiscal and political realities under which the study was conducted. The research team is grateful to the TAG for its efforts to shield the study from much of the political and bureaucratic furor, and for having the wisdom to recognize those points on which compromise would have worked to the detriment of the scientific quality (and therefore the ultimate credibility) of the research.

A third Federal group that provided advice, though on a more limited basis, was the Congressional Office of Technology Assessment (OTA). Acting in response to a request from the Senate and House Veterans' Affairs Committees, OTA convened a panel of experts over the summer of 1986 to review the progress of the study to date. The research team appreciated the opportunity to discuss many of the important scientific issues involved in the study with the OTA panel, and the study benefitted from the recommendations made in the subsequent staff report.

Other Federal officials also contributed to the study. Invaluable assistance in developing veteran sampling frames and/or gaining access to military record information was provided by: Mr. Richard Christian and the staff of the Department of Defense's (DoD) Environmental Support Group; Mr. Michael Dove and Ms. Deborah Eitelberg and other staff of the DoD Defense Manpower Data Center; Ms. Diane Rademacher and other staff of the DoD

National Personnel Records Center; Major Robert Elliott and other staff of the U. S. Army Reserve Components Personnel and Administration Center; and Drs. Patricia Breslin and Han Kang of the VA. Additionally, Mr. David Brown of the National Institute of Occupational Safety and Health provided valuable assistance in obtaining current address information for sampled veterans from the Internal Revenue Service. Also, Mr. Stephen Dienstfrey, Ms. Lynne Heltman, and Dr. Victor Tsou of the VA provided data from official VA files concerning current veteran population counts and official records of service connected disability.

In addition to external review groups, the research team made liberal use of consultants and other collaborators in the conduct of the study. One person on whom we repeatedly called for help, and who repeatedly answered the call, is Dr. David Grady. A highly decorated Vietnam veteran who is now a practicing clinical psychologist, Dr. Grady provided both personal and professional insight into many of the important issues in the study, particularly those concerning the phenomenology of PTSD and the conceptualization of war zone stress. His willingness to take on difficult tasks, and his ability to carry them out successfully, have been a tremendous contribution to the study. We are both personally and professionally indebted to Dr. Grady for his efforts in the service of the study.

Another person to whom the research team is particularly indebted is Dr. John Boyle. Dr. Boyle participated in the study initially as part of his duties as a Vice President of Louis Harris and Associates and project director for the LHA subcontract, and later as a consultant to the research team. Dr. Boyle's extensive knowledge and experience in conducting survey research was a vital resource in the planning and execution of the National Survey of the Vietnam Generation.

Continuing advice and support were also received from our colleagues at the Traumatic Stress Study Center at the University of Cincinnnati: Drs. Bonnie Green and Jacob Lindy, and Ms. Mary Grace. We consulted with them on many of the study's most difficult issues, and always received insightful advice delivered in a thoughtful and supportive way. The research team is grateful for having had the benefit of their extensive experience in traumatic stress research, and for their continuing support.

Over the course of the study, the research team relied heavily on groups of professionals to help us with specific tasks. Early in the study, we convened an Ad Hoc Panel on the Definition and Measurement of PTSD, in cooperation with the American Psychiatric Association's Work Group to Revise DSM-III. This panel made recommendations on revisions to the definition of PTSD that were subsequently incorporated into the revision of the official nomenclature, and advised the research team on issues of PTSD assessment. The advice of this panel was a great contribution to this study and an advance in the state of the art in diagnosis and assessment of stress disorders.

Along this line, the research team is indebted to Drs. Robert Spitzer and Janet Williams and Ms. Miriam Gibbon of the New York State Psychiatric Institute. Dr. Spitzer, in his role as Chair of the Work Group to Revise DSM-III, was very helpful in providing for coordination between the study team and the Work Group, helping to assure that the Readjustment Study estimates of PTSD prevalence represented the disorder as officially defined at the time results became available. Also, Drs. Spitzer and Williams and Ms. Gibbon provided valuable training in the administration of the Structured Clinical Interview for DSM-III-R for several groups of clinicians who participated in the clinical interview components of the study.

A second instance in which a group of professionals provided invaluable assistance was in the conduct of the study's preliminary validation component. This component was conducted as a cooperative effort of the study team and teams of mental health professionals at eight sites located across the country. The preliminary validation study, which was a critically important part of the Readjustment Study, could not have been carried out without the participation of the large group of expert clinicians, site coordinators, and site activators who participated.

A third group of professionals who made a substantial contribution to the study was the team, led by Dr. David Grady, who trained the study's survey interviewers in veterans' issues and in dealing with sensitive material and supported them throughout the survey interviewing period. The team included Dr. George Carnevale, Ms. Joan Craigwell, and Mr. Forest Farley, Jr. The low incidence of "problems" during NSVG survey interviews is a tribute to the success of this team.

A fourth group who made an invaluable contribution to the study is the over 140 professional survey interviewers who participated. Readjustment Study interviews were long and were sometimes difficult to conduct. The high response rates and the low problem rates are an indication of the professionalism and care with which these interviewers took on the task.

A fifth group of professionals who made an important contribution to the study was the group of mental health clinicians who conducted follow-up clinical interviews with a subsample of veterans from the national survey. These clinicians, working at 28 locations across the country, made possible the Readjustment Study's multiple-indicators approach to PTSD assessment. Their sensitivity and professionalism in conducting the interviews, and their tenacity and flexibility in making themselves available to respondents so that the interviews could be completed, assured the success of this critical component of the study. The clinicians invloved were: Drs. Stephen Bailey, Roland Brauer, Raymond Costello, Yael Danieli, Kathryn DeWitt, Phil Ellis, Johanna Gallers, William Gordon, David Hansen, Carol Hartman, Ronald Kidd, Walter Knake, Charles Lawrence, Bert Levine, Richard McNally, Bruce Marcus, Mary Merwin, Phillip Ninan, Frank Ochberg, Erwin Parson, Patricia Resick, Ralph Robinowitz, Sherry Roth, Philip Saigh, Thomas Scarano, Robert Ursano, Charles VanValkenburg, Nicholas Winter, and John Zajecka.

A sixth group who made an important contribution was the Vietnam theater veteran refusal conversion team. This was a group of Vietnam veterans who made calls to those Vietnam veterans who were selected in the national survey sample but had refused to participate in the survey interview when contacted by the interviewer. The purpose of these calls was to be sure that the potential respondent understood the nature of the study and the importance of his/her participation. The team included Messrs. Daniel Cummings, William Gordy, Sr., Laurence Kolman, William Miller, Jerome Odorizzi, Ms. Linda Schwartz, and Mr. Philip Smith. The efforts of this team made a significant contribution to the high participation rate of theater veterans.

Another consultant who was generous with his time and expertise was Dr. W. Grant Dahlstrom of the University of North Carolina at Chapel Hill. Professor Dahlstrom arranged for us to have access to Form AX of the Minnesota Multiphasic Personality Inventory (MMPI) for use in the Clinical

Interview component of the study. This allowed the study to be coordinated with the ongoing research that will result in a revised version of the MMPI. Also, the work of National Computer Systems in scoring the completed MMPI's is greatly appreciated.

We are also indebted to a number of experts who advised us on issues of instrumentation. These include Drs. Richard Berrego, Dan Blazer, Ghislaine Boulanger, Lois Johns, Robert Laufer, Erwin Parson, and Frank Putnam.

Additionally, we want to express our gratitude to the superb survey operations, data processing, analytic, and other support staff who have done the study's work and participated in the preparation of the various reports and other documents. These include Ms. Maggie Allison, Ms. Wendy Foran, and Ms. Susan Westneat of RTI, who participated in a variety of tasks over the course of the study; Ms. Lisa Packer and Ms. Pat Kristiansen of RTI for their diligence in keeping track of the study's budget and schedule; Dr. Ralph Folsom and Mr. Frank Potter of RTI for creating the study's multicomponent sampling design, and Mr. Michael Johnson, Ms. Packer and Mr. Potter of RTI for constructing the sampling frames, selecting the samples, and computing the sampling weights; Mr. James Andrews, Ms. Anne Crusan, Mr. Michael Davis, Mr. Dan Roentsch, Ms. Kathy Rourke, Ms. Cathy Rowley, Ms. Susan Siegrist, Mr. David Wilson, and Carrotte of LHA, who participated in survey interviewer training and oversaw the interviewing for LHA; Mr. Richard Boytos, Mr. James Devore, Ms. Janice Kelly, and Ms. Ellen Stutts of RTI, who participated in the training of survey interviewers; Mr. Jerry Durham, Mr. Donald Jackson, Ms. Stutts, and Mr. Harvey Zelon of RTI, who oversaw the day-to-day survey data collection for RTI; Ms. Viviane Cobb, Ms. Suson Freeman, Mr. Tim Gabel, Mr. Johnson, Ms. Packer, and Ms. Angela Perez-Michael of RTI, who provided excellent analytical and data processing support; Ms. Pat Kerr and Ms. Karla Colegrove of RTI, who managed the field operation of the clinical subsample; Ms. Colegrove, Ms. Kristiansen, and Ms. Liz Stewart and the editing teams at LHA and RTI, whose unflagging efforts ensured the quality of the survey data; Ms. Judy Weir of San Diego State University, who provided analytic support and participated in the writing of parts of this report; Dr. Louise Gaston of the Langley Porter Psychiatric Institute, who provided support of the clinical interviewing effort; Ms. Donna Albrecht, Ms. Lil Clark, Ms. Linda Miller, and Ms. Brenda Smith, who prepared the

manuscript for this and the many prior NVVRS documents; and Dr. Robert Kelton and the staff of The Kelton Group, who provided excellent editorial review of this report. The high level of professionalism of these and the many other persons who have worked with us on various aspects of the study has made a substantial contribution to its ultimate outcome.

Finally, we thank the spouses/partners and other family members of the research team for their tolerance, understanding, support, and constructive criticism over the years that it has taken to bring the study to its current state. They have made many sacrifices over this period, during which conduct of the study has consumed the research team. Though their participation was indirect, their influence on the study has been pervasive. We cannot understate the importance of their support, and we hope that they will always understand the value of their contribution to the study and judge that the outcome justified their sacrifice.

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LIST OF EXHIBITS

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Table of Key Acronyms and Abbreviations

ASP	Antisocial Personality Disorder
BLK	Blacks
CDC	Centers for Disease Control
CIV	Civilian Counterparts
DIS	Diagnostic Interview Schedule
DMDC	Defense Manpower Data Center
DSM-III	Diagnostic and Statistical Manual, Version III
ECA	Epidemiologic Catchment Area Project
ERA	Veteran of Vietnam era who did not serve in Vietnam (except in Chapter 2)
ERA	Veteran who served during the Vietnam Era (in Chapter 2)
ES6	Environmental Support Group (Department of Defense)
FI	Family Interview
GAD	Generalized Anxiety Disorder
HISP	Hispanics
LAM	Living as Though Married
HWZ	High War Zone Stressed
LWZ	Low/Moderate War Zone Stressed
M-PTSD	Mississippi Scale of Combat-Related Post-Traumatic Stress disorder
MOS	Military Occupational Specialty
NIOSH	National Institute of Occupational Safety and Health
NPRC	National Personnel Records Center
NS	Not (Statistically) Significant
NSVG	National Survey of the Vietnam Generation

Table of Key Acronyms and Abbreviations (Continued)

NT	Not Tested for Statistical Significance
NVVRS	National Vietnam Veterans Readjustment Study
P	(Statistical) Probability
PERI	Psychiatric Epidemiology Research Interview
POW	Prisoner of War
PTSD	Post-Traumatic Stress Disorder
PWPP	Post-War Psychological Problems
RTI	Research Triangle Institute
S/P	Spouse or Partner with Whom Veteran is Living as Though Married
SCPD	Service Connected Physical Disability
SEI	Socioeconomic Index
SMSA	Standard Metropolitan Statistical Area
SUBABUSE	(Those with) Substance Abuse
THR	Vietnam Theater Veteran
VA	Veterans Administration
VES	Vietnam Experience Study
W/O	White/Others

EXECUTIVE SUMMARY

The Executive Summary is provided in three parts. In Part A, highlights of some major findings are provided in brief summary form. In Part B, study findings from the various chapters of the report are integrated to address directly the specific issues raised in Public Law 98-160, the enabling legislation for the National Vietnam Veterans Readjustment Study. Part C provides a chapter by chapter summary of the entire report.

A. Highlights of Findings

- Conducted in response to Public Law 98-160, the National Vietnam Veterans Readjustment Study (NVVRS) is the most rigorous and comprehensive study to date of the prevalence of post-traumatic stress disorder (PTSD) and other psychological problems in readjusting to civilian life among Vietnam veterans.

- The sample of veterans examined in the NVVRS was broader and more inclusive than those of past studies. As a result, the descriptions of Vietnam theater and era veterans found in this report are in some ways different from, but more representative than, descriptions provided in previous research.

- The majority of Vietnam theater veterans have made a successful re-entry to civilian life and currently experience few symptoms of PTSD or other readjustment problems.

- Although in general, male Vietnam theater veterans do not differ greatly in their current life adjustment from their era veteran counterparts, there is some evidence that female theater veterans currently experience more readjustment problems than Vietnam era veteran women of similar age and military occupation.

- NVVRS findings indicate that 15.2 percent of all male Vietnam theater veterans are current cases of PTSD. This represents about 479,000 of the estimated 3.14 million men who served in the Vietnam theater. Among Vietnam theater veteran women, current PTSD prevalence is estimated to be 8.5 percent of the approximately 7,200 women who served, or about 610 current cases. For both males and females, these rates of current PTSD for theater veterans are consistently and dramatically higher than rates for comparable Vietnam era veterans (2.5 percent male, 1.1 percent female) or civilian counterparts (1.2 percent male, 0.3 percent female).

- An additional 11.1 percent of male theater veterans and 7.8 percent of female theater veterans--350,000 additional men and women--currently suffer from "partial PTSD." That is, they have clinically-significant stress reaction symptoms of insufficient intensity or breadth to qualify as full PTSD, but may still warrant professional attention.

- NVVRS analyses of the lifetime prevalence of PTSD indicate that over one-third (30.6 percent) of male Vietnam theater veterans (over 960,000 men) and over one-fourth (26.9 percent) of women serving in the Vietnam theater (over 1,900 women) had the full-blown disorder at some time during their lives. Thus, about one-half of the men and one-third of the women who have ever had PTSD still have it today. These findings are consistent with the conceptualization of PTSD as a chronic, rather than acute, disorder.

- NVVRS findings also indicate a strong relationship between PTSD and other postwar readjustment problems: having PTSD increases the likelihood of having other specific psychiatric disorders and a wide variety of other postwar readjustment problems. These findings confirm that, in addition to the painful symptoms of PTSD

itself, the lives of Vietnam veterans with PTSD are profoundly disrupted, in that they experience problems in virtually every domain of their lives.

- The prevalence of PTSD and other postwar psychological problems is significantly, and often dramatically, higher among those with high levels of exposure to combat and other war zone stressors in Vietnam, either by comparison with their Vietnam era veteran and civilian peers or with other veterans who served in the Vietnam theater and were exposed to low or moderate levels of war zone stress. This suggests a prominent role for exposure to war stress in the development of subsequent psychological problems, and confirms that those who were most heavily involved in the war are those for whom readjustment was, and continues to be, most difficult.

- Among men who served in the Vietnam theater, substantial differences in current PTSD prevalence rates were also found by minority status. The current prevalence of PTSD is estimated to be 27.9 percent among Hispanics, 20.6 percent among blacks, and 13.7 percent among white/others. Analyses of several factors that may account for these differences suggested that differences between blacks and white/others may be attributed to their differing levels of exposure to war zone stress, but differences between Hispanic men and the other two groups could not be explained by this factor. More generally, the evidence suggests that black and Hispanic Vietnam theater veteran men have experienced more mental health and life adjustment problems subsequent to their service in Vietnam than white/other veterans.

- Interviews conducted with the spouses or partners of Vietnam theater veterans with and without PTSD revealed that PTSD has a substantial negative impact not only on the veterans' own lives, but also on the lives of spouses, children, and others living with such veterans.

- Vietnam veterans with post-war psychological problems are more likely to have sought mental health care provided by the VA than those without such problems. Such veterans have also made greater use of mental health services in general, both from the VA and from other sources (e.g., private physicians or clinics), with non-VA sources accounting for the majority of their total mental health service use. Nevertheless, very substantial proportions of Vietnam veterans with readjustment problems have never used the VA or any other source for their mental health problems, especially during the previous 12 months.

B. Overview of Findings Keyed to Specific Issues of Public Law 98-160

The Congressional mandate for the National Vietnam Veterans Readjustment Study required that certain specific issues be addressed. In this part of the Executive Summary, we present findings keyed to the specific issues raised. Except for Section 1, which reports on PTSD prevalence rates among all Vietnam veterans, these issues are discussed only for male Vietnam theater veterans. In the final section (Section 10), however, there is a discussion of these issues specifically addressed to the situation of Vietnam veteran women, reflecting the special emphasis on these veterans specified in the Public Law.

1. The Prevalence of Post-Traumatic Stress Disorder Among Vietnam Veterans

One of the major scientific challenges of conducting the NVVRS was the development of a reliable and valid method for identifying cases of post-traumatic stress disorder (PTSD). To address this problem, and ultimately to increase the accuracy of the NVVRS estimates of PTSD prevalence, we included multiple PTSD measures in the study. We took this approach in acknowledgment of the fact that no single PTSD assessment is completely error free. Therefore, instead of relying on a single PTSD diagnostic indicator, current PTSD diagnoses in the NVVRS were made on the basis of information from multiple indicators. The PTSD diagnosis based on information from multiple indicators is called the composite diagnosis. It is the convergence of information across PTSD indicators, and the cross-measure confirmation of the diagnosis that results from a multi-measure "triangulation" approach, that provides the foundation for the credibility of the NVVRS PTSD prevalence estimates. This "multi-measure triangulation approach" did not specify a positive diagnosis if only one of the measures suggested the presence of PTSD, a strategy sometimes employed when multiple measures are used. Rather, under the procedure employed by the NVVRS, a conflict among multiple measures might lead to either a "negative" or a "positive" diagnosis, depending on the preponderance of evidence.

To address the "service needs assessment" aspect of the Congressional mandate, we have presented prevalence estimates for two "types" of PTSD: the full PTSD syndrome, and "partial" PTSD. Estimates of the prevalence of

"partial" PTSD are estimates of the percent whose stress reaction symptoms are either of insufficient intensity or breadth to qualify as the full PTSD syndrome, yet that may still warrant professional attention. People with partial PTSD today may have had a full syndrome in the past that is currently in partial remission, or they may have never met the full criteria for the disorder. Nevertheless, they do have clinically significant stress-reaction symptoms that could benefit from treatment. Thus, they represent an additional component of the total spectrum of potential "need for treatment."

Additionally we have presented prevalence rates with respect to two specific reference periods: current prevalence and lifetime prevalence. Current PTSD prevalence is the percent of those who have the disorder today, while the lifetime prevalence rate is the percent who have met the diagnostic criteria for the PTSD diagnosis at some time during their lives (including those who currently have the disorder). Taken together, lifetime and current prevalence of full and partial PTSD provide a relatively complete picture of the stress reaction sequelae of exposure to trauma.

NVVRS findings indicate that 15.2 percent of all male Vietnam theater veterans are current cases of PTSD. This represents about 479,000 of the estimated 3.14 million men who served in the Vietnam theater. Among Vietnam theater veteran women, current prevalence is estimated to be 8.5 percent of the approximately 7,200 women who served, or about 610 current cases.

For both males and females, current PTSD prevalence rates for theater veterans are consistently higher than rates for comparable era veterans (2.5 percent male, 1.1 percent female) or civilian counterparts (1.2 percent male, 0.3 percent female). These differences are even more striking when Vietnam era veterans and civilians are compared with the subgroup of Vietnam theater veterans exposed to high levels of war zone stress. Rates of PTSD among the latter are dramatically higher than those observed among theater veterans exposed to low or moderate levels of war zone stress.

Among male theater veterans, differences in current PTSD prevalence rates were also found between the racial/ethnic subgroups. The current

PTSD prevalence rate is 27.9 percent among Hispanics, 20.6 percent among blacks, and 13.7 percent among white/others.

Additionally, NVVRS findings indicate that the current prevalence of partial PTSD is 11.1 percent among male theater veterans and 7.8 percent among female theater veterans. Together, this represents about 350,000 veterans--in addition to the 480,000 with the full PTSD syndrome today--who have trauma-related symptoms that may benefit from professional treatment.

NVVRS findings indicate that the lifetime prevalence of PTSD is 30.9 percent among male theater veterans and 26.9 percent among females. The lifetime prevalence of partial PTSD among male theater veterans is 22.5 percent, and among female theater veterans 21.2 percent. These findings mean that over the course of their lives, more than half of male theater veterans and nearly half of female theater veterans have experienced clinically significant stress reaction symptoms. This represents about 1.7 million veterans of the Vietnam war.

A comparison of the current and lifetime PTSD prevalence rates shows that about one-half of the male theater veterans and one-third of the female theater veterans who have ever had PTSD still have it today. Also, of those theater veterans who have ever had significant stress reaction symptoms (full or partial PTSD), about half of males and one-third of females are experiencing some degree of clinically significant stress reaction symptoms today. These findings are consistent with the conceptualization of PTSD as a chronic, rather than acute, disorder.

Thus, Vietnam theater veterans as a group are much more "at risk" for having PTSD than are era veterans or civilian counterparts. This leads to an important question: what is it about the characteristics or experiences of Vietnam veterans that puts them "at risk"? The contrasts of PTSD prevalence rates between theater veterans and the era veteran and civilian counterpart comparison groups provide some information in this regard. However, those comparisons are not completely satisfying, because whether or not an individual served in the military and/or was sent to Vietnam was not a random event. On the contrary, many powerful social forces operated to determine who served in the military, and, within the military, who served in Vietnam. Because of this nonrandom assignment, differences that we observe today in current PTSD prevalence between the study groups may be attributable to differences in the experiences of the groups (for example,

service in Vietnam), but they may also result from differences in some characteristics or experiences that theater veterans brought with them to their military service.

We conducted a series of multivariate statistical analyses to assess the role of a large group of potential predisposing factors in current PTSD prevalence. In addition, we extended the analyses to assess the contribution of exposure to war zone stress to current PTSD prevalence among theater veterans after the effect of predisposing factors had been taken into account.

Results of these multivariate analyses indicated that theater veterans differed from era veterans and civilian counterparts on some background characteristics that might have rendered theater veterans more vulnerable to the development of PTSD. Nevertheless, the current PTSD prevalence rate is much higher among theater veterans even after these differences in potential predisposing factors are taken into account. Additionally, the analyses showed clearly that exposure to war zone stress in Vietnam plays a significant role in determining who among theater veterans has PTSD today, even after a broad array of potential predisposing factors have been taken into account.

Taken together, these results are consistent with a model of PTSD that posits a role for individual vulnerability (potentially including biological, psychological, and sociodemographic predisposing factors) and a role for exposure to environmental factors (specifically, war zone stressors) in determining who among theater veterans gets PTSD. However, it is clear that exposure to war zone stress makes a substantial contribution to the development of PTSD in war veterans that is independent of a broad range of potential predisposing factors.

2. Prevalence of Other Post-War Psychological Problems Among Vietnam Veterans

While the primary focus of the Readjustment Study was to establish the prevalence of PTSD among Vietnam veterans, Public Law 98-160 also clearly expressed a parallel focus on the prevalence of other problems in readjusting to civilian life. These were referred to as other "post-war psychological problems." Although the range of such problems that might have been examined is extremely broad, the Readjustment Study sought to

establish the prevalence of other post-war psychological problems in two basic classes: (1) other forms of psychiatric disorder (in addition to PTSD) as defined in DSM-III; and (2) more general forms of personal or psychological problems, ranging from general psychological distress to malfunctions in marital or family roles to violent or criminal behavior.

The prevalence of psychiatric disorders other than PTSD was assessed in the NSVG by the Diagnostic Interview Schedule (DIS), from which lifetime (ever had the disorder) and current (within the last six months) prevalence rates were assessed among Vietnam veterans and their peers for nine specific disorders. (These disorders are described in Part B of this summary and in Chapter VI). NSVG prevalence rate estimates for these psychiatric disorders among male Vietnam theater veterans are as follows:

	Ever Had the Disorder	Had the Disorder In the Past 6 Months
Affective Disorders		
Major Depressive Episode	5.1	2.8
Manic Episode	0.8	0.7
Dysthymia	4.2	--
Anxiety Disorders		
Panic Disorder	1.8	0.9
Obsessive Compulsive Disorder	1.8	1.5
Generalized Anxiety Disorder	14.1	4.5
Substance Abuse Disorders		
Alcohol Abuse or Dependence	39.2	11.2
Drug Abuse or Dependence	5.7	1.8
Antisocial Personality Disorder	9.5	2.0

Alcohol abuse or dependence and generalized anxiety disorder were by far the most prevalent disorders, both currently and in the past, among men who served in the Vietnam theater. Overall, almost half (49.1 percent) of Vietnam theater veterans met the criteria for at least one of these disorders at some point in their lives, and over one in six (17.1 percent) had at least one disorder currently (within the last six months). Since alcohol abuse or dependence accounted for a substantial proportion of

these "any disorder" rates, overall rates excluding alcohol disorders were also examined. When alcohol disorders are excluded, over one-fourth (26.5 percent) of Vietnam theater veteran men have had at least one of the other disorders at some time in their lives, and just under one in eleven (8.6 percent) currently have at least one such disorder.

In general, however, such rates were not substantially higher than those observed among Vietnam era veterans (45.8 percent lifetime and 13.3 percent current for "any disorder;" 24.3 percent lifetime and 5.2 percent current for "any disorder," excluding alcohol disorders), except for a current major depressive episode and current obsessive compulsive disorder. In contrast, there were several disorders for which rates of lifetime or current disorder among Vietnam theater veteran men were significantly higher than their civilian counterparts, including lifetime rates of major depression, dysthymia, obsessive compulsive disorder, alcohol abuse or dependence, and antisocial personality disorder, as well as current rates of major depressive episode and antisocial personality disorder.

Moreover, among those most heavily involved in the war--those exposed to high levels of war zone stress--rates of psychiatric disorder other than PTSD were substantially higher: almost two-thirds (63.3 percent) had experienced one of these nine disorders at some time in their lives, and almost half of these (29.8 percent) currently had at least one such disorder. Even when alcohol disorders are excluded, these rates are still 43.1 and 18.0 percent, respectively. Looking across all types of disorder, with few exceptions, Vietnam theater veteran men exposed to high levels of war zone stress exhibited significantly higher rates of psychiatric disorder than either Vietnam era veterans or the civilian counterparts.

Based on these results, it appears that having served in Vietnam per se (as compared with serving elsewhere in the military during the Vietnam era) did not greatly increase one's risk of psychiatric disorder other than PTSD. However, the number of psychiatric disorders for which theater veteran rates were significantly higher than civilians (though not era veterans) suggests that serving in the military during that time period may well have been a risk factor (or at least a correlate) in its own right for certain types of psychiatric disorder. By far the most

important risk factor for virtually all of these disorders, however, was direct and intensive participation in the war and the resulting high exposure to combat and other dimensions of war zone stress. By comparison to either their era veteran and civilian peers or to fellow veterans serving in the Vietnam theater who were exposed to low or moderate levels of war stress, Vietnam theater veteran men with high levels of exposure to war zone stress have clearly been subject to higher rates of psychiatric disorder in their lives even when PTSD (per se) is not considered.

Among the more general forms of personal or psychological functioning examined was nonspecific psychological distress and general problems of readjusting to civilian life. Almost 17 percent of Vietnam theater veterans reported very high current levels of general psychological distress. A substantial minority (44.5 percent) of men who served in Vietnam also reported having had at least one serious post-war readjustment problem, and approximately 60 percent of those who have ever had such problems (26.0 percent) reported that they have continued to experience at least one such problem. Overall, then, approximately one in four Vietnam theater veterans currently has at least one serious readjustment problem, and approximately six percent have four or more. However, Vietnam theater veterans were not significantly higher than their era veteran counterparts on either of these measures of post-war psychological problems. In contrast, those exposed to high levels of combat and other war stress reported significantly higher levels of nonspecific distress and readjustment problems than Vietnam era veterans or other Vietnam theater veterans exposed to lower levels of war zone stress. One-third (32.2 percent) of the men serving in Vietnam and exposed to high war stress scored at the highest level on nonspecific distress. Over two-thirds reported having had at least one serious readjustment problem, and almost one-fourth reported having had four or more. Also, over four in ten (42.1 percent) currently have at least one such problem.

Similarly, 40 percent of Vietnam theater veteran men have been divorced at least once (10 percent had two or more divorces), 14.1 percent report high levels of marital problems, and 23.1 percent have high levels of parental problems. One in twelve reports being very unhappy or dissatisfied with their lives, one in eight is extremely isolated from

other people, and one in ten has been homeless or vagrant at some time during their life. Over one Vietnam veteran in four scored high on active expression of hostility, and 46.8 percent had committed at least one violent act during the past year (9.4 percent having committed 13 or more). In each case, however, the prevalence rates of these problems or behaviors for Vietnam theater veterans were not very different from the rates for veterans who served elsewhere during the Vietnam era. Also, in each case, however, Vietnam veterans exposed to high levels of war stress had significantly higher rates of these problems than era veterans, civilians, and Vietnam theater veterans with low to moderate levels of war stress exposure. For example, Vietnam veterans exposed to high war zone stress were twice as likely as those exposed to lower levels of war stress to be: very unhappy or unsatisfied with their lives (12.5 versus 6.2 percent) highly isolated from others (21.7 versus 9.7 percent), and to have committed 13 or more violent acts during the past year (14.4 versus 7.6 percent). Thus, the subset of Vietnam veterans who most literally and directly fought the war were also at high risk for the development of a broad array of other post-war psychological or readjustment problems.

3. The Relationship Between PTSD and Other Post-War Psychological Problems

In addition to establishing the prevalence of PTSD and of other "post-war psychological problems" among Vietnam veterans, the Congressional mandate also specified that information be collected on the relationship between PTSD and these other types of problems. A more basic way of asking this question is: what does it mean to be a Vietnam veteran with PTSD? What types of other problems do such men have, and what is the overall quality of their lives?

Other than the obviously debilitating nature of PTSD symptoms in and of themselves, NVVRS findings indicate that Vietnam veterans with PTSD lead profoundly disrupted lives. Whether this indicates a profound impact of PTSD on the development of other adjustment problems, that those with prior adjustment problems are more prone to PTSD, or that PTSD and other adjustment problems share common risk factors--all of which are undoubtedly true to some degree--has not as yet been thoroughly explored with these data. Nevertheless, the evidence presented in this report serves to

underline the nagging suspicion derived from previous research on more limited samples that having PTSD is associated with other problems in virtually every domain of these veterans' lives.

Men who served in the Vietnam theater and who currently suffer from PTSD were significantly less well adjusted than those who do not currently meet criteria for this disorder on almost every indicator of post-war psychological adjustment included in the NSVG. It is important to note that included among the latter are some men who suffered from the full-blown disorder at some time previously in their lives, some that currently (still) have significant PTSD symptomatology (i.e., partial PTSD), and others that suffer from psychiatric disorders other PTSD. Nevertheless, differences between these two groups are striking, and they are remarkably consistent. For example, well over half (55.8 percent) of the men with PTSD score at the highest levels of nonspecific psychological distress, compared to less than 10 percent (9.5) of those without PTSD. Similarly, virtually all veterans with PTSD suffered from at least one other psychiatric disorder at some time during their lives (three-fourths even if one excludes alcohol disorders) and half (40.6 percent if alcohol disorders are excluded) currently suffer from at least one other disorder (comparable figures for those without PTSD were 40.6 and 11.5, respectively). Vietnam veteran men with PTSD had significantly higher rates of both lifetime and current disorder for every specific psychiatric diagnosis assessed in the NSVG.

In turn, this pattern of disorder appears to have penetrated virtually every other area of these veterans' lives. Overall, 97 percent reported having at least one serious readjustment problem since leaving the military, and over one-third (35.6 percent) reported four or more. Seven of ten (69.7 percent) have at least one such problem currently, and over one in five (22.1 percent) have four or more. Veterans with PTSD are five times more likely than those without to be unemployed, and one in five has a history of extreme occupational instability post-military. Almost one-fourth are currently separated or living with someone as though they were married, 70 percent have been divorced (35 percent two or more times), 49 percent have high levels of marital or relationship problems, 55 percent have high levels of problems with parenting, and half report poor levels of overall family functioning. One in four is very unhappy or dissatisfied

with his life, almost half (47.3 percent) report extreme levels of isolation from other people, and 34.8 percent have been homeless or vagrant at one time or another. Four in ten also report high levels of actively expressed hostility, and 36.8 percent had committed six or more acts of violence during the past year (19.8 percent had committed 13 or more). Almost half had been arrested or in jail at least once--34.2 percent more than once--and 11.5 percent had been convicted of a felony. In every instance these rates for Vietnam veterans with PTSD are at least twice the rate of men not currently suffering from the disorder, and often the ratio is considerably higher.

4. Relationship Between Service Connected Physical Disabilities and Post-War Psychological Problems

An estimated 11 percent of Vietnam theater veterans have a current service connected physical disability (SCPD). Thus, approximately 346,000 Vietnam theater veterans have been officially certified by the Veterans Administration as having one or more service connected physical disabilities.

Vietnam theater veterans with SCPD's were significantly more likely than those without to have current PTSD. Specifically, an estimated 21.4 percent of Vietnam theater veterans with SCPD's met criteria for a current diagnosis of PTSD compared to 14.5 percent of theater veterans without SCPD's. Yet, theater veterans with SCPD's were no more likely than those without SCPD's to suffer a variety of other major psychological disorders, including affective disorders (major depressive episode, manic episode, and dysthymia), several anxiety disorders (panic disorder and obsessive compulsive disorder), substance abuse or dependence, and antisocial personality disorder. One important exception, however, is that theater veterans with an SCPD were more likely to have suffered from generalized anxiety disorder than their counterparts without SCPD's. Theater veterans with SCPD's were also more likely to currently suffer from nonspecific psychological distress than their counterparts without SCPD's. In addition, theater veterans with SCPD's were more likely than theater veterans without SCPD's to be not working, to report higher levels of occupational instability, to have never been married, and to report that they are unhappy or dissatisfied with their lives.

In sum, findings from the NSVG indicate that Vietnam theater veterans with service connected disabilities were almost 50 percent more likely than those without SCPD's to have PTSD today. In addition, those with SCPD's were more likely to have a positive history of generalized anxiety disorder, to have symptoms of nonspecific psychological distress, and to be dissatisfied with their current life circumstances. These findings clearly suggest that Vietnam theater veterans with service connected physical disabilities are at elevated risk for a variety of readjustment problems.

5. Relationship Between Alcohol and Drug Abuse and Post-War Psychological Problems

As described in Section 2, the estimated lifetime prevalence of alcohol abuse or dependence among male theater veterans is 39.2 percent, and the estimate for current alcohol abuse or dependence is 11.2 percent. The corresponding estimates for lifetime and current drug abuse or dependence are 5.7 percent and 1.8 percent, respectively.

Male theater veterans with current PTSD are two to six times as likely to abuse alcohol or drugs than those without the disorder (22.2 percent versus 9.2 percent for current alcohol abuse-dependence and 6.1 percent versus 1.0 percent for current drug abuse). These figures corroborate the clinical impression of high comorbidity of PTSD with alcohol and drug abuse and underscore the need for coordinated treatment programs.

A strong association is also found between having had a substance abuse disorder (that is, either an alcohol or drug disorder) and the presence of other post-war psychological problems. Male theater veterans with lifetime substance abuse are four to five times more likely to have a lifetime or current major depressive episode or lifetime dysthymia than those without these substance abuse disorders. Much higher rates are also seen for both lifetime and current manic episode, panic disorder, and generalized anxiety disorder. These results are consistent with the hypothesis that individuals with psychiatric disorders such as these self-medicate in an attempt to ameliorate their symptoms. Male theater veterans with lifetime substance abuse are also four to six times more likely to meet criteria for antisocial personality disorder (ASP), a finding which parallels other results in studies of non-veteran populations of a high co-occurrence of substance abuse in those with ASP.

With regard to general indexes of adjustment, male theater veterans who meet criteria for lifetime substance abuse have greater numbers of serious postmilitary and current readjustment problems, are less likely to have completed either high school or college, are more likely to be currently not working, and to have higher levels of occupational instability. They are also less likely to be presently married, more likely to have had multiple divorces, and report greater difficulties in marital and parental role functioning. They also report being more socially isolated, exhibiting more violence, and overall lower levels of subjective well being.

In conclusion, it appears that veterans who, at some time in their lives, have met the criteria for an alcohol abuse or dependence disorder or a drug abuse or dependence disorder show significantly more impairment on almost every measure of post-war adjustment and psychological well being than those who never became heavily involved with psychoactive substances.

6. Relationship Between Minority Group Membership and Post-War Psychological Problems

Of the veterans who served in the Vietnam theater, approximately 11 percent (about 350,000) were black and over 5 percent (about 170,000) were Hispanic. This section summarizes significant differences found in this study between the racial/ethnic subgroups.

The most important differences, for the purposes of this report, were in the estimates of current prevalence of PTSD. The current prevalence among white/other male Vietnam theater veterans was estimated to be 13.7 percent (34.0 percent among those with high war zone stress exposure). The current prevalence was significantly higher for black theater veterans (20.6 percent total and 38.2 percent for those with high war zone stress exposure) and Hispanic theater veterans (27.9 percent total and 48.4 percent for those with high war zone stress).

The significantly higher rates of PTSD among Hispanic as compared to white/other theater veterans persisted even after taking into account a broad range of predisposing risk factors and war zone stress exposure. This suggests that neither such background differences nor a higher level of war zone stress exposure among Hispanics wholly explains the difference observed between these groups. The general pattern was also not due solely

to the propensity of Hispanics to report more symptomatology, since the prevalence rate of PTSD among Hispanic theater veterans was significantly higher than that of Hispanic era veterans or civilian counterparts.

While the black male theater veteran PTSD prevalence rates were significantly lower than those for Hispanics, they were significantly higher than those for white/others. The black versus Hispanic difference essentially disappeared when predispositional factors were taken into account, but blacks were still significantly higher than white/others. When war zone stress exposure was taken into account as well, however, the black versus white difference disappeared. This suggests that, overall, elevated rates of PTSD among black theater veteran men as compared to white/other veterans were largely the result of differences in their levels of exposure to war zone stress.

While it should be noted that racial/ethnic differences were not found on the great majority of contrasts on other psychological problems in the area of affective and anxiety disorders, nevertheless, overall, Hispanic theater veterans tended to report more mental health problems than white/others or blacks. The lifetime prevalence of "any NSVG/DIS" psychiatric disorder was significantly higher for Hispanic theater veterans (67 percent) than for blacks (50 percent) or white/others (48 percent). Rates for Hispanic theater veterans were particularly high on lifetime alcohol abuse or dependence (50 percent), and were also higher than rates for white/others on their rate of generalized anxiety disorder. Blacks, on the other hand, were more likely to be diagnosed for current antisocial personality disorder (4 percent) than were Hispanics (2 percent), but they were not significantly different from white/other theater veterans. Both Hispanic and black theater veterans were higher than white/others on the levels of nonspecific distress they experienced.

Both black and Hispanic theater veterans reported more overall adjustment problems than white/others. Most notably, both groups reported significantly more problems with marital relationships and violent behavior. In terms of marital relationships, black theater veterans were significantly less likely to be currently married, compared to Hispanics or white/others. They were more likely to be living as though married or to be separated. However, no significant racial/ethnic differences were found on number of divorces, number of parental problems, and family adjustment.

In terms of mean number of violent acts in the last year, both black and Hispanic Vietnam theater veterans were higher than white/others. Both minority groups also reported lower levels of happiness and life satisfaction than white/others.

There were no other readjustment problems on which Hispanics were higher than either blacks or white/others. Blacks, however, were more likely than white/other theater veterans to report:

- current lower levels of educational attainment
- current unemployment
- some involvement with the criminal justice system

One other important finding emerges from comparison between black Vietnam theater and era veteran men. Specifically, many of the problems examined for which black theater veterans were significantly higher than white/others and/or Hispanics were also quite prevalent among black Vietnam era veteran men. As a result, significant differences between theater and era veteran men frequently observed among white/others and Hispanics were rarely observed among blacks. Rather than indicating that black theater veterans are relatively well-adjusted, the lack of such differences emphasizes instead an especially high level of readjustment problems among black era veterans, problems which they appear to share with black men who served in the Vietnam theater.

Overall, it appears that black and Hispanic veterans have experienced more mental health and life adjustment problems subsequent to their service in Vietnam than white/other veterans. Hispanics and blacks shared a number of problems including elevated rates of PTSD, overall adjustment problems, and lower levels of life satisfaction. For Hispanics, problems were particularly manifested in high rates of PTSD and other psychiatric disorders (e.g., alcohol abuse and dependence and generalized anxiety). Among blacks, other than PTSD, the more serious problems appear to be in social readjustment, particularly educational and occupational achievement, marital status, and involvement with the criminal justice system.

Much more analysis and research is clearly needed to understand these differences.

7. Relationship Between Incarceration and Post-War Psychological Problems

Public Law 98-160 also stated that the Readjustment Study be designed to "yield information regarding any statistical correlations between post-war psychological problems [among Vietnam veterans] and the incarceration of such veterans in penal institutions." However, because of the very small number of Vietnam veterans who were found to be incarcerated at the time on the NSVG interview, it was not possible to assess the relationship between post-war psychological problems and incarceration. Less than one percent of Vietnam theater veterans interviewed in the NSVG were currently in jail or prison. This estimate is probably somewhat too low, because some of those sampled for the NSVG who could not be located are likely to have been in jail or prison. Nevertheless, since less than five percent of the total Vietnam veteran sample was nonlocatable, even if all of these veterans had been located, there would still have been too few incarcerated Vietnam veterans to answer reliably the questions posed.

8. Impact of Post-War Psychological Problems on Veterans' Families

Public Law 98-160 also specified that the Readjustment Study "include an evaluation of the long-term effects of post-war psychological problems among Vietnam veterans on the families of such veterans (and persons in other primary social relationships with such veterans)." Analyses of the Family Interview component of the Readjustment Study indicated that PTSD has a substantial negative impact not only on a veteran's own life, but also on the lives of those who are close to him. Vietnam veterans with PTSD tend to be married (or living with someone as though married) for a shorter time (on the average, six fewer years) and to have many more marital and family problems than do Vietnam veterans without PTSD. Vietnam veterans with PTSD are also less likely to report being married and more likely to report themselves living as though married than those without PTSD. Vietnam veterans with PTSD also report more divorces, more marital and relationship problems, more problems related to parenting, and substantially poorer family adjustment than those without the disorder.

In terms of demographic characteristics, the wives or partners (that is, the persons with whom the veteran is living as married) of veterans with PTSD closely resemble the spouse/partners in the lives of veterans without PTSD, and neither group of women reports major drug or alcohol problems. However, in families in which the veteran has PTSD, the spouse/partners report being less happy and satisfied with their lives and having more general psychological distress (including feeling as though they might have a nervous breakdown) than do the spouse/partners of Vietnam veterans who do not have PTSD. The spouse/partners of veterans with PTSD also report more marital problems and more family violence than is found in families of those without PTSD. Children of Vietnam veterans with PTSD tend to have more behavioral problems, including behavioral problems of clinical significance, than do children of Vietnam veterans without PTSD. Thus, living with a veteran suffering from PTSD appears to have a significant negative impact on the psychological status and well-being of their spouses or coresident partners and their children.

9. Use of Care Furnished by the Veterans Administration By Veterans with Post-War Psychological Problems

An additional concern expressed in the Public Law was "the extent to which Vietnam veterans with post-war psychological problems use care furnished by the Veterans Administration." Overall, 7.5 percent of male Vietnam theater veterans reported having used VA services for a mental health problem since their separation from the military, compared to only 3.3 percent of comparable Vietnam era veterans. This rate of VA use among Vietnam theater veterans represents about one-fourth of their total (both VA and non-VA combined) use of mental health services (30.3 percent have sought help from at least one such source). Close to one-third of those theater veterans using some type of VA service since leaving the military made use of Vet Centers specifically for their mental health problems, either as their only mental health resource or in conjunction with other services. More recently, just under three percent (2.6) of male theater veterans reported that they had used VA services for mental health problems in the past year, one-fourth of their total mental health service utilization during that period (10.4 percent).

Veterans found to have the highest levels of post-war psychological problems, that is, those exposed to high levels of war zone stress, those with PTSD, and those who have had a substance abuse problem, made much greater use of VA mental health services than those without such problems. The postmilitary utilization rate of some type of VA mental health service by those with high levels of war zone stress exposure (15.9 percent) was over four times that of comparable Vietnam era veterans (3.8 percent) and over three times that of theater veterans with low to moderate levels of war zone stress exposure (4.7 percent); and nearly 40 percent of those exposed to high war zone stress who had ever received VA services for mental health problems had received such services in the past year (6.1 percent). While these rates of postmilitary and current use of the VA for mental health services by theater veterans exposed to high war zone stress represent only about 40 percent of their total use of mental health services (41.3 and 14.3 percent, respectively), the comparable ratio of VA to total use of mental health services among theater veterans exposed to low or moderate levels of war zone stress was less than 20 percent. Nearly six percent (5.9) of male theater veterans who experienced high levels of war zone stress exposure had used Vet Centers at some time since leaving the military specifically for mental health problems, approximately three-eighths of those using any VA mental health service.

An even greater proportion of those with current PTSD made use of VA services. One-fifth of all male theater veterans with PTSD had used VA services for mental health problems since separating from the military, and just over half of those (10.3 percent) had received such services in the past 12 months. Lifetime use of VA mental health services by those with PTSD was nearly four times, and current use over ten times, the rate of those without PTSD (5.2 and 1.1 percent, respectively). However, less than four (3.6) percent of those with PTSD had ever sought help from a Vet Center specifically for their mental health problems. In addition, among those with PTSD who have at some time received mental health care from any source (61.7 percent), only one-third have received such care from the VA. About half of those with PTSD who were currently receiving any mental health care were using VA mental health services. Nevertheless, among those without PTSD, the ratio of VA to total mental health service use was only about one in five for lifetime and one in eight for current use.

Higher rates of use of VA mental health care facilities were also found among those who had had a history of alcohol or drug abuse problems. Rates for this group were approximately 12 percent for lifetime use of VA mental health services and four percent for current use. While male theater veterans with a service connected physical disability reported somewhat fewer types of post-war psychological problems than some other groups, such as those with PTSD, the scores of male theater veterans with a SCPD on several key NSVG measures suggest that such veterans also suffer from some major psychological or adjustment problems resulting from the war. Like other groups with high levels of post-war psychological problems, those with a SCPD reported a higher than average rate of using VA mental health services. Those with a SCPD had used VA mental health services at more than twice the rate of those with no SCPD (17.4 versus 6.3 percent), and there was a more than three-fold elevation in rates of mental health service utilization for those with a SCPD of 30 percent or higher as compared to those with no SCPD. Current rates of VA mental health service use for those with a high level of SCPD were the highest of any group: 13 percent had used such services in the past year as compared to only two percent among those without a SCPD. Their use of Vet Centers was similar to that of the high war zone stress exposure group (5.5 percent). Since those with mental health problems often seek care from services designed to treat physical health problems, it is also important to note that all of the groups described above with elevated rates of VA mental health service utilization also had higher than average rates of using VA physical health services.

In sum, Vietnam veterans with post-war psychological problems do indeed make greater use of VA mental health services than those without such problems. Such veterans also make greater use of mental health services in general, both VA and non-VA. In fact, non-VA sources still account for the majority of their total mental health service use. Nevertheless, very substantial proportions of Vietnam veterans with post-war readjustment problems have never used the VA or any other source for their mental health problems, especially during the previous 12 months. Additional analyses of the Readjustment Study and other data are clearly required to better determine the extent and nature of their current unmet need for such services.

10. Women Vietnam Veterans

The Congressional mandate emphasized a special need for information on the prevalence of post-war readjustment problems among women who served in Vietnam. The NVVRS was designed to address this mandate, and was the only nationally representative study of women Vietnam veterans conducted to date. We estimate that 8.5 percent of female theater veterans have PTSD now, which is approximately 610 cases. We also estimate that an additional 7.8 percent of these women (roughly 560 women) have enough serious symptoms of PTSD that, although they do not meet the full set of diagnostic criteria now, they suffer from impairments in functioning related to PTSD (partial PTSD) and so may benefit from professional attention. These women with active PTSD symptoms bring our estimate of the number of women who currently have serious problems with PTSD to 1,170 cases--a full 16.3 percent of all theater veteran women.

Two factors of military service appeared to be connected to having PTSD today. First, women who served in either I Corps or II Corps in Vietnam were more likely to have PTSD than women who served in other parts of Vietnam. Second, among those female theater veterans with high exposure to war zone stressors the prevalence rate of PTSD is 17.5 percent, as opposed to 2.5 percent for those with low or moderate exposure. This finding highlights the role of exposure to war zone stress in the subsequent development of PTSD among women veterans.

We also found that fully one-quarter of female theater veterans (26.9 percent) have had PTSD at some point in their lives. An additional 21.2 percent of theater veteran women reported that their lives have been seriously affected by PTSD symptoms (partial PTSD), even though their problems did not meet the criteria required for diagnosis.

Among women Vietnam theater veterans, for the nine specific psychiatric disorders (other than PTSD) assessed in the NSVG, the most frequently occurring lifetime disorders were generalized anxiety disorder, major depressive episode, and alcohol abuse or dependence. The lifetime prevalence for all three of these disorders was greater than nine percent, and the rate for generalized anxiety disorder was almost 17 percent. The lifetime rates for both depression and alcohol abuse or dependence were

significantly higher for women theater veterans than for women era veterans or civilians. This was not true for generalized anxiety disorder.

The most prevalent current disorders among female theater veterans were major depressive episode and generalized anxiety disorder, both of which were at rates of just over four percent. These rates were significantly higher than those for era veteran women or civilians for depression but not for generalized anxiety disorder. When the era veteran and civilian groups were statistically adjusted to women theater veterans on age and occupation, there was no disorder for which the rates of era veterans and civilians were higher than those of theater veterans. In contrast, there were several disorders for which rates for theater veterans were higher than for era veterans or civilians. Besides current major depressive episode, the disorders for which theater veterans had higher rates differ by comparison group (that is, era veterans or civilians).

Not only were few major differences found between women theater veterans overall and their Vietnam era veteran counterparts, for women theater veterans fewer disorders were associated with war zone stress exposure than were found among men, although the prevalence rates for some disorders in the high war zone stress group appeared to be quite high. Of women exposed to high levels of war zone stress, 22 percent had a major depressive episode at some time in their lives, 21 percent had lifetime generalized anxiety disorder, and 10 percent had dysthymia (lifetime). The rates for lifetime depression and dysthymia were significantly higher than the rates for era veterans, civilians, and theater veteran women exposed to low/moderate levels of war zone stress. Major depressive episode was the one current disorder with significantly higher rates among women exposed to high war zone stress than for all other groups: era veterans, civilians, and low/moderate war zone stress females.

A very high degree of co-occurrence between PTSD, substance abuse, and these other psychiatric disorders was also found among women. Female theater veterans with PTSD had significantly higher rates of most of the other disorders. Differences between those with and without PTSD were statistically significant; they were also quite dramatic. Women with PTSD had a 42 percent rate of lifetime depression, and a 23 percent rate of current depression. Of these women, 38 percent had lifetime generalized anxiety disorder and 20 percent had current generalized anxiety disorder.

Other disorders for which women with PTSD had lifetime rates of greater than 20 percent were: dysthymia (33 percent), panic disorder (21 percent), and alcohol disorders (29 percent). Other disorders with current rates of 10 percent or higher in this group were panic disorder (13 percent), and alcohol disorders (10 percent). Women theater veterans with a lifetime substance abuse disorder also tended to have high rates for several other psychiatric disorders.

In examining the patterns of nonspecific distress (demoralization), we found that the major elevations in rates of nonspecific distress were among women exposed to high levels of war zone stress, those with PTSD, and those with a lifetime substance abuse disorder.

Women who served in Vietnam, especially those exposed to higher levels of war zone stress, also reported significantly higher levels of other readjustment problems than did female era veterans. Female theater veterans exposed to high war zone stress were almost three times more likely than comparable era veterans to score at the highest level on the index of readjustment problems and were almost four times more likely to report four or more serious readjustment problems postmilitary. Almost one-third reported four or more current readjustment problems. Female theater veterans exposed to high war zone stress tended to be better educated and were more likely to be working than those with low or moderate levels of exposure. Nevertheless, female theater veterans who were exposed to high levels of war zone stress had higher levels of occupational instability than those with low to moderate war zone stress exposure.

Theater veteran women were less likely to be currently married and more likely to be never married than era veterans or civilians. They also tended to report more marital and relationship problems than women era veterans. Exposure to high levels of war zone stress was positively related to the number of divorces for female theater veterans. And women theater veterans with high war zone stress exposure reported poorer family adjustment than women era veterans. Overall, however, female theater veterans were not distinguishable from era veterans or civilians on measures of subjective well-being. Nonetheless, when compared to women theater veterans without PTSD, female theater veterans with PTSD reported

poorer well-being and adjustment in a number of areas, including social isolation, marital problems, occupational instability, life satisfaction and happiness, and number of divorces.

For female theater veterans, differences in levels of problems with physical health were apparent only for those exposed to high levels of war zone stress and those with current PTSD. Women in both these groups, which overlap substantially as noted above, reported more active chronic physical health problems.

Of those with current PTSD, 73 percent have made at least one mental health care visit to some type of mental health care provider at some point in their lives, and 55 percent have made such a visit during the last year. Thus, roughly one-half of the female theater veterans who have PTSD today are now receiving care. It also appears that female theater veterans overall were more likely to use Veterans Administration physical and mental health care resources than were era veterans. Roughly 60 percent of those women receiving care for mental health problems, lifetime or current, have received care from VA facilities.

In summary, for female theater veterans, significant problems now exist in the area of PTSD and PTSD symptoms. In turn, having PTSD is associated with a host of other post-war readjustment problems that profoundly affect both the veteran and the veteran's family. If a woman was exposed to high levels of war zone stress, she is also more likely to have had significant troubles or problems. Though the majority of female theater veterans have made an adequate and positive adjustment to civilian life, a significant minority of these women continue to suffer significant problems in readjusting to civilian life.

C. Chapter by Chapter Summary of Findings

1. Chapter I: Introduction

This report presents findings from the National Vietnam Veterans Readjustment Study (NVVRS). Congress mandated this study in Public Law 98-160 and directed that it should address "the prevalence and incidence of post-traumatic stress disorder (PTSD) and other psychological problems in readjusting to civilian life" among Vietnam veterans. Our report concentrates on the issues specified in the Congressional mandate.

The NVVRS had three broad goals, as mandated by the Congress and evolved by the VA, its consultants, and the research team:

(1) To provide information about the incidence, prevalence, and effects of PTSD and related post-war psychological problems among Vietnam veterans;

(2) To describe comprehensively the total life adjustment of Vietnam theater veterans and to compare their adjustment to the adjustment of era veterans (persons who served in the Armed Forces during the Vietnam era but did not serve in the Vietnam theater) and nonveterans; and

(3) To provide detailed scientific information about PTSD in particular.

To meet the Readjustment Study's ambitious informational and methodological objectives, the NVVRS research design contained multiple components. The component designed to meet the study's major informational objectives was the National Survey of the Vietnam Generation (NSVG). The NSVG research design involved in-depth face-to-face interviews averaging 3 to 5 hours in length with samples of respondents drawn to represent the study's three major groups of interest. These are:

(1) Vietnam theater veterans. Persons who served on active duty in the U.S. Armed Forces during the Vietnam era (August 5, 1964, through May 7, 1975) in Vietnam, Laos, Cambodia, or in the surrounding waters or airspace of one of these three countries.

(2) Vietnam era veterans. Persons who served on active duty in the U.S. Armed Forces during the Vietnam era but did not serve in the Vietnam theater.

(3) Nonveterans or civilian counterparts. Persons who did not serve in the military during the Vietnam era. We matched members of this group to the theater veterans on the basis of age, sex, race/ethnicity (for men only), and occupation (for women only).

2. Chapter II: Characteristics of Vietnam Veterans

Because the sample of Vietnam theater and era veterans selected for the NVVRS was designed to be the most representative sample of all Vietnam era veterans studied to date, it differs somewhat from samples for prior studies on a number of major sociodemographic and military characteristics. However, the findings of the NVVRS provide the best available basis for inferences about the entire population of Vietnam veterans. The population of inference for the NSVG was 8,269,881 veterans who served during the Vietnam era, of whom an estimated 3,150,811 (38.1 percent) served in the Vietnam theater of operations. Of those serving in or around Vietnam, an estimated 3,143,645 were men and 7,166 were women.

In this chapter and the following chapter summary, different terminology was used to refer to the study's groups of veterans than in the rest of the report. This terminology reflects the fact that "Vietnam theater veterans" and "Vietnam era veterans," as the terms are employed throughout the report, are formally both "Vietnam era veterans" or "veterans of the Vietnam era." In the descriptive profile in this chapter and summary, the terms "Vietnam theater" and "Vietnam era" or "era" were also used to describe the two major subgroups, while the terms "all veterans of the Vietnam era" or "all Vietnam era veterans" were used only to describe the entire population of veterans serving during the Vietnam era. Because women serving during the Vietnam era were a small proportion of all Vietnam era veterans, overall statistics reflect predominantly distributions for men. In many cases, these distributions are quite different for women, and in selected instances these are highlighted in this summary.

A majority of veterans serving during the Vietnam era were born between 1940 and 1949, but over one fourth of the women theater veterans were older. Overall, 87 percent of all Vietnam era veterans were white, 11

percent black, and 5 percent Hispanic. The majority were born in the South or North Central States.

For all Vietnam era veterans, a near majority entered military service between 1965 and 1969, but over 25 percent entered earlier and over 33 percent of both male and female era veterans entered later. Although 25 percent were drafted, almost 70 percent enlisted. A near majority served only one to three years of active duty, and approximately 8 out of 10 veterans have had some contact with the Veterans Administration.

For Vietnam theater veterans, the peak years of entry to the theater of operations for men were 1967-69 and for women 1968-70; the peak years for exit were 1968-70 and 1969-71, respectively. One man in five served more than one tour, while only one woman in 20 did the same. Thirty percent of the men and 20 percent of the women served in Vietnam less than 12 months. About 25 percent of the men and six percent of the women received a combat medal, 13 percent and one percent (respectively) receiving a Purple Heart. Less than one percent of the theater veterans interviewed reported being a prisoner of war.

Three-fourths of all Vietnam era veterans (Vietnam theater and era veterans combined) were currently married, but only half of the women were married. The majority of both men and women had children. One third of all Vietnam era veterans were high school graduates, and another 40 percent had some college. Those men who served in the Vietnam theater were not different in education from the Vietnam era veterans who did not, whereas the women who served in the Vietnam theater were better educated and less likely to have had children. Nineteen percent reported family incomes of less than $20,000, while 23.1 percent reported an income of $50,000 or more.

Close to 40 percent of all Vietnam era veterans lived in the South. Overall, the majority had lived in their current communities for more than 10 years. Theater veteran women were twice as likely as theater veteran men to be living alone. Among all Vietnam era veterans, 58 percent were Protestant, 22 percent Catholic, and 17 percent had no religious preference.

Overall, the characteristics of the veterans who served in Vietnam varied substantially from the characteristics of the veterans who did not, especially so for women. In particular, though the majority of Vietnam

veterans fit our general stereotype of young "citizen soldiers" (that is, draftees and one-term enlistees who dominated the military numerically throughout the Vietnam era), the NVVRS samples also contained substantial proportions of reenlistees and career military personnel--many now retired--whose attitudes, experiences, and readjustment to civilian life may quite plausibly differ considerably from the majority.

3. Chapter III: The Prevalence of Stress Reaction Symptoms

This chapter examines the prevalence of the component criterion symptoms for diagnosing PTSD as described in the 1987 edition of the Diagnostic and Statistical Manual of the American Psychiatric Association. The etiological criterion for PTSD requires that the person must have been exposed to one or more traumatic events--events that are psychologically distressing and outside the range of usual human experience. The phenomenological characteristics of PTSD involve three classes of symptoms: re-experiencing of the traumatic event, avoidance of stimuli associated with the event or numbing of general responsiveness, and increased arousal. Examples of re-experiencing phenomena include recurrent, intrusive, and distressing memories or dreams of the event(s). Avoidance and numbing symptoms include deliberate efforts to avoid or escape thoughts or feelings associated with the event(s) and feelings of detachment or estrangement from others that develop after the trauma. Symptoms of increased arousal include difficulty falling or staying asleep, hypervigilance, exaggerated startle response, and physiologic reactivity in the face of events that symbolize or resemble an aspect of the traumatic event.

One of the study's most notable findings was that the lifetime prevalence of experiencing traumatic events was significantly different among the various comparison groups. Vietnam theater veterans were significantly more likely to report having experienced traumatic events than era veterans and civilian counterparts. Particularly striking was the finding that male Vietnam theater veterans who were most involved in the war (i.e., had high levels of exposure to war zone stress) were 14 times more likely to report having experienced one or more traumatic events than were their civilian counterparts.

We also found that the lifetime prevalence of symptoms of re-experiencing was substantially greater in theater veterans than in era veterans or civilian counterparts. Theater veterans with high levels of exposure to war zone stress had more lifetime intrusive symptoms than other theater, era, or civilian groups. Though we found some racial/ethnic differences among males, for the most part the findings did not change radically within racial/ethnic groups. High levels of exposure to war zone stress had a more pronounced effect on female theater veterans than on male veterans.

A third important finding was that the lifetime prevalence of symptoms of numbing and avoidance was greater for male theater veterans than for civilians. However, these symptoms were not more prevalent among theater veterans than they were for era veterans. As expected, the lifetime prevalence of numbing and avoidance symptoms was greater for male theater veterans with exposure to high war zone stress than for either era veterans or civilian men. The pattern of results for racial/ethnic groups on numbing and avoidance was consistent for the most part with the overall results for males. However, the impact of serving in the Vietnam theater on the development of PTSD avoidance symptoms was most striking for Hispanic men and somewhat less consistent for black men. Black era males had a slightly, yet significantly, higher prevalence of these symptoms than black theater veterans. For female theater veterans, those with exposure to high war zone stress had much greater lifetime numbing and avoidance symptoms than either era veteran or civilian women.

A fourth finding was that the lifetime prevalence of symptoms of increased arousal was greater in theater veterans than in era veterans or civilian counterparts. Theater veterans, both men and women, with high levels of exposure to war zone stress showed more lifetime symptoms of increased arousal than other theater, era, or civilian groups. Comparisons of results within the male racial/ethnic subgroups essentially paralleled findings for the overall male population. For example, Hispanic and white/other theater veterans with exposure to high levels of war zone stress reported significantly more adverse arousal symptoms than era veteran and civilian counterparts. Black male theater veterans also reported significantly more PTSD arousal symptoms than black male civilians. However, we found no such difference between the rates reported

by black male Vietnam theater and era veterans. When we contrasted the theater veterans with high war zone stress to those with low war zone stress, our results also were statistically significant and in the expected direction for both men and women. Vietnam theater veterans exposed to high war zone stress had much higher rates of increased arousal symptoms.

In summary, the following conclusions may be derived from the NSVG findings on the prevalence of the DSM-III-R component criteria for PTSD among Vietnam theater veterans, era veterans, and civilian counterparts. First, these results support the contention that Vietnam theater veterans were much more likely to have been exposed to trauma than their era veteran and civilian counterparts. Second, in terms of PTSD symptom characteristics, Vietnam theater veterans were more likely than their military and civilian counterparts who did not serve in Vietnam to report that at some point in their lives they have been afflicted by PTSD re-experiencing symptoms--such as intrusive, repetitive, and distressing memories, nightmares, or "flashbacks" of trauma--and symptoms of increased arousal--such as sleep disturbance, hypervigilance, startle reactions, and physiologic reactivity. Although Vietnam theater veterans were more likely than civilians to report having experienced symptoms of avoidance and numbing, the prevalence of this symptom component among theater veterans did not differ significantly from that of era veterans. Third, as expected, these data show strong relationships between level of exposure to war zone stress and the component criteria of PTSD. Clearly, the subset of theater veterans who bore the brunt of the war in Vietnam were much more likely than other veterans and civilians to have been exposed to trauma and to report PTSD symptoms of re-experiencing, avoidance and numbing, and increased arousal.

4. Chapter IV: The Prevalence of Post-Traumatic Stress Disorder

a. Methods for Estimating PTSD Prevalence. To increase the accuracy of the NVVRS estimates of PTSD prevalence, we included multiple PTSD measures in the study. This approach was taken in acknowledgment of the fact that no single PTSD assessment is completely error free. Therefore, instead of relying on a single PTSD assessment, current PTSD diagnoses in the NVVRS were made on the basis of information from multiple

indicators. The PTSD diagnosis based on information from multiple indicators is called the composite diagnosis. It is the convergence of information across PTSD indicators, and the cross-measure confirmation of the diagnosis that results from a multi-measure "triangulation" approach, that provides the foundation for the credibility of the the NVVRS PTSD prevalence estimates. This "multi-measure triangulation approach" did not specify a positive diagnosis if only one of the measures suggested the presence of PTSD, a strategy sometimes employed when multiple measures are used. Rather, under the procedure employed by the NVVRS, a conflict among multiple measures might lead to either a "negative" or a "positive" diagnosis, depending on the preponderance of evidence.

By definition, a prevalence rate is the percent of a specified population group or subgroup that has a given disorder during a specified time period. To address more completely the "service needs assessment" aspect of the Congressional mandate, we decided to present prevalence estimates for two "types" of PTSD: the full PTSD syndrome (as defined by DSM-III-R) and "partial" PTSD. Estimates of the prevalence of "partial" PTSD are estimates of the percent whose stress reaction symptoms are either of insufficient intensity or breadth to qualify as the full PTSD syndrome, yet that may still warrant professional attention. People with partial PTSD today may have had a full syndrome in the past that is currently in partial remission, or they may have never met the full criteria for the disorder. Nevertheless, they do have clinically significant stress-reaction symptoms and might benefit from treatment. Thus, they represent an additional component of the total spectrum of potential "need for treatment."

We have opted to present in this report prevalence rates with respect to two specific reference periods: current prevalence and lifetime prevalence. Current PTSD prevalence is the percent of those who have the disorder today, while the lifetime prevalence rate is the percent who have met the diagnostic criteria for the PTSD diagnosis at some time during their lives (including those who currently have the disorder).

Current and lifetime prevalence rates are reported because they provide two different perspectives on the PTSD problem. Given that the Readjustment Study was conducted 15 or more years after most veterans' Vietnam service, the lifetime prevalence rate may be thought of as an index of the "total" PTSD problem: what proportion of the men and women who

served in Vietnam ever had PTSD? Current prevalence, on the other hand, provides an index of the magnitude of the problem today. Taken together, lifetime and current prevalence of full and partial PTSD provide a relatively complete picture of the stress reaction sequelae of exposure to war trauma.

b. PTSD Prevalence Estimates. An estimated 15.2 percent of all male theater veterans are current cases of PTSD. This represents about 479,000 of the estimated 3.14 million men who served in the Vietnam theater. Among female Vietnam theater veterans current prevalence is estimated to be 8.5 percent of the estimated 7,166 women who served, or about 610 current cases.

Also for both sexes, current PTSD prevalence rates for theater veterans are consistently higher than rates for comparable era veterans (2.5 percent male, 1.1 percent female) or civilian counterparts (1.2 percent male, 0.3 percent female). These differences are even more striking when Vietnam era veterans and civilians are compared with the subgroup of Vietnam theater veterans exposed to high levels of war zone stress. Rates of PTSD among the latter are dramatically higher than those observed among theater veterans exposed to low or moderate levels of war zone stress.

Among theater veteran males, the current PTSD prevalence rate is 27.9 percent among Hispanics, 20.6 percent among blacks, and 13.7 percent among white/others. Differences between theater veterans, era veterans, and civilian counterparts are also observed within the three race/ethnicity subgroups: theater veteran rates are consistently higher than rates for era veterans or civilians.

Additionally, NVVRS findings indicate that the current prevalence of partial PTSD is 11.1 percent among male theater veterans and 7.8 percent among female theater veterans. Together, this represents about 350,000 veterans--in addition to the 480,000 with the full PTSD syndrome today--who have trauma-related symptoms that may benefit from professional treatment.

NVVRS findings indicate that the lifetime prevalence of PTSD is 30.9 percent among male theater veterans and 26.9 percent among females. The lifetime prevalence of partial PTSD among male theater veterans is 22.5 percent, and among female theater veterans 21.2 percent. These findings mean that over the course of their lives, more than half

(30.9 + 22.5 = 53.4 percent) of male theater veterans and nearly half (26.9 + 21.2 = 48.1 percent) of female theater veterans have experienced clinically significant stress reaction symptoms. This represents about 1.7 million veterans of the Vietnam war.

A comparison of the current and lifetime PTSD prevalence rates shows that about one-half (49.2 percent) of the male theater veterans and one-third (31.6 percent) of the female theater veterans who have ever had PTSD still have it today. Also, of those theater veterans who have ever had significant stress reaction symptoms (full or partial PTSD), about half (49.3 percent) of males and one-third (33.9 percent) of females are experiencing some degree of clinically significant stress reaction symptoms today. These findings are consistent with the conceptualization of PTSD as a chronic, rather than acute, disorder.

c. The Distribution of PTSD Among Vietnam Theater Veterans. Having established the prevalence of PTSD among the major study groups, we then conducted a series of descriptive analyses designed to identify characteristics associated with higher current PTSD prevalence among theater veterans. These analyses help to clarify who among theater veterans has PTSD today. We present here a general summary of the distribution of PTSD according to a selected group of background characteristics, characteristics of military service and service in Vietnam, and current sociodemographic characteristics. We have summarized the findings separately for men and women.

(1) Male Theater Veterans. Men who served in the Army (16.2 percent) or Marine Corps (24.8 percent) are considerably more likely than those who served in the other branches of the Armed Forces to have PTSD today. Across the services, one in four of those who served in the junior enlisted pay grades (E1-E3) currently have PTSD. By far the lowest rate of PTSD is among those who served on active duty 20 or more years (5.6 percent), while those who served more than four but less than 20 years have the highest rate (24.8 percent).

Somewhat surprisingly, the particular time period during which male theater veterans served in Vietnam (for example, during the 1968 Tet Offensive) is not strongly related to variation in current rates of PTSD.

In contrast, age at entry to Vietnam clearly is. Those who were 17-19 years of age when they first entered Vietnam are much more likely to have current PTSD (25.2 percent) than those who were older at the time of entry. Those who served in Vietnam 13 months (the conventional tour of duty for Marines) or longer are also more likely to meet criteria for current PTSD (19-20 percent) than those who served 12 months or less (12.7-15.3 percent).

In addition to length of service, the nature of Vietnam service also appeared to exert a major influence on the prevalence of current PTSD. For example, among those who served in I Corps (the military region in which the Marine Corps was predominant), the current prevalence of PTSD is 22.5 percent. Similarly, those who were wounded or injured in combat are two to three times as likely to have current PTSD, and the likelihood of having current PTSD is also greater for those who received a Purple Heart (over one-third) or received any (other) combat medal (almost one in four).

In addition, several characteristics of veterans' current lives are related to the prevalence of PTSD today. The prevalence of PTSD is higher among theater veteran men who are currently separated or living with someone as though they were married. The rate of disorder is also higher among those who never finished high school (28.7 percent), who are currently unemployed (34.5 percent), and those who have incomes of less than $20,000 per year (26.2 percent). Conversely, rates of current PTSD are particularly low among those who are currently married, college graduates, employed or retired, and have incomes of $30,000 or higher. The prevalence rate is also higher than average for men who reside in the West (23.3) and in very large or medium-sized cities (24.8 and 21.2 percent, respectively). Comparisons by current religious preference suggest that men who declare no religious preference are those at highest risk for current PTSD.

(2) Female Theater Veterans. Fewer characteristics are associated with an increased prevalence of PTSD among Vietnam theater veteran women than among men. This may reflect the greater homogeneity of this subgroup, in that most were nurses. The small sample size prohibited comparisons by race and ethnicity, but comparisons by year of birth revealed that women born before 1940 have PTSD rates under five percent,

while those born during the forties (1940-1949) have essentially twice that rate (approximately 10 percent).

There was also little variation in current PTSD rates among women by type of entry to military service, branch of service, or service in the Reserves or National Guard. However, as with men, those who served on active duty more than 20 years have especially low rates of the disorder, while those serving 4-19 years have somewhat elevated rates. Interestingly, women who served in the junior officer pay grades (01-03) have almost twice the rate of current PTSD as the more senior officers (04-06).

As was the case for men, there was little variation for women in PTSD prevalence by year of entry to Vietnam, but also no substantial differences by age at entry or length of service. However, those who served in I Corp and II Corps have higher rates of PTSD today than those who served elsewhere. As was also true for men, women exposed to high levels of war zone stress, such as exposure to the wounded and dead, have seven times the rate of current PTSD as those with low or moderate levels of exposure.

Women who are divorced, separated, or living as married also have substantially higher rates of PTSD than those who are married, and, unlike the findings for men, the prevalence of current PTSD is higher among female theater veterans with some college (11 percent) or postgraduate training (10 percent) than among high school or college graduates (3.8 and 6.4 percent, respectively). The prevalence of current PTSD is also higher among theater veteran women with incomes of less than $20,000 per year (10.4 percent), those who currently reside in the West (14.7 percent) or in medium-sized cities (14.3 percent), and those who state no religious preference (26.8 percent)

5. Chapter V: The Role of "Risk Factors" in Current PTSD Prevalence

A literal interpretation of the Readjustment Study's Congressional mandate would suggest that the mandate could be fulfilled with respect to PTSD simply by determining the PTSD prevalence rate among Vietnam theater veterans. However, a broader interpretation of the intent of the mandate suggests that more is required. In addition to knowing the current prevalence of PTSD among theater veterans, it is important to the Readjustment

Study's "needs assessment" function to determine: (1) whether that rate is different from the PTSD prevalence rate among era veterans and civilian counterparts, and (2) if so, whether the higher prevalence among theater veterans is predominantly due to their experiences in Vietnam.

Findings presented in Chapter IV demonstrate clearly that the current prevalence of PTSD among theater veterans is much higher than the prevalence among era veterans or civilian counterparts. These findings indicate that Vietnam theater veterans as a group are much more "at risk" for having PTSD than are their era veteran or civilian counterparts.

These findings lead to an important question: what is it about the characteristics or experiences of Vietnam veterans that puts them "at risk"? The contrasts of PTSD prevalence rates between theater veterans and the era veteran and civilian counterpart comparison groups provide some information in this regard. However, those comparisons are not completely satisfying because whether or not an individual served in the military and/or was sent to Vietnam was not a random event. On the contrary, many powerful social forces operated to determine who served in the military, and, within the military, who served in Vietnam. Because of this nonrandom assignment, differences that we observe today in current PTSD prevalence between the study groups may be attributable to differences in the experiences of the groups (for example, service in Vietnam), but they may also result from differences in some characteristics or experiences that theater veterans brought with them to their military service.

The problem of nonrandom assignment to study groups is one that is frequently encountered in applied social research. However, by using multivariate statistical techniques, we can partially overcome the problem of nonrandom assignment and thus increase confidence that differences between the groups are attributable to differences in the experiences by which the groups were defined (that is, participation in the military or the war). By examining the study group contrasts in a multivariate analysis framework, we can assess the extent to which potential predisposing factors account for (or explain) the group differences in current PTSD rates that we have observed. We can also assess the independent contribution to current PTSD prevalence of factors such as

exposure to war zone stress. In essence, such analyses allow us to make the group comparisons while controlling for the effects of potential predisposing factors.

To examine the extent to which potential predisposing factors might account for observed study group differences, we conducted a series of multivariate statistical analyses. These analyses provided estimates of the difference in current PTSD prevalence for each of the standard study group contrasts, taking into account (or "adjusting for") differences between the groups in the set of potential predisposing variables.

These analyses indicated that among males, controlling for potentially predisposing variables typically reduced the between-group differences in current PTSD prevalence. A generally greater impact of the predisposing variable adjustment was observed in the theater versus civilian contrasts than in the theater versus era veteran contrasts, suggesting larger differences in potentially predisposing characteristics between theater veterans and their civilian counterparts. The variables controlled for in the various contrasts tended to be of two types: those that reflected the socioeconomic circumstances of the person's family while growing up, and those reflecting the presence of psychiatric symptoms prior to service in the military or in Vietnam.

The findings of the adjusted theater versus era veteran and civilian counterpart contrasts indicate that there was a significant "predisposition effect": however, the current prevalence of PTSD among Vietnam theater veterans is much higher than that among era veterans and civilian counterparts even after we take into account differences on a large group of potential predisposing factors. Thus, we cannot explain the high current prevalence of PTSD among Vietnam veterans solely on the basis of characteristics that they brought with them to the war. This finding is consistent with the hypothesis that the experiences to which theater veterans were exposed in Vietnam play a prominent role in determining current PTSD prevalence.

In an effort to obtain a clearer understanding of the role of Vietnam experience in current PTSD prevalence rate among theater veterans, we extended the multivariate analyses that accomplished the adjustment for the potential predisposing factors one additional step. This step involved adding the variable for global war zone stress exposure to the

predisposition adjustment models for the male theater veteran racial/ethnic subgroup contrasts. Doing so allowed us to determine whether the between-group differences in current PTSD prevalence rates that remained after the predisposition adjustment could be further reduced by taking account of exposure to war zone stress. Findings indicated that when potential predisposing factors and exposure to war zone stress are controlled, there is no significant difference between the current PTSD rate for black and white/other men. However, the current PTSD rate for Hispanics was significantly higher than that for blacks or white/others even when predisposing and Vietnam experience factors are controlled.

Several conclusions seem warranted from this set of analyses of the role of potential predisposing factors and Vietnam experience factors in current PTSD prevalence. First, the current prevalence of PTSD is much higher among Vietnam theater veterans than among era veterans or civilian counterparts. Second, theater veterans differed from era veterans and civilian counterparts on some background characteristics that are related to current PTSD and that might have rendered theater veterans more vulnerable to the development of PTSD. Nevertheless, the current PTSD prevalence rate is much higher among theater veterans even after these differences in potential predisposing factors are taken into account. Third, exposure to war zone stress in Vietnam plays a significant role in determining who among theater veterans has PTSD today, even after a broad array of potential predisposing factors have been controlled for.

Taken together, these results are consistent with a model of PTSD that posits a role for individual vulnerability (potentially including biological, psychological, and sociodemographic predisposing factors) and a role for exposure to environmental factors (specifically, war zone stressors) in determining who among theater veterans develops PTSD. However, it is also clear that exposure to war zone stress makes a substantial contribution to the development of PTSD in war veterans that is independent of a broad range of potential predisposing factors.

6. Chapter VI: The Prevalence of Other Psychiatric Disorders and Nonspecific Distress

This chapter provides information on levels and patterns of general psychiatric symptomatology, as well as lifetime and current prevalence rates of psychiatric disorders other than PTSD.

"Nonspecific distress" refers to symptomatology that may be associated with a variety of psychiatric disorders rather than to the symptoms of a specific diagnostic category. Nonspecific distress was measured in the NSVG using the Demoralization Scale from the Psychiatric Epidemiology Research Interview (PERI).

An examination of patterns of nonspecific distress indicated that the major elevations in levels of nonspecific distress were found among those exposed to high levels of war zone stress, those with PTSD, those with a lifetime substance abuse disorder, and, for men, among those with a high level of service connected disability. Theater veteran men who were members of a minority group (black or Hispanic) also had higher rates of distress than white/other men. However, those with the highest rates of nonspecific distress were men and women with PTSD.

This chapter also contains a detailed discussion of prevalence rates, and patterns of prevalence, for nine specific psychiatric disorders (other than PTSD) assessed in the NSVG, as well as a discussion of two summary measures of these disorders. These disorders, which were assessed using the Diagnostic Interview Schedule (DIS), are: major depressive episode, manic episode, dysthymia, obsessive compulsive disorder, panic disorder, generalized anxiety disorder, alcohol abuse or dependence, drug abuse or dependence, and antisocial personality disorder.

A Major Depressive Episode is an extended period (two weeks or more) during which the person feels pervasively depressed, sad, or blue, and also experiences a variety of other symptoms such as a profound loss of interest in activities, loss of appetite, and sleep problems. A Manic Episode is a period during which the person experiences an abnormal and persistently euphoric or "high" mood, and also experiences other symptoms such as hyperactivity, decreased need for sleep, and grandiose ideas. Dysthymia, or dysthymic disorder, is a chronic mood disturbance that lasts for at least two years and is characterized by feeling "low" or "blue" most of the time. Dysthymia differs from a major depressive episode in that the depressed mood is less severe but more persistent. Obsessive-Compulsive Disorder is characterized by the occurrence of persistent, irrational thoughts and images, or unwanted, recurrent behaviors that the person feels powerless to control. Panic Disorder is characterized by sudden attacks of severe and disabling irrational fear or terror. Generalized Anxiety

Disorder is characterized by anxiety that persists for at least one month, accompanied by an array of cognitive and physiological symptoms, including feeling nervous or jumpy, sweating, heart pounding, and dizziness. Both Alcohol Abuse and Dependence and Drug Abuse and Dependence are characterized by behavioral changes that result from regular and/or heavy use of psychoactive drugs or alcohol. Antisocial Personality Disorder is characterized by a history of continuous and chronic antisocial behavior in which the rights of others are violated. The category "any NSVG/DIS disorder" is a summary measure for any of the nine psychiatric disorders described above. Except for dysthymia, prevalence rates for all disorders were assessed "lifetime" (i.e., the individual had the disorder at some time in his/her life), and "current," where "current" is defined as within the last six months.

For the nine specific psychiatric disorders other than PTSD assessed in the NSVG, those that occurred most frequently among male Vietnam theater veterans were alcohol abuse or dependence, generalized anxiety disorder (GAD) and antisocial personality disorder (ASP). None of these rates were significantly different from those observed for male Vietnam era veterans, but the theater veteran rates for ASP and alcohol abuse or dependence were higher than those for male civilians. The most prevalent current disorders among male theater veterans are alcohol abuse or dependence and GAD, both of which had rates of above five percent. However, for neither disorder were the rates for Vietnam theater veteran males higher than for Vietnam era veteran males or male civilians. Current symptoms of antisocial personality disorder are relatively rare among male theater veterans.

Among Vietnam theater veteran women, the most frequently occurring lifetime disorders were GAD, depression, and alcohol abuse or dependence. The lifetime rates for both depression and alcohol abuse or dependence were significantly higher for women theater veterans than for women era veterans or civilians. This was not true for GAD. The most prevalent current disorders among female Vietnam theater veterans were depression and GAD, both of which were at rates of just over four percent. These rates were significantly higher than those for Vietnam era women or civilian women for depression but not for GAD.

Overall, the rates for these various psychiatric disorders among Vietnam era veterans, civilians, and Vietnam theater veterans exposed to

low levels of war zone stress were within the ranges reported for community samples in the NIMH-sponsored Epidemiologic Catchment Area (ECA) studies.

Both men and women Vietnam theater veterans had higher levels of current depression than either civilians or Vietnam era veterans. When the era veteran and civilian groups were statistically matched to theater veterans on age and race for men, and age and occupation for women, there was no disorder for which the rates for Vietnam era veterans and civilians were higher than those of Vietnam theater veterans. However, there were several disorders for which the rates for Vietnam theater veterans, overall, were higher than those for Vietnam era veterans or civilians. In addition to current depression, the disorders for which theater veterans had higher rates differ by gender and comparison group (that is, era veterans or civilians). Based on these results, it appears that having served in Vietnam, in comparison to serving elsewhere in the military during the Vietnam era did not greatly increase one's risk for most of the NSVG/DIS disorders. However, the number of psychiatric disorders for which theater veterans rates were higher than civilian rates suggests that serving in the military during that time period was in and of itself a risk factor for some disorders.

In contrast to the few differences found between theater veterans overall and their Vietnam era veteran counterparts, an examination of data for those most often thought of as "Vietnam veterans," that is, those with high levels of exposure to war zone stress, produced much more dramatic findings. Male theater veterans who experienced high war zone stress had higher rates of almost all of these psychiatric disorders than era veterans and civilians. The rates of virtually all of these disorders were also higher for theater males exposed to high war zone stress, by comparison with theater males exposed to low/moderate war zone stress, further validating the finding of higher rates for these disorders among Vietnam theater males most heavily involved in the war.

Among female Vietnam theater veterans, fewer disorders were associated with level of exposure to war zone stress, although the prevalence rates for some disorders among those exposed to high war zone stress appear to be quite high. Their rates for lifetime depression and dysthymia were significantly higher than those for era veterans, civilians, and Vietnam theater veteran women exposed to low/moderate levels of war zone stress.

Major depressive episode is the one current disorder for which significantly higher rates were observed among women exposed to high war zone stress than for all other groups of women: era veterans, civilians, and women exposed to low/moderate levels of war zone stress.

Having a service connected physical disability (SCPD) appeared to have very little effect on the prevalence rates of these psychiatric disorders: males with a high level of SCPD had higher rates only for lifetime generalized anxiety disorder, and females with a SCPD did not have higher prevalence rates for any disorder. Being black also had little effect on rates of disorder, although blacks did tend to have higher rates of ASP, significantly so for current ASP. Being Hispanic had a somewhat greater impact. When examining data on these various disorders combined, Hispanic men had rates 10-15 percent higher than blacks or white/others, regardless of whether one includes or excludes the alcohol use disorders. Nevertheless, Hispanic Vietnam theater veterans tended to be particularly troubled by problems with alcohol and drugs.

A very high degree of co-occurence between PTSD, substance abuse, and other psychiatric disorders was perhaps the most striking finding for these specific psychiatric disorders. Male Vietnam theater veterans with PTSD had significantly higher rates for all disorders except for manic episode. Female theater veterans with PTSD had significantly higher rates for most of these other disorders as well. Differences between those with and without PTSD were statistically significant and quite dramatic. Three-fourths of the men with PTSD had a lifetime diagnosis of alcohol abuse or dependence, 44 percent had a lifetime diagnosis of GAD, and more than 20 percent had a lifetime diagnosis of depression, dysthymia, or ASP. Among males with PTSD, three current NSVG/DIS disorders were found to have prevalence rates in 16-20 percent range: current alcohol disorder, current GAD, and current depression. Forty-two percent of the women with PTSD had lifetime depression, and almost one-fourth had a recent major depressive episode. More than three-eighths of these women had lifetime GAD and one-fifth have it currently. Other lifetime rates above 20 percent for women were: dysthymia, panic disorder, and the alcohol disorders. Other current rates at 10 percent or above for women with PTSD are panic disorder and the alcohol disorders.

This high degree of co-occurence might raise questions concerning the uniqueness of the PTSD diagnosis. However, by noting which disorders have the highest degree of comorbidity--for example, alcohol abuse or dependence, depression, dysthymia, and generalized anxiety--it is clear that these disorders have considerable symptom overlap with PTSD, and are not unlikely to co-occur with the disorder. Also, having almost any psychiatric disorder has been found in previous studies to increase the risk for having another disorder. For example, in the NSVG data, substance abuse also has a high degree of co-occurence with several other disorders. Specifically, males with a history of substance abuse had higher rates for most other disorders than men without such a history, and women with substance abuse also had higher rates for several disorders.

The finding of high rates of ASP among those with PTSD was also discussed. It was hypothesized that the relationship with ASP is probably, at least in part, due to a selection bias, since those with ASP were more likely to have experienced high war zone stress as well. It may also reflect a vulnerability to PTSD among those with ASP.

7. Chapter VII: The Prevalence of Other Post-War Readjustment Problems

a. Readjustment Problems in General. A substantial minority of both men and women who served in the Vietnam theater of operations reported experiencing at least one serious readjustment problem after returning to civilian life, and the majority of these continue to experience at least one such problem. Although male Vietnam theater veterans in general do not differ significantly from Vietnam era veterans in their reported levels of readjustment problems, those who most literally fought the war--theater veterans exposed to high levels of war zone stress--were significantly more likely than era veterans to report such problems. Analyses by race and ethnicity revealed that this pattern was evident among both white/other and Hispanic males. These differences were not observed among blacks, primarily because the levels of readjustment problems reported by black era veterans were particularly high. However, comparisons between male theater veterans by race/ethnicity indicated that both black and Hispanic men serving in Vietnam reported significantly more readjustment problems than white/other males. Among women, those serving in Vietnam--and especially

those exposed to higher levels of war zone stress--reported significantly higher levels of readjustment problems than Vietnam era veterans serving elsewhere. In addition, some evidence exists that Vietnam theater veteran women experiencing lower levels of war stress have experienced fewer such problems than Vietnam era veterans. Among both men and women serving in Vietnam, the prevalence of readjustment problems is strongly and positively related to war zone stress exposure, PTSD, a history of substance abuse, and having a service connected physical disability.

b. Education and Occupation. The major significant differences between Vietnam theater and era veterans were found on educational attainment, with the differences essentially reversed between male and female veterans. Among men, theater veterans in general and the subgroup exposed to high war stress were less well educated today than era veterans, whereas the opposite was observed for women, reflecting the fact that theater veteran women were predominantly nurses. Moreover, the observed education difference in favor of male era veterans was observed only among white/other males. Significant differences between theater veterans and civilians also varied by sex and race/ethnicity. Hispanic and black Vietnam theater veteran males and, especially, female theater veterans, were better educated than their civilian counterparts, while white/other theater veteran males tended toward the middle of the educational distribution, with civilians being both better and less well educated. A work history characterized by instability was also more common among theater veteran men than among civilians. This difference was not found among blacks, however, due to a high rate of occupational instability among black civilian males.

Among theater veterans, blacks were significantly less educated than Hispanics, and somewhat less educated than white/others. In contrast, Hispanics serving in Vietnam were somewhat better educated than white/other males. Both white/other and Hispanic males were more likely to be working than blacks. While men exposed to high levels of war zone stress were less educated than those exposed to lower levels, the opposite was true for women (who were primarily nurses). Though better educated, women experiencing high stress were also more likely to be working and reported higher levels of instability in their work histories. Among both men and

women, those with PTSD reported significantly higher levels of occupational instability, and men with PTSD were both less educated and more likely to be unemployed (though 7 in 10 were currently working).

c. Marital/Relationship and Family Adjustment. Vietnam theater veteran males, including those most highly exposed to war zone stress, were significantly more likely to be living as though married than Vietnam era veterans and civilians, a pattern generally observed among all subgroups except Hispanic men. Vietnam theater veteran women and those exposed to high war stress were less likely married and more likely never married than era veterans or civilian women. More generally, in virtually every subgroup male and female veterans exposed to high war zone stress reported poorer levels of adjustment than era veterans and/or civilians on at least one (and frequently several) indicator(s) of marital/relationship or family adjustment, including more divorces, marital or relationship problems, parental problems, and/or poor family functioning.

Among Vietnam theater veterans, black men were significantly less likely to be currently married than Hispanic and white/other men, and the latter reported fewer marital/relationship problems than either of the two minority subgroups. For men, level of war zone stress exposure was positively correlated with number of divorces, marital or relationship problems, and parental problems, with the divorce relationship also evident for women. Both men and women with PTSD were less likely than those without the disorder to be married, had more divorces, and experienced more marital/relationship problems. Men with PTSD also reported more problems related to parenting and substantially poorer family adjustment. Men and women who had experienced substance abuse problems were less likely married, more often divorced, and experienced higher levels of marital and parental problems.

d. Subjective Well-Being and Adult Behavior Problems. Although contrasts vary somewhat from indicator to indicator, and by race/ethnicity, in general, Vietnam theater veterans exposed to high levels of war zone stress were significantly more likely than their civilian counterparts, and to a lesser extent their era veteran counterparts, to report problems in this area. With one exception (social isolation), however, relationships

observed for women do not follow this pattern. Nevertheless, this relative disadvantage of those exposed to high war stress in comparison with civilians was evident in: (1) lower levels of life happiness and satisfaction among white/other and Hispanic men; (2) higher levels of social isolation among all Vietnam theater veteran subgroups (including women); (3) a higher prevalence of homelessness or vagrancy among white/other males; (4) higher levels of active hostility and actual violent behavior among all male theater veteran subgroups; and (5) higher levels of arrests and incarceration. Moreover, a similar disadvantage relative to Vietnam era veterans was observed among white/other men for subjective well-being, social isolation, homelessness or vagrancy, and violent behavior, and among black and Hispanic men for active expression of hostility. Theater veteran women in general and those exposed to high war zone stress reported significantly less violent behavior than era veteran women.

Among Vietnam theater veteran males, white/other men reported higher levels of general well-being and fewer violent acts during the past year than both black and Hispanic men, who did not differ significantly from each other. Black men also reported significantly higher levels of involvement with the criminal justice system (arrests, incarceration, felony convictions) than either white/other or Hispanic men.

Differences observed by level of war zone stress exposure, PTSD diagnosis, and substance abuse were quite consistent and striking. Although women serving in the Vietnam theater did not differ significantly on any of these measures by level of exposure to war zone stress, men exposed to high war stress reported significantly poorer adjustment on every one of these feelings/behaviors. Similarly, men suffering from PTSD and those with a history of alcohol or drug abuse reported dramatically poorer adjustment on all of these feelings/behaviors, as did women for two of these: subjective well-being and social isolation. Among men and women with PTSD, for example, 1 in 4 reported extreme unhappiness, and 24 percent of these women and 47 percent of the men reported extreme levels of social isolation. Similarly, fully 35 percent of men with PTSD had been homeless or vagrant, over 4 in 10 scored at the highest level on hostility, 1 in 4 had committed 13 or more acts of violence during the past year, and almost half had been arrested or jailed more than once in their lives. Although

the relationships differed in strength, essentially the same pattern was observed for those with a history of substance abuse as for those currently suffering from PTSD.

8. Chapter VIII: The Prevalence of Physical Health Problems

This chapter provides information on the prevalence of physical health problems among Vietnam theater veterans, era veterans, and civilian counterparts. Self-ratings of current health status and number of active chronic physical health problems were contrasted among the major study groups and subgroups. Rates of service connected physical disabilities were obtained from official VA records and contrasted for the subgroups of Vietnam theater veterans. Eleven percent of male Vietnam theater veterans were listed as having a service connected physical disability, four percent at 30 percent or higher. Comparable disability rates for Vietnam theater veteran women were 16 and 10 percent, respectively.

For both male and female Vietnam theater veterans overall, few comparisons with era veteran and civilian counterparts showed significant differences on physical health measures. However, a key finding was that men and women who were exposed to high levels of war zone stress in Vietnam consistently reported higher rates of physical health problems than other theater veterans, era veterans, and civilians. Specifically, male Vietnam veterans who experienced high levels of war zone stress have a significantly more negative perception of their current physical health status, and report more chronic health problems, than the era veteran and civilian comparison groups. In general, the prevalence of active chronic health problems reported by male racial/ethnic subgroups parallel the findings for the main male study groups: Hispanic, black, and white/other theater veterans with high levels of exposure to war zone stress report significantly higher rates of persistent health problems than era veteran and civilian counterparts. In addition, these men who were most exposed to the stressors of war in Vietnam have higher rates of service connected physical disabilities than those with less exposure to stress in the war zone.

Vietnam theater veteran women exposed to high levels of war zone stress also reported a significantly greater number of active chronic physical

health problems than other female theater veterans and civilian counterparts.

Both female and male theater veterans with current diagnoses of PTSD and/or lifetime problems with substance abuse reported significantly more active physical health problems, and poorer perceptions of their current physical health, than theater veterans without either of these disorders.

9. Chapter IX: Use of Physical and Mental Health Services

Chapter IX presented findings on the patterns of use of services for physical and mental health problems. Separate analyses were provided for a number of subtypes of mental and physical health services. First, because the mental health status of Vietnam veterans was a particular focus of the NVVRS, findings for the use of mental and physical health services were presented separately. Because Public Law 98-160, which mandated the Readjustment Study, expressly stipulated that data be presented on use of services provided by the Veterans Administration, data on VA services (VA medical centers, VA outpatient clinics, and Vet Centers) were presented separately from those for other services, although the total use of services, VA and non-VA combined, was also examined. To determine whether Vietnam theater veterans have sought more care overall than comparison groups--and whether they have sought more or less care, recently--lifetime use of services was also distinguished from more recent use. Finally, because use of inpatient care often reflects the presence of more serious problems than outpatient care, but yet typically represents only a small proportion of total care, separate information is also provided for the use of inpatient and outpatient physical health care. However, because inpatient mental health care is a particularly rare event, use of inpatient mental health care was not separated for either analysis or discussion.

a. Utilization of Services for Physical Health Problems.

(1) Differences in VA Utilization. Only one significant difference was found between male Vietnam theater and era veterans in their use of VA facilities for physical health care. Since leaving the military, Vietnam theater veterans were approximately 35 percent more likely than era

veterans to have used VA outpatient services. Overall, 26 percent of male Vietnam theater veterans have used VA outpatient services since leaving the military, and three percent had used these services within the past six months. Twelve percent of male theater veterans reported using VA inpatient services since leaving the military, and one percent reported having used such services in the past 12 months.

Among women, more differences were found between Vietnam theater and era veterans. Since their separation from the military, women theater veterans were approximately three times more likely than era veteran women to have used VA services (both inpatient and outpatient). Vietnam theater veteran women had used VA facilities in the following proportions: 27 percent, lifetime outpatient; three percent, current outpatient; six percent, lifetime inpatient; and one percent, current inpatient.

Within the male Vietnam theater veteran subgroups, a number of differences were found in the rates of use of VA services. Overall, black Vietnam theater veteran men were significantly more likely to have used VA services for physical health problems than white/others or Hispanics. Use of inpatient VA services (both lifetime and current) by black theater veterans was more than double the rate of white/others, while their relative postmilitary use of VA outpatient services was almost double, and current use three times the rate of white/other theater veteran men. In contrast, we found no significant differences between white/other and Hispanic theater veterans.

Overall, theater veterans with PTSD, a service connected physical disability (SCPD), or a lifetime diagnosis of substance dependence or abuse were more likely to have used VA services for physical health problems than their counterparts without these conditions. Not surprisingly, the largest difference observed was for those with a SCPD. The rate of postmilitary use of VA outpatient services for both male and female Vietnam theater veterans with a SCPD was more than triple that of theater veterans without a SCPD. For men with a SCPD, there was also an almost threefold elevation in the postmilitary use of inpatient VA services. Although current rates of use for VA services are predictably much lower than overall or lifetime rates, among men the magnitude of the difference between those with and without a SCPD did not diminish for use of inpatient care and actually increased to a sevenfold difference for use of outpatient care. This

difference for current VA outpatient service use was also found for female theater veterans with a SCPD, but no significant difference was found for current inpatient use by women Vietnam theater veterans.

Differences in rates of VA use for physical health problems between those with and without PTSD or a history of substance abuse were not quite as extreme, but still quite large. Men with one of these conditions had rates of postmilitary VA physical health service use ranging from 30 to 140 percent higher than their counterparts without the disorder, and differences for current service use were even higher. For women with PTSD or substance abuse problems, lifetime rates of VA inpatient and outpatient use for physical health problems were three to five times higher than those of their counterparts without this disorder. Current utilization rates for women theater veterans showed fewer statistically significant differences between those with and without these disorders.

Overall, male Vietnam theater veterans who were exposed to high levels of war zone stress used the VA for physical health care at approximately twice the rate of male theater veterans exposed to low or moderate levels of war zone stress, although these rate differentials were not reflected in current use. Differences in recent use between the two groups were much smaller. Female Vietnam theater veterans with high war zone stress exposure had rates of lifetime VA outpatient physical health care use more than 50 percent higher than female theater veterans with low to moderate war zone stress exposure, but this difference was not evident for use of VA inpatient care for physical health problems. No differences in current VA use were found among female Vietnam theater veterans by level of exposure to war zone stress.

(2) Differences in the Use of "Any Physical Health Service." We found no statistically significant differences between Vietnam theater veterans (male or female) and era veterans in their rates of any current physical health care service use (that is, VA and non-VA combined), inpatient or outpatient. In addition, we found only one difference among subgroups of male theater veterans for current use of any type of service for physical health problems. This finding indicated that male theater veterans with PTSD were more likely to have used outpatient physical health services in the last six months than male theater veterans without PTSD.

Among female theater veterans, we found several differences in the current use of "any physical health care services." Elevated rates in the use of "any physical health care service" were found for female theater veterans exposed to high war zone stress (both inpatient and outpatient), those with a SCPD (outpatient), and those with a history of substance abuse (outpatient).

b. Utilization of Services for Mental Health Problems. Vietnam theater veterans as a group (both men and women) were more likely to have used the VA for mental health services than their era veteran counterparts (7.5 versus 3.3 percent for men, and 8.2 versus 1.0 percent for women). Among women, theater veterans were also more likely than comparable era veterans to have ever sought assessment or treatment specifically for mental health problems at Vet Centers in particular (4.6 versus 0.5 percent), while the rates of utilization of Vet Centers for such problems by Vietnam theater and era veteran men were quite similar (2.3 versus 1.2 percent). Lifetime utilization of any mental health facility (that is, non-VA and VA combined) was essentially the same for theater and era veterans, among men and women. Comparisons of Vietnam era veterans to theater veterans most directly exposed to the adverse aspects of war were even more telling and consistent. Theater veteran men and women exposed to high levels of war zone stress were significantly more likely than comparable era veterans to have ever received mental health services from a Vet Center, any VA mental health service (including VA Medical Centers and Outpatient Clinics), and (for men) any type of mental health facility (including private, state, and federal facilities). For example, male theater veterans who were exposed to high war zone stress were more than four times (and women theater veterans more than 20 times) as likely as comparable era veterans to have ever sought treatment for mental health problems from an agency affiliated with the Veterans Administration (15.9 versus 3.8 percent for men, and 15.8 versus 0.7 percent for women). In addition, male theater veterans who were exposed to high levels of war zone stress were more than three times as likely, and women eight times as likely, as comparable era veterans to have sought mental health services from the VA within the past 12 months (6.1 versus 1.9 percent for men, and 8.1 versus 0.1 percent for women).

The NSVG data thus suggest that Vietnam theater veterans -- especially those exposed to high levels of war zone stress -- have made greater use of mental health care resources than their era veteran and civilian counterparts. In fact, there was not a single contrast on which theater veterans were significantly lower than comparable era veterans and civilians, and there were a great many on which they were more likely to have used services for mental health problems. Although further analyses are clearly needed to identify factors that explain the greater use of these services among Vietnam theater veterans, one plausible hypothesis is that this higher rate of use reflects their greater need for such services.

We also examined variations in mental health care use within white/other, black, and Hispanic subsamples of Vietnam theater veteran men. Overall, we found that the white/other and Hispanic subgroups used all mental health resources in much the same way as the total population of theater veterans. Among blacks, however, the picture was somewhat different. For example, in contrast to the other two racial/ethnic subgroups, the proportions of black theater and black era veterans who had ever used VA mental health facilities did not differ significantly on any contrast. An examination of the lifetime VA usage rates for these groups revealed a similar propensity among both black theater and black era veterans to have used VA mental health services, thereby minimizing differences between these groups.

Another issue of considerable importance to both Congress and the Veterans Administration is the use of mental health services by Vietnam veterans with PTSD. We found that both male and female theater veterans with PTSD were significantly more likely than theater veterans without this disorder to have ever used any type of formal mental health service. For example, male theater veterans with PTSD were nearly four times more likely than theater veterans without PTSD to have ever been treated for a mental health problem at a VA facility (20.0 versus 5.2 percent), while the usage ratio for female theater veterans with and without PTSD was nearly 9 to 1 (41.4 versus 4.7 percent). Similarly, we found that 62 percent of male and 73 percent of female theater veterans with current PTSD had made at least one visit to a mental health care provider for treatment of mental health problems at some point in their lives. Vietnam veterans with PTSD were also significantly more likely than their counterparts without this

disorder to have used mental health services within the past 12 months. Some 22 percent of male and 55 percent of female theater veterans with a current diagnosis of PTSD had visited a health care professional for treatment of a mental health problem within the last year, and approximately half of the facilities used for such treatment, in each case, were VA facilities.

These data on use of mental health services by Vietnam veterans with PTSD beget the age-old question "Is the glass half empty or half full?". As is usually the case, the answer depends on one's perspective. Clearly, the NSVG data on utilization suggest that many veterans with PTSD are seeking and receiving mental health services through the auspices of federal, state, and private health care providers. Yet, the findings also indicate that three-eighths of male and one-quarter of female Vietnam theater veterans with current PTSD have never seen a health professional about a mental health problem, and that roughly 78 percent of current PTSD cases among male theater veterans and 45 percent among female theater veterans have not done so within the past year. Since PTSD is a major and debilitating psychiatric disorder, a considerable unmet need for mental health services probably remains.

We also looked for significant variations in the use of mental health resources by level of SCPD and presence or absence of a lifetime diagnosis of substance abuse or dependence. Among male Vietnam theater veterans, those with SCPD's were significantly more likely than theater veterans without SCPD's to have reported seeking treatment for mental health problems at Vet Centers, any VA facility, and any mental health facility. Female veterans with SCPD's did not differ from their theater veteran counterparts on lifetime and current use of any mental health services. However, both male and female theater veterans with a lifetime diagnosis of substance abuse or dependance were more likely than their non-abusing and non-addicted theater veteran counterparts to have used mental health services of all types, both since their separation from the military and within the past year.

10. Chapter X: The Vietnam Veteran and PTSD: A Family Perspective

This chapter reported on analyses of the interviews conducted with the spouses or partners (that is, spouse or person with whom the veteran is living as though married) of Vietnam theater veterans. Data from these interviews indicated that there are more problems in the families of Vietnam veterans with PTSD than in the families of Vietnam veterans without PTSD. Among male veterans, the spouse/partners of those with PTSD appear to be less happy and satisfied, and to have more general distress, including feeling like they might have a nervous breakdown, than the spouse/partners of those without PTSD. They also report more marital problems and more family violence than is found in families of those without PTSD. Due to the small number of spouse/partners of women veterans with PTSD, fewer statistically significant differences were found between the families of women veteran PTSD positives and PTSD negatives.

In many ways the spouse/partners of those with PTSD resembled the spouse/partners of those without PTSD in their demographic characteristics, as well as in the absence of significant alcohol or drug problems. Despite these similarities, it is impossible to accurately determine how many of the differences between families of PTSD positive and negatives are due to a direct effect of PTSD on the family and to what extent these problems result from a selection factor, i.e., people who become involved with a person troubled with PTSD may differ in important ways from those who do not.

Finally, the reports of the spouse/partners of those with PTSD were basically consistent with, and tended to support, the report of the veteran (detailed in other sections of this report), that the veteran with PTSD has had major problems in life functioning, in readjustment, and with symptoms of PTSD.

11. Chapter XI: Recommendations for Further Research

We prepared this report to address the specific issues raised in the Congressional mandate. Therefore, it is primarily a descriptive report. As such, it serves the useful purpose of describing the levels of

post-war psychological problems among Vietnam veterans, and it provides the kinds of information needed by Federal policy makers to formulate mental health service program plans.

However, the report leaves unanswered many questions about Vietnam service and its sequelae. Many such questions refer to the more fine-grained details that can be examined due to the depth and breadth of the Readjustment Study data base, but some are more fundamental. For example, a more complete understanding of the full spectrum of readjustment problems among Vietnam veterans will require extensive multivariate analyses that were beyond the scope of this report.

Therefore, although publication of this report represents an important milestone and endpoint in the life of the Readjustment Study, it is not a "final" report. Rather, it represents the first in what is hoped will be a series of reports that reveal the details of the study's findings. The data base that has been created through conduct of the NVVRS is an extremely rich resource for use in addressing issues of scientific interest as well as of policy import.

In recognition of these facts, the research team felt it important to recognize explicitly the descriptive nature of this report, and to record some of our thoughts about the directions in which subsequent analyses of the Readjustment Study data base might profitably be aimed. This chapter provides an outline of our thoughts about some initial directions that such further analyses should take.

The outline is intended as an illustrative, rather than exhaustive, listing of the potential uses of the data base. Recommendations were made for analyses in the following major areas:

(1) Understanding the Aftermath of Trauma
(2) Understanding the Syndrome of PTSD
(3) Understanding Racial/Ethnic Differences
(4) Understanding the Broader Impact of PTSD
(5) Understanding the Paths to Seeking and Utilizing Services
(6) Improving the Assessment of PTSD
(8) General Scientific and Methodological Issues.

Additional studies of this type would provide a more detailed and complete understanding of the problems of readjustment to civilian life among Vietnam veterans revealed in the previous chapters of this report.

I. INTRODUCTION

A. Purpose

This report presents the findings from the National Vietnam Veterans Readjustment Study (NVVRS). Congress mandated this study in Public Law 98-160, and directed that it should address "the prevalence and incidence of post-traumatic stress disorder (PTSD) and other psychological problems in readjusting to civilian life" among Vietnam veterans. Our report concentrates on the issues specified in the Congressional mandate.

In preparing this report, we have made a conscious effort to focus the text on the study's findings and their implications, and have discussed the study's methods and other technical details primarily in appendices and in separately bound volumes. Because the tabular presentation of findings is extensive, the basic tables of NVVRS findings have been bound separately as Volume II of the report. By binding the tables separately, we have tried to make it easier for the reader to reference the information while reading the text. As an aid to interpretation, we have also included exhibits in Volume I that summarize important findings. Volume III contains the survey interview instrumentation. Volume IV contains the clinical interview subsample instrumentation.

The following chart summarizes the organization of Volume I:

THIS CHAPTER:	CONTAINS THIS INFORMATION:
Chapter I	• A brief description of the background of the NVVRS • An overview of its design • The standard format for the presentation of findings and statistical tests of the differences among study groups
Chapter II	• definitions of the study groups • description of the characteristics of those groups

THIS CHAPTER:	CONTAINS THIS INFORMATION:
Chapter III	Findings about the prevalence of the component symptoms of PTSD
Chapter IV	Findings about the prevalence of PTSD
Chapter V	Contribution of differences in premilitary characteristics and Vietnam experience to group differences in current PTSD prevalence
Chapter VI	Findings on the prevalence of other psychiatric disorders
Chapter VII	Findings on the prevalence of other readjustment problems
Chapter VIII	Findings on the prevalence of physical health problems
Chapter IX	Findings about the use of health and mental health services
Chapter X	Impact of PTSD in theater veterans on their spouses or partners and their children
Chapter XI	Directions for the future analysis of the NVVRS data in light of what we have learned from the primarily descriptive analyses presented in this report.

Appendices A through G contain the details of a variety of technical aspects of the study.

B. Background

With the evacuation of Saigon on March 25, 1973, the role of overt American intervention in the Republic of Vietnam ended. On May 7, 1975,

President Gerald R. Ford proclaimed an end to the "Vietnam era." The Vietnam era had officially begun on August 5, 1964.

By September 30, 1983, an estimated 8,238,000 men and women who served in the U.S. Armed Forces (both in the Vietnam theater and elsewhere) during the Vietnam era had returned to civilian life (U.S. Veterans Administration, 1983). During the 13 years since the Ford proclamation, the Nation has hotly debated the nature and extent of the problems faced by these Vietnam era veterans in readjusting to civilian life. Hundreds of articles and dozens of books concerning Vietnam veterans' readjustment to civilian life have been published, and the plight of these veterans has been a popular theme in the news media, television, and motion pictures. In part, the resurgence of public interest in the Vietnam war and its veterans reflects some dramatic and precedent-setting changes in the country's socioemotional climate in recent years, changes that have gradually depoliticized somewhat the debate over the mental health of Vietnam veterans.

During the years following the termination of U.S. military involvement, evidence began to mount suggesting that: (1) a substantial number of Vietnam veterans continued to experience problems of readjustment, and (2) many Vietnam veterans either could not or would not avail themselves of services within the traditional Veterans Administration (VA) system. For a significant minority of the men and women who served during the Vietnam war, "the war is not yet over," because they continue to suffer from emotional turmoil 15-20 years or more after the end of their military service and return to civilian life. However, previous estimates of the actual numbers of veterans have varied widely, from as few as 250,000 (for example, Wilson, 1978) to over 2 million (Egendorf, 1982). Although the consensus today is that some Vietnam veterans suffer from PTSD and other psychological problems in readjusting to civilian life, precise national estimates of the number of Vietnam veterans experiencing such problems simply have not been available.

In response to the mounting evidence and public concern, Congress enacted legislation in 1979 (Public Law 96-22) directing the VA to establish a readjustment counseling program, frequently referred to as the "Vet Center" program, separate from the existing VA medical center system.

At the time of its enactment, the Vet Center program was expected to be a short-term program to deal with what was believed to be a temporary quirk in the demand for services. However, demand for Vet Center services continued to exceed expectations. Consequently, Congress renewed the program in 1981 (Public Law 97-72) and again in 1983 (Public Law 98-160).

At the time of the 1981 renewal, Congress mandated that the VA evaluate the readjustment counseling program and formulate plans for meeting Vietnam veterans' future mental health needs through the regular VA system. To comply with these mandates, the VA created a Readjustment Counseling Planning Task Force and contracted for a study to evaluate the effectiveness of the Vet Centers in meeting the needs of the clients served. These efforts helped keep the program's attention focused on meeting the needs of those veterans who came seeking service.

By the time of the 1983 renewal, the Vet Center program had been in operation for four years and had provided service to a substantial number of Vietnam veterans. Although the program seemed to serve the needs of those veterans who used it, the program prompted an additional question: How many more Vietnam veterans are experiencing significant readjustment problems but have not yet sought help? To address this question, the 1983 legislation mandated a study of the prevalence, incidence, and effects of PTSD and related postwar psychological problems in Vietnam veterans. The study was to be of sufficient size, scope, complexity, and design to provide national estimates of the extent of Vietnam veterans' mental health and other health needs. The study also needed to permit sophisticated analyses of the nature, scope, covariation, and etiology of Vietnam veterans' readjustment difficulties.

On September 12, 1984, the VA awarded a contract to the Research Triangle Institute (RTI) to conduct the mandated study, which became known as the National Vietnam Veterans Readjustment Study (NVVRS).

C. Study Objectives

The NVVRS had three broad goals, as mandated by the Congress and evolved by the VA, its consultants, and the research team (see Exhibit I-1). The first major goal of the study was to provide information about the incidence, prevalence, and effects of post-traumatic

Exhibit I-1

NVVRS Objectives

Conduct a Comprehensive Study in the Population of Vietnam Veterans (VVs) of:

I. PREVALENCE AND INCIDENCE OF:

- A. Post-Traumatic Stress Disorder (PTSD)
- B. Other Psychological Problems of Readjusting to Civilian Life--Other "Post-War Psychological Problems" (PWPPs)
  - 1. Other DSM-III Psychiatric Disorders
  - 2. Malfunctions in:
    - A. Marital Roles
    - B. Familial Roles
    - C. Vocational Roles and Careers
    - D. Educational Roles and Careers
  - 3. More General and Subjective Disturbances
    - A. Life Satisfactions, Dissatisfaction, Quality of Life
    - B. Demoralization or Non-Specific Distress

II. EFFECTS OF PWPPs ON SUCH VETERANS, ESPECIALLY:

- A. Those With Service-Connected Disabilities
- B. Women Veterans

III. ASSESS CORRELATIONS BETWEEN PTSD AND OTHER PWPPs:

- A. Physical Disabilities (By Type)
- B. Alcohol and Drug Abuse
- C. Minority Group Membership
- D. Incarceration in Penal Institutions

IV. EVALUATION OF LONG-TERM EFFECTS OF PWPPs ON:

- A. Families
- B. Others in Primary Social Relationships

V. EXTENT TO WHICH VVs WITH PWPPs USE VA AND OTHER RESOURCES

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stress disorder and related post-war psychological problems among Vietnam veterans.

A second major goal of the study was to provide a comprehensive description of the total life adjustment of Vietnam theater veterans and to compare their adjustment to that of era veterans (i.e., persons who served in the Armed Forces during the Vietnam era but did not serve in the Vietnam theater) and nonveterans. It was intended that this description document in the aggregate the course of the lives of these three groups: the problems they have faced, the ways in which they have coped, and the quality of their lives. The description was to cover many dimensions of life--education, work, family, interpersonal relations, emotional stability, etc. The aim was to look at the broad spectrum of adjustment, and to identify factors that have made both positive and negative contributions to these citizens' lives.

A third major goal of the study was to provide detailed scientific information about one specific type of post-war psychological problem: post-traumatic stress disorder (PTSD). Of particular interest are its antecedents, its course, its consequences, and its relationship to other physical and emotional disorders. Relationships between PTSD and other post-war psychological problems, physical disabilities, substance abuse, minority group membership, and criminal justice involvement were all to be examined. Additionally, information describing the impact of post-war psychological problems on veterans' families and on their use of VA facilities was to be developed.

In short, the Congressional mandate was both detailed and far reaching. Fulfillment of that mandate required perhaps the most ambitious national mental health epidemiological study ever attempted on any population.

D. Study Design

1. Overview of Major Components

Clearly, to achieve these broad and very ambitious objectives we needed a rather extraordinary research design. This design required careful attention to sampling and location procedures, instrument

development and validation, data collection, and numerous other special methodological issues. In addition, the controversial nature of some of the study's subject matter (for example, PTSD), the intense interest in the study on the part of groups across the political spectrum, and the programmatic implications of the study's findings have all intensified the importance of the design to the ultimate utility of the study's findings. If the findings are to be useful to policy makers, the findings must be credible to the scientific community, to various political interest groups, and ultimately to the Congress. As with all research projects, the credibility of the findings from the Readjustment Study is predicated on the rigor of its research design.

To meet the Readjustment Study's ambitious informational and methodological objectives, RTI proposed a design with multiple components. The component designed to meet the study's major informational objectives was the National Survey of the Vietnam Generation (NSVG). The NSVG research design involved indepth face-to-face interviewing averaging three to five hours in length with samples drawn to represent the study's three major groups of interest. These groups are:

(1) Vietnam theater veterans. These individuals served on active duty in the U.S. Armed Forces during the Vietnam era (August 5, 1964, through May 7, 1975) in Vietnam, Laos, Cambodia, or the waters or airspace surrounding these countries

(2) Vietnam era veterans. These individuals served on active duty in the U.S. Armed Forces during the Vietnam era, but did not serve in the Vietnam theater

(3) nonveterans or civilian counterparts. These individuals did not serve in the military during the Vietnam era, and they were matched to the theater veterans on the basis of age, sex, race/ethnicity (for men only), and occupation (for women only)

To ensure that critical statistical comparisons could be made reliably, certain subgroups were oversampled, including females, black and Hispanic males, and theater veterans with service-connected physical disabilities.

The survey interview was designed to cover the broad spectrum of adjustment, including such topics as:

- marriage and family
- education and occupation
- military service and Vietnam experience
- stressful and traumatic life experiences
- substance use
- psychiatric disorder
- physical health
- use of health and mental health services

A summary outline of the topics covered and the average number of minutes of interview time allocated to each is shown in Exhibit I-2.

Three additional components of the NVVRS that are closely related to the NSVG were also of key importance in meeting the study's objectives:

(1) Preliminary Validation Study component, conducted and analyzed in preparation for the NSVG

(2) Clinical Interview component conducted after the NSVG interview

(3) Family Interview component, also conducted after the NSVG interview

Because at the time this study was initiated none of the measures currently available for a survey-based assessment of PTSD had yet been validated, an integral part of the study design was completing an elaborate Preliminary Validation Study component. We administered candidate PTSD measures to 225 Vietnam theater veterans whose mental health status with regard to PTSD and other psychiatric disorders was already known. The validation study determined how well diagnostic decisions about PTSD made on the basis of information from a survey interview would correspond with diagnostic decisions made by trained clinicians with extensive experience in diagnosing and treating PTSD. By providing information about the ability of the candidate survey interview instruments to identify true cases of PTSD, this validation component provided a scientific basis for selecting the actual PTSD instruments to be used in the NSVG.

For the Clinical Interview component, we selected a subset of over 300 theater veterans and 100 era veterans to undergo a followup clinical interview with an expert mental health professional. This semistructured diagnostic interview was designed to provide additional information about the validity of diagnoses made on the basis of information collected in

Exhibit I-2

National Survey of the Vietnam Generation:

Average Interview Times by Section
for the Household Interview

	Section/Title	Time in Minutes: Vietnam Theater Veterans	Vietnam Era Veterans	Civilian Counterparts
SECTION A:	Preamble and Eligibility	2	2	2
SECTION C:	Marital History and Adjustment	10	10	10
SECTION D:	Parenting History and Adjustment	10	10	10
SECTION E:	Educational History	6	6	6
SECTION F:	Occupational History and Work Role Adjustment	9	9	9
SECTION G:	Childhood and Family History	12	12	12
SECTION H:	Military Service History	16	16	2
SECTION J:	Vietnam Experience	60	--	--
SECTION K:	Post-Service	22	22	--
SECTION M:	Stressful and Traumatic Life Events	22	18	10
SECTION N:	Self-Perceptions, Attitudes, and Nonspecific Distress	18	18	24
SECTION P:	Physical Health Status	9	9	9
SECTION R:	Diagnostic Interview Schedule (DIS)	79	73	72
SECTION S:	Use of Health and Mental Health Services	16	15	13
SECTION T:	Social Support	6	6	5
SECTION U:	Demographics	11	11	11
TOTAL		308	237	195
		(5 hrs. 8 mins.)	(3 hrs. 57 mins.)	(3 hrs. 15 mins.)

the survey interview, particularly the diagnosis of PTSD. The clinical interviews were conducted by mental health professionals located in 28 specific geographic areas around the country who were experienced in diagnosing and treating stress disorders. The Clinical Interview sample was drawn from among NSVG theater and era veteran respondents who lived within "reasonable commuting distance" of these 28 areas; the sample included all those who appeared on the basis of their survey interview to be PTSD positive, and a sample of those who appeared to be PTSD negative.

The Family Interview component involved one-hour followup interviews with the spouses or other co-resident partners (that is, someone with whom the veteran was living as though married) of over 450 theater veterans. The purpose of these interviews was to collect information about the veteran from someone close to him or her, and to assess the impact of post-war psychological problems of Vietnam theater veterans on persons sharing their lives. The Family Interview subsample was selected from the entire theater veteran sample. This subsample was designed to include adequate numbers of both spouses or partners of veterans whose survey interviews suggested substantial levels of post-war psychological problems and spouses/partners of those without such problems.

2. Sample Design of the NSVG

Two important requirements in the design of the NSVG were: (1) that the sample of persons interviewed be nationally representative of the corresponding populations, and (2) that the survey include adequate comparison groups to provide a context for understanding the current adjustment problems of Vietnam veterans. To meet these requirements, the NSVG design specified the selection of national probability samples of Vietnam (theater and era) veterans and their civilian counterparts of sufficient size to support estimates for and contrasts among the groups of interest. For example, the study design contrasts Vietnam theater veterans with other Vietnam era veterans (male and female) and theater veterans with nonveterans (male and female). The study also contrasts racial/ethnic subgroups of male theater veterans (black, Hispanic, and white/other) and subgroups exposed to different levels of combat or war zone stress.

Operationally, the NSVG sample design combined: (1) a military-records-based sample designed to yield 1,500 Vietnam theater veterans and 730 era veterans, (2) a household sample of 450 male and 50 (non-nurse) female civilian counterparts, and (3) a list sample of 150 female civilian registered nurses. The Vietnam theater veteran sample was augmented with 100 theater veterans with service-connected disabilities, for a total of 1,600 theater veterans.

The veteran respondent universe was defined as all persons who served on active duty in the military forces of the United States during the Vietnam era (August 5, 1964 through May 7, 1975), except those currently on active duty. Under this definition, career retirees, enlistment terminations, and persons who served on active duty during the Vietnam era and are now reservists or National Guard personnel are all included. By this definition the study population contained an estimated 93 to 94 percent of all living persons who served on active duty during the Vietnam era, the most comprehensive coverage of the Vietnam veteran population of any study conducted to date.

The task of selecting the veteran samples was complicated by the fact that no master list existed of the over eight million veterans who served in the military during the Vietnam era. In consequence, one of the study's initial tasks was to create such a list (or sampling frame), from which the samples of veterans could be selected. The most common means for creating such a list in past studies had been to screen households either by telephone or in-person to identify Vietnam era veterans. However, this approach necessarily relies on self or proxy reports to identify veterans, and the screening rates obtained by the most rigorous surveys employing this method (Fischer, Boyle, Bucuvalas, & Schulman, 1980; Rothbart, Fine, & Sudman, 1982) suggest significant underreporting of Vietnam theater and era veteran status, resulting in undercoverage on the order of 32-38 percent relative to 1980 Census findings. To avoid this problem of undercoverage, the NVVRS sampling frame for veterans was compiled directly from military personnel records, using three sources:

- the National Personnel Records Center (NPRC)
- the Defense Manpower Data Center (DMDC)

- a special list compiled for the VA by the Department of Defense's Environmental Support Group (ESG), purported to contain the names of all female theater veterans

From a sample of 34,000 accession numbers selected from the NPRC Chronological Model (which includes accession numbers assigned to personnel records received between January, 1966, and June, 1977), 25,000 personnel records were fully abstracted. From the DMDC master files, we selected a total of 966 cases. These two sources served as the basis of the male theater and era veteran samples. These abstraction samples were designed to include sufficient numbers of minority members to produce the required oversamples of blacks and Hispanics. Although the number of black veterans available was enough to produce the black oversample, the number of Hispanics was insufficient to provide an adequate yield. As a result, we had to include a supplemental sample of 6,800 accession numbers from NPRC to obtain sufficient numbers of Hispanic male theater veterans to meet the statistical requirements of the study.

The NPRC and DMDC files were also the basis of the female era veteran sample. However, because more than 80 percent of female veterans serving in the Vietnam theater were nurses, we modified the sample design for female Vietnam era veterans to produce a similar proportion of nurses in that subsample to ensure more valid comparisons between these two groups. To obtain adequate numbers of era veteran nurses for that purpose, we screened a sample of 205,000 accession numbers from the NPRC Chronological Model to identify all of those with potentially female names. We then retrieved the military records for all those with potentially female names and examined the records to determine the veteran's gender. All records verified as identifying female veterans were abstracted to identify nurses based on the recorded military occupational specialty (MOS). This procedure resulted in a large enough pool to provide sufficient numbers of era veteran nurses.

We also used the ESG list of female theater veterans to select the female theater veteran sample.

3. Implementation

Implementing this complex, multiple component research proved to be especially challenging--indeed, it proved to be a formidable test of some of the hypothetical limits of survey research. For example, although identification of the veteran samples from military records provided the advantage of a more representative sample than could have been achieved through identification via household screening, it had the distinct disadvantage of requiring the research team to track down all sampled veterans wherever they were currently living to interview them. The resulting sample was scattered literally throughout the world, and address information in their military records was often up to 20 years old. However, through an interagency agreement with the National Institute of Occupational Safety and Health (NIOSH), it was possible to obtain current addresses for most veterans from the Internal Revenue Service (IRS). Those for whom the IRS-supplied address was inaccurate, and those for whom the IRS could not supply a current address, were located by specialized tracing procedures.

Even when located, the sample was very widely scattered, and interviews were conducted in virtually every corner of the 50 states and Puerto Rico. This resulted in an unusually high level of interviewer travel (averaging 200 miles and seven hours per case for theater veterans), in conjunction with the administration of a highly sensitive interview averaging three to five hours in length. In turn, the complexity and sensitivity of the latter required 10 full days of training and a special certification procedure for over 140 interviewers.

In spite of these and some other formidable challenges, the NVVRS achieved virtually all of its performance objectives. In the NSVG, over 95 percent of the veterans sampled were located (over 96 percent of the theater and 93 percent of the era veterans). The 3,016 total interviews conducted exceeded the targeted number of 2,980. For Vietnam theater veterans, over 83 percent of those sampled and eligible (87 percent of those located and eligible) were interviewed, ranging from 81 percent among Hispanic male theater veterans to 86 percent for female theater veterans. Response rates for Vietnam era veterans and nonveterans were 76 and 70 percent, respectively, reflecting in part the lower salience of the

survey to these groups in relation to the level of burden required for their participation.

Similarly, 344 of the 403 Vietnam theater veterans selected for the Clinical Interview component (85 percent) were successfully interviewed. Response rates for demographic subgroups ranged from 80 percent among Hispanic males to 97 percent among women. Among era veterans, 96 of the 116 era veterans selected for the Clinical Interview subsample (83 percent) were interviewed.

Finally, of the 557 spouses or partners of theater veterans who were selected for the spouse/partner interview, 474 were interviewed, for an overall response rate of 85 percent. Response rates for the demographic subgroups ranged from 83 percent for black and Hispanic males to 91 percent for female theater veterans.

C. Interpreting Tables and Contrasts

The basic NVVRS findings described in this report are presented in tabular form in Volume II, and are always referred to as "Tables." Summary findings presented in this volume are always referred to as "Exhibits."

Most of the findings in Volume II are presented in a standard tabular format that consists of two parts. The first part of each table presents the NVVRS estimates (that is, the findings) for each of the study's groups and subgroups, while the second part presents the results of statistical contrasts between selected study groups or subgroups.

Each table presents the NVVRS findings for one characteristic, or "outcome," that was included in the study. Examples of the outcomes include current PTSD diagnosis, educational attainment, and use of mental health services. Tabulations are provided for the outcomes for each study group and subgroup, and are always presented separately for men and women. For example, the table of findings about current PTSD diagnosis shows separate prevalence rates for male and female theater veterans, era veterans, and civilian counterparts.

The tables provide estimates for the study's major groups: theater veterans, era veterans, and civilian counterparts. For men, estimates are also provided for racial/ethnic subsets of the major study groups:

Hispanic, (nonHispanic) black, and white/other. Additionally, within the theater veteran group, estimates are provided for some specific subgroups, selected because of their relevance to the Congressional mandate. These include subgroups based on: level of exposure to war zone stress (high and low/moderate; see Appendix C for details); current PTSD diagnosis (positive and negative; see Appendix D for details); level of service-connected physical disability (SCPD), as indicated in official VA records (none, 0-20 percent, and 30-100 percent); and lifetime substance abuse diagnosis (ever met the criteria for alcohol or drug abuse or dependence, positive and negative).

In addition to estimates, the tables also present the results for a standard set of "contrasts." These contrasts are statistical tests of the differences in the outcome between specific pairs study groups or subgroups (for example, male theater veterans versus male era veterans) in terms of the outcome being tabulated. Each table shows, for example, the contrast between theater and era veterans, separately for men and women. Results of these statistical tests tell whether the findings indicate that the groups being contrasted are or are not different in terms of the outcome being examined.

The Introduction to Volume II provides a more detailed explanation of the table structure and of the statistical tests used to evaluate the contrasts.

II. CHARACTERISTICS OF VETERANS OF THE VIETNAM ERA

A. Introduction

As explained in Chapter I, the sample of Vietnam theater and era veterans selected for the NVVRS was intended to be representative of all veterans who served during the Vietnam era, excluding only those currently on active duty residing outside of the 50 United States and Puerto Rico. The population represented by this sample was somewhat different from that examined by previous studies of such veterans, such as the Legacies of Vietnam (Egendorf, Kadushin, Laufer, Rothbart, & Sloan, 1981), in which the researchers imposed other restrictions on the sample (for example, age range). In reviewing and interpreting the results of an epidemiological study of veterans of this era, we must consider the extent to which the survey sample represented the entire population of these veterans. In many respects, the Vietnam theater and era veterans selected for the NSVG were quite different from the stereotype that has arisen both from prior research based on nonrepresentative samples and from portrayals in literature and the media. In effect, the only studies that were based on reasonably comprehensive definitions of the Vietnam era veteran population were the Myths and Realities study conducted by Louis Harris and Associates (Fischer, Boyle, Bucuvalas, & Schulman, 1980) and the VA's National Surveys of Veterans (Hammond, 1980). However, the samples examined in these studies also differed in important ways from the definitions and design employed in the Readjustment Study.

Because of these differences, readers of this report need to gain a general understanding of the characteristics of Vietnam theater and era veterans represented by the NSVG sample. To that end a "statistical profile" of some major sociodemographic and military characteristics of the Vietnam theater and era veterans is provided in Tables II-1 through II-54 in Volume II. In these tables and in the rest of Chapter II, we have used different terminology to refer to the study's groups of veterans than in the rest of the report. This terminology reflects the fact that "Vietnam theater veterans" and "Vietnam era veterans," as the terms are employed throughout this report, are formally both "Vietnam era veterans" or "veterans of the Vietnam era." Thus, in Tables II-1 through II-54, these

groups are described as "Vietnam theater veterans," "Other Vietnam era veterans," and "All veterans of the Vietnam era." In this descriptive profile, the terms "Vietnam theater" and "Vietnam era" or "era" will also be used to describe the two major subgroups, while the terms "all veterans of the Vietnam era" or "all Vietnam era veterans" will only be used to describe the entire population of veterans serving during the Vietnam era.

The data in these tables are based on the self-reports of veterans interviewed in the NSVG, properly weighted to account for different probabilities of selection and further adjusted to compensate for interview-level nonresponse (see Appendix B). We have provided separate estimates of characteristics for males and females and, within each group, for veterans who served in the Vietnam theater of operations (Vietnam theater veterans) and for those who served elsewhere during the Vietnam era (other Vietnam era veterans). We have also included overall estimates for all male veterans of this era, all female veterans, and all veterans who served during the Vietnam era--males and females combined. In addition, we have provided tests of statistical significance by sex to contrast theater and other veterans. We have also provided tests for contrasts by theater versus other era veteran status separately for men and women. This profile provides a general picture of the population described by this sample, the population represented by all other estimates provided in this report.

As described in Appendix B, the population of inference for the NSVG component of the Readjustment Study was the 8,269,881 veterans who served during the Vietnam era. An estimated 3,150,811 of these veterans (38.1 percent) served in the Vietnam theater of operations as defined by the study (stationed in Vietnam, Laos, or Cambodia, stationed in the waters in or around these countries, or flew air missions over these areas). The remaining 5,119,070 other Vietnam era veterans served in the U.S., Europe, Korea, at sea, or elsewhere in the military during the Vietnam era. Of those serving in or around Vietnam, an estimated 3,143,645 were men and 7,166 were women. Of the over 5 million other Vietnam era veterans, an estimated 4,863,851 were men and 255,219 were women. The proportions presented for these groups in Tables II-1 through II-54 may be applied to these population totals to derive a general idea of the numbers of men and women who have these various characteristics.

B. Background Characteristics (Tables II-1 through II-6)

1. Gender and Year of Birth

As derivable from the population totals described above, fully 97 percent of these veterans were men, 99.8 percent of the theater veterans and 95.0 percent of other era veterans. A majority were born between 1940 and 1949 (current age 39-48), but year of birth varied significantly by group. Over one-fourth of the women who served in the Vietnam theater were borm before 1940 (current age 49 and above), and over one-third of the male Vietnam era veterans were born after 1949 (current age 38 and below). Over half of both male theater veterans and female era veterans were born during the latter half of the decade of the 1940's (1945-1949).

2. Race and Ethnicity

Eighty-seven percent of all Vietnam era veterans were white and eleven percent were black, with the only notable deviation from this pattern observed among Vietnam theater veteran women, 97 percent of whom were white and only 2 percent black. By comparison, 84.7 percent of the total U.S. population in 1986 was white and 12.2 percent black (U.S. Bureau of the Census, 1987). Approximately 5 percent of all veterans of the Vietnam era reported that they were of Hispanic origin (compared to 7.5 percent of the total population of the U.S. in 1986), over half of whom (2.6 percent) were Mexican American and another one-fourth (1.1 percent) of Puerto Rican descent. A higher proportion of Vietnam theater than other era veteran men were of Hispanic origin. In addition, Vietnam theater veteran men were also more often Hispanic than were theater veteran women.

3. Birthplace and Family Size

Approximately one out of three veterans of the Vietnam era was born in the South and another 30 percent in the North Central states, with only 12 percent born in the western states.[1] These proportions reflect quite closely the distribution of the total U.S. population living in these areas in 1950 (just after the end of the decade in which most of these veterans were born): 31.2 percent in the South, 29.4 percent in the North Central states, and 13.3 percent in the West (U.S. Bureau of the Census, 1982). The one notable exception was among Vietnam theater veteran women, who were predominantly born in the North Central states and the Northeast (rather than the South). Family sizes while growing up were quite similar for all subgroups of Vietnam era veterans, with the majority reporting one to three siblings.

C. Military Service Characteristics (Tables II-7 through II-29)

1. Time of Enlistment

A near majority of all Vietnam era veterans entered active duty during the period 1965-1969 (47.9 percent), but over 25 percent entered

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1/ The regions and subregions referenced in this report are those established by the U.S. Bureau of the Census (1982; 1987). The NORTHEAST includes both the New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut) and the Middle Atlantic (New York, New Jersey, and Pennsylvania) states. The NORTH CENTRAL (or MIDWEST) includes the East North Central (Ohio, Indiana, Illinois, Michigan, and Wisconsin) and West North Central (Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas) states. The SOUTH includes the South Atlantic (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida) and East South Central (Arkansas, Louisiana, Oklahoma, and Texas) states. The WEST includes the Mountain (Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada) and Pacific (Washington, Oregon, California, Alaska, and Hawaii) states.

before the beginning or build-up of the Vietnam war (1940-1964), and over one-third of both male and female Vietnam era veterans entered after 1969. By contrast, over 60 percent of both male and female Vietnam theater veterans entered the military during the critical build up period for the war (1965-1969). Consistent with their places of birth, the majority of all Vietnam era veterans entered the military from the South and the North Central states, except for the theater veteran women (North Central and Northeast). The majority was working at the time, but one-third was in school or training. Both theater veteran men and women were more likely to be working than other era veterans, with era veteran men were more likely in school and era veteran women were more likely unemployed before entering the service.

2. Method of Enlistment

Although over 25 percent were drafted, the vast majority (almost 70 percent) enlisted, 56 percent voluntarily and 11 percent to "avoid the draft" (based on their self-reports). Moreover, men who served in the Vietnam theater and those who served elsewhere were equally likely to have enlisted, either voluntarily or otherwise. Reflecting the predominant military occupation as nurses, four of ten women who served in the Vietnam theater received direct commissions. Half of all veterans of this era served in the Army, but the veterans varied considerably by subgroup. A higher proportion of male theater veterans served in the Army and Marines, while larger proportions of male era veterans served in the Air Force. Similarly, almost 80 percent of women serving in Vietnam were in the Army, while higher proportions of era veteran women were in the Navy and Marine Corps.

3. Other Military Service

Over 7 percent of all veterans of the Vietnam era served during the Korean Conflict as well, and 20 percent between the end of that war and our involvement in Vietnam. Almost 11 percent also served after the Vietnam era, including one-fourth of all women veterans. Over 40 percent of both male and female Vietnam theater veterans had foreign or sea duty

other than in Vietnam, as well as two-thirds of the men and one-third of the women not serving in the Vietnam theater. Similarly, 5-10 percent of all groups other than era veteran women had been exposed to combat situations in places other than in Vietnam.

4. Time of Service and Rank

A large plurality of all groups (42-55 percent), except for female theater veterans, served only one to three years on active duty. Nevertheless, over half of the female theater veterans served more than four years and one-fifth served 20 years or more. Comparable proportions for men serving in Vietnam were 29 and 14 percent, respectively. Consistent with this pattern, 54 percent of the women serving in the Vietnam theater re-enlisted or extended their period of active duty service, compared to less than one-third of the men serving there and one-fifth of the other Vietnam era veteran women. Overall, 96 percent of all veterans of the Vietnam era served in the enlisted ranks at some time during their period of active duty, over 40 percent became non-commissioned officers, less than one percent warrant officers, and six percent commissioned officers. Over three-fourths of all Vietnam era veterans achieved a highest military rank of non-commissioned officer (E4-E9), while approximately 15 percent were below these ranks (grades E1-E3) and seven percent were commissioned or warrant officers (grades 01-06, W1-W4). Among women, we noted some dramatic differences, however; for example, almost 60 percent of the women era veterans attained only the junior enlisted ranks (E1-E4). In contrast, close to 90 percent of women theater veterans were commissioned officers (01-06), one-fourth in the highest pay grades (e.g., Major, Lt. Colonel, or Colonel in the Army). Consistent with general promotion tends in the military, men serving in Vietnam also achieved significantly higher rank than those serving elsewhere in the military.

5. Disciplinary Actions

Over 30 percent of veterans serving during the Vietnam era received some form of disciplinary action (courts martial or non-judicial punishment) while on active duty - 32 percent for all Vietnam era veteran

men, compared with less than 2 percent for women serving in Vietnam and 17 percent among other era veteran women. Specifically, 28 percent of all Vietnam era veteran men received an Article 15 or other form of non-judicial punishment (for example, Captain's Mast, Office Hours) and 13 percent of women (1 percent among theater veterans). Only four percent of all veterans of the Vietnam era reported receiving a court martial (less than 1 percent of the women), and the men serving in Vietnam were more than twice as likely as other era veteran men to have received one.

6. Discharge

Close to half of all veterans of the Vietnam era were released from active duty between 1970 and 1974, but three-eighths of the men were released before 1970 and over one-third of the women left the service after 1974. In particular, women serving in the Vietnam theater were twice as likely as men to have left the service in 1975 or later. Reported pay grades at discharge parallel closely the highest ever achieved (described above), but a distinct (though small) trend exists among both theater and era veteran men to have been discharged in lower enlisted pay grades than the highest ever achieved while in the service. Almost 96 percent of all Vietnam era veterans received an honorable discharge, including virtually all (99.5 percent) theater veteran women. Six out of ten veterans of the Vietnam era were released from active duty at the end of a normal term of service, and another 19 percent through the "early out program" or mandated reduction in force. Just under 10 percent, however, retired from the military, including 14 percent of the men and 18 percent of the women serving in the Vietnam theater. Over 30 percent of women veterans not serving in Vietnam were released due to marriage, pregnancy, or children.

7. Service in the Reserves or National Guard, Participation in Veterans Organizations, and Service-Connected Disability

One in four veterans serving on active duty during the Vietnam era also served in the Reserves or National Guard (either before or after their active duty service), and theater veteran women were significantly more likely to have done so (32.2 vs. 22.1 percent) than men serving in or around Vietnam. Among all veterans of this era, three of ten had also been

members of a veterans organization since leaving the military, and 19 percent were currently members, though such membership varied a great deal among subgroups. Among those serving in the Vietnam theater, approximately 40 percent of the men had ever been members, and almost one-third of the women, with approximately 25 percent of each group still being members. By contrast, three-fourths of the other era veterans had never been members. Approximately eight of ten veterans in all groups had had some contract with the Veterans Administration. Among Vietnam theater veterans, 20 percent of the men and closer to one-fourth of the women had applied for--and 13 and 20 percent (respectively) had received--a service-connected disability. Though theater veteran men were more likely to have received such a disability than other male era veterans, their "service-connected" receipt rate was still significantly lower than among women serving in the Vietnam theater.

D. Characteristics of Service in the Vietnam Theater (Tables II-30 through II-40)

1. Time of Service

Comparisons under this heading are relevant only to Vietnam theater veterans, men and women serving in the Vietnam theater of operations. Overall, the "peak" years in which men began their first Vietnam-related tours of duty were 1967-1969; for women the peak years were 1968-1970. Overall, a higher proportion of men than women first entered Vietnam in the years preceding 1968, and a lower proportion than women entered in 1968 or later. Correspondingly, men were most likely to have ended their Vietnam tours in 1968-1970 and women in 1969-1971. Overall, just under one-fifth of the men served more than one period of duty in Vietnam, compared to less than one in 20 women. Over three-eights of the men and close to two-thirds of the women served in Vietnam 12 months, with one-third of the men and 17 percent of the women serving 13 months or more. However, substantial proportions of both men and women--30 and 20 percent, respectively--served less than a 12-month tour. Other than IV Corps, where seven percent served, men were relatively evenly distributed throughout the four military regions, while over half of the women served in III Corps

(the region that included Saigon). Similarly, over 80 percent of the men, and all but 5 percent of the women, were stationed in Vietnam proper, with 17 percent of the men and four percent of the women having duty in the waters in or around Vietnam, and six percent of the men involved in air missions over Vietnam.

2. Decorations

Over 25 percent of the men and six percent of the women reported receiving a combat medal for service in Vietnam, and approximately the same proportions of men and women were wounded or injured in the Vietnam theater, 19 and 1 percent in combat, respectively. In turn, 13 percent of the men and 1 percent of the women reported receiving a Purple Heart, and seven and three percent, respectively, reported spending time in a military hospital after leaving the Vietnam theater. Less than one percent of the theater veterans reported being a prisoner of war (POW).

E. Current Characteristics (Tables II-41 through II-54)

1. Family Status

Three-fourths of all veterans of the Vietnam era were married, but only half of both theater and era veteran women. One-fourth of the era veteran women were divorced and three-tenths of the theater veteran women were never married. By comparison, in the total U.S. population 78-84 percent of the men and 76 percent of the women aged 35-54 in 1986 were married (U.S. Bureau of the Census, 1987). Four-fifths of the men serving during the Vietnam era and two-thirds of the women had children, with men serving in the Vietnam theater having more children than theater veteran women (reflecting predominantly differences in the numbers "never married"). Over 50 percent of the women serving in Vietnam had no children, compared to less than 20 percent of the men.

2. Educational Status

One-third of all Vietnam era veterans were high school graduates, and an additional 40 percent had some college. By comparison, 39 percent of all men and women in the U.S. aged 35-44 in 1986 were high school graduates, 21 percent had some college, and 26 percent were college graduates or higher (U.S. Bureau of the Census, 1987). Those serving in Vietnam did not differ substantially on education from those who served elsewhere, although women serving in Vietnam (predominantly nurses) were significantly better educated than theater veteran men.

3. Occupational Status

Ninety percent of all veterans of the Vietnam era were working, and men serving in Vietnam and those serving elsewhere did not differ in this regard. However, Vietnam theater veteran women were more likely retired than men serving in Vietnam and other era veteran women. Among those who have worked at a civilian occupation, the distributions of jobs by socioeconomic status did not differ significantly between men who served in Vietnam and other male era veterans, but two-thirds of the theater veteran women fell in one category (that associated with nursing).

4. Income

The distributions of family income levels for veterans of the Vietnam era were also relatively even, with 18.6 percent reporting incomes of less than $20,000 and 23.1 percent reporting $50,000 or more. Veterans' households were considerably more affluent than U.S. households as a whole in 1986, 40 percent of which had incomes of less than $20,000 and 17 percent reporting $50,000 or more (U.S. Bureau of the Census, 1987). However, women who served in Vietnam reported higher incomes than both theater veteran men and other women veterans of the Vietnam era. That this figure is not entirely a function of their status as professional nurses (or their own salaries per se) is suggested by their significantly lower levels of reported personal income relative to theater veteran males,

although their personal incomes were still significantly higher than era veteran women.

5. Place of Residence

Partially in contrast to their regions of birth and from where they entered the military, a plurality of all Vietnam era veterans reported currently living in the South (close to 40 percent), with the other three regions being quite similar in their proportions of the remaining population. In part, these shifts reflect general changes in the population distribution of the U.S. from 1950 to 1986, at which time 34 percent of the population lived in the South, 21 percent in the Northeast, 25 percent in the Midwest (North Central states), and 20 percent in the West (U.S. Bureau of the Census, 1987). This distribution was relatively similar within all subgroups except for era veteran women, who were significantly more likely (than era veteran men) to live in the West. Similarly, over 40 percent of all veterans of the Vietnam era were living in a small town or city (under 50,000 people). Theater veteran women, however, were more likely than men serving in Vietnam to live in a suburb or large city and less likely to live in a small town or city or in open country. Overall, the majority of all Vietnam era veterans had lived in their current communities more than 10 years, with both the theater and other era veteran men having been less mobile than theater and other era veteran women, respectively. The majority of all veterans of the Vietnam era had also lived at their current residence more than 5 years, with other era veteran women being more mobile than era veteran men and theater veteran women. Approximately 30 percent of all these veterans were living in households with four people, although 50 percent lived in households with one-to-three people (with 14 percent living alone). Theater veteran women were twice as likely as theater veteran men to be living alone (22.2 vs. 11.3 percent) and had smaller households in general.

6. Religious Affiliation

Among all Vietnam era veterans, 58 percent were Protestant, 22 percent Catholic, and 17 percent had no religious preference. By

comparison, 59 percent of the total U.S. population in 1986 identified themselves as Protestant, 27 percent Catholic, 6 percent "other," and 8 percent "no preference" (U.S. Bureau of the Census, 1987). Theater veteran women were more than twice as likely to be Catholic (36.4 percent) as other era veteran women (15.9 percent), and significantly more likely than theater veteran men to be Catholic, Methodist, or Reformation Era Protestant (for example, Presbyterian, Lutheran, Congregationalist, or Episcopalian). Vietnam theater and other Vietnam era veteran women were also significantly more likely than theater and era veteran men, respectively, to report frequent church attendance.

F. Conclusions

In sum, the study shows substantial variation in the characteristics of the four basic subgroups of veterans serving during the Vietnam era, particularly between those serving in the Vietnam theater of operations and elsewhere - especially between theater and era veteran women. In particular, though the majority of these veterans fit our general conception of young "citizen soldiers" (that is, draftees and one-term enlistees who dominated the military numerically throughout the Vietnam era), these samples also contained substantial proportions of reenlistees and career military personnel--many now retired--whose attitudes, experiences, and readjustment to civilian life may quite plausibly differ considerably from the majority. More detail on these and other characteristics of the veterans of the Vietnam era is provided in Tables II-1 through II-54 in Volume II.

III. THE PREVALENCE OF STRESS REACTION SYMPTOMS

As defined by the 1987 edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R: American Psychiatric Association, 1987) PTSD is a syndrome characterized by four major criteria: (A) the occurrence of an event that is "outside the range of usual human experience and that would be markedly distressing to almost anyone", (B) persistent, intrusive, and distressing re-experiencing of that event, (C) persistent avoidance of stimuli associated with the event, and (D) persistent symptoms of increased arousal. DSM-III-R is published by the American Psychiatric Association and serves as the standard for defining mental illness in the United States. The description of PTSD in DSM-III-R provides guidance as to what constitutes an event that is "outside the range...and markedly distressing...", and also identifies the specific symptoms that provide evidence that the re-experiencing, avoidance, and increased arousal criteria are present. Exhibit III-1 presents the full DSM-III-R definition of PTSD. In the following sections of this Chapter, we provide the NSVG findings on the lifetime prevalence of exposure to traumatic events and on the lifetime prevalence of the symptoms that constitute the PTSD syndrome.

A. PTSD Criterion A: Exposure to Stressors Outside the Range of Usual Human Experience

The NSVG interview contained questions aimed at assessing respondents' lifetime exposure to major stressors (for example, military service in the Vietnam war zone; severe marital difficulties leading to separation and divorce), as well as lifetime exposure to specific military and non-military traumatic events (for example, surviving an enemy rocket attack, civilian housefire, or airliner crash in which others were critically injured). The interview was purposely designed to allow respondents multiple opportunities during the interview to tell the interviewer about traumatic events that had occurred at any time during their lives. The interview provided both direct and indirect opportunities for such expression, on the theory that for at least some respondents direct questioning

Exhibit III-1

DSM-III-R Diagnostic Criteria for PTSD

A. The person has experienced an event that is outside the range of usual human experience and that would be markedly distressing to almost anyone (for example, serious threat to one's life or physical integrity; serious threat or harm to one's children, spouse, or other close relatives and friends; sudden destruction of one's home or community; or seeing another person who has recently been, or is being, seriously injured or killed as the result of an accident or physical violence).

B. The traumatic event is persistently reexperienced in at least one of the following ways:

   (1) recurrent and intrusive distressing recollections of the event (in young children, repetitive play in which themes or aspects of the trauma are expressed)
   (2) recurrent distressing dreams of the event
   (3) sudden acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative [flashback] episodes, even those that occur upon awakening or when intoxicated)
   (4) intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries of the trauma

C. Persistent avoidance of stimuli associated with the trauma or numbing of general responsiveness (not present before the trauma), as indicated by at least three of the following:

   (1) efforts to avoid thoughts or feelings associated with the trauma
   (2) efforts to avoid activities or situations that arouse recollections of the trauma
   (3) inability to recall an important aspect of the trauma (psychogenic amnesia)
   (4) markedly diminished interest in significant activities (in young children, loss of recently acquired developmental skills such as toilet training or language skills)
   (5) feeling of detachment or estrangement from others
   (6) restricted range of affect (for example, unable to have loving feelings)
   (7) sense of a foreshortened future (for example, does not expect to have a career, marriage, or children, or a long life)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by at least two of the following:

   (1) difficulty falling or staying asleep
   (2) irritability or outbursts of anger
   (3) difficulty concentrating
   (4) hypervigilance
   (5) exaggerated startle response
   (6) physiologic reactivity upon exposure to events that symbolize or resemble an aspect of the traumatic event (for example, a woman who was raped in an elevator breaks out in a sweat when entering any elevator)

might not be the most productive way of eliciting information about events that were painful to recall and describe.[1]

Interviewers first raised the issue of exposure to major life stressors and potential traumatic events explicitly in NSVG interviews with Vietnam veterans during the interview's second hour, when respondents were asked to describe details of their Vietnam experience. This description included a thorough assessment of veteran's exposure to combat and to other war zone stressors. We used information collected in this portion of the interview to develop multiple indices of exposure to various types of war zone stress (for example, combat, abusive violence, deprivation), and to create a sum-

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1/ NSVG interviews were conducted by experienced survey research interviewers, trained in administering the NSVG interview in a ten-day training session. In addition to covering the mechanics of the interview process, the training also focused on issues of interviewer sensitivity. During this stage of training, the trainers helped interviewers identify the parts of the interview that were most likely to evoke emotional responses from respondents, recognize the behavioral cues indicating emotional reactivity, and manage emotionality should it occur. This portion of the training was provided by a team of recognized expert clinicians experienced in diagnosing and treating stress disorders, particularly among combat veterans.

In addition to this training, we established support networks for both respondents and interviewers. Interviewers carried with them to each interview a list of local mental health treatment resources (for example, Vet Centers and mental health centers) in the event that the respondent requested referral information. In addition, we instructed interviewers to report to the clinical training team anything "unusual" that occurred in their contacts with respondents. The clinician would then review the facts of the case with the interviewer, and they would together decide on a course of action (for example, the clinician might call the respondent to make a treatment referral). Finally, each respondent was followed up by phone a week or so after the interview and asked specifically about the interview and its impact. During this phone call, we offered referral assistance to those who requested it.

The number of interviews in which respondents were distressed was quite small, and no reactions were severe. These few cases were resolved by applying the above procedures in a manner that addressed the individual needs and specific circumstances of the respondent.

Interviewers had both professional and peer supports to help them. In addition to their special training, interviewers had access to clinical backup (for advice, support, and other needs) at all times. In addition, we scheduled conference calls for small groups of interviewers with members of the training team to provide peer support and to allow interviewers to benefit from the experiences of their colleagues.

mary index of exposure (see Appendix C for full details of the NSVG assessment of exposure to war zone stress).

Somewhat later in the interview, we included sections addressing the lifetime occurrence of specific "stressful" and "traumatic" events. These sections provided respondents with the opportunity to tell the interviewer about other stressful and traumatic experiences that may have occurred during their lives, including those not related to their military service. First, the stressful life events section inquired about the occurrence during the past year of 12 specific types of stressful experiences (including such things as serious illness, death of a family member, loss of a job, and ending of an important personal relationship). These experiences, although stressful, are the kinds of things that happen to many people at some time in their lives, and are actually not "outside the range of usual human experience". Thus, they do not meet the DSM-III-R defined criteria for traumatic events.

These stressful life event questions were followed by a series of questions about potentially traumatic events. The interviewer differentiated these from the stressful life events by noting that: "We've just been talking about events that happen to most people. Now we'd like to talk about unusual events that are extraordinarily stressful or disturbing--things that do not happen to most people but when they do they can be frightening, upsetting, or distressing to almost everyone. By that I mean things like being in a war or heavy combat, being physically assaulted or raped, being in a major earthquake or flood or a very serious accident of fire, seeing other people killed or dead, or experiencing some other type of disastrous event." This transition was intended to help screen out the less serious events (for example, divorces) at this point.

The interviewer then asked specifically whether any of the following 10 types of traumatic events had ever happened to the respondent: specific combat or war-related traumatic experiences (included here to give the respondent another opportunity to describe combat-related events); serious accidents or crashes involving a car, boat, train or other similar serious accident or crash (not war related); large fires or explosions (not war related); serious accidents involving industrial or farm equipment; natural disasters such as tornadoes, hurricanes, floods, or major earthquakes; physical assaults, torture, rape, abuse, or mugging (not war related);

seeing someone who was mutilated, seriously injured, or violently killed (not war related); being in serious danger of dying or being seriously injured; receiving news of the mutilation, serious injury, or violent or very unexpected death of someone close; or experiencing any other very stressful event like these.

Finally, the interviewer followed these probes with a question about the existence of "any experiences like these that you feel you can't tell us about." This last question was included on the basis of our field test experience that some persons were willing to acknowledge that such events had taken place but they would or could not describe them.

For each category in which the respondent reported having experienced an event, the interviewer asked a fixed set of probes about each event of the type. These probes were intended to provide information that could serve as the basis for deciding whether the event met the DSM-III-R definitional criteria for a traumatic event, and were aimed at determining the respondent's degree of personal involvement in the event (that is, did he or she experience the event personally, hear about the event, or come upon the aftermath?), the level of personal danger involved, and so on. As a memory aid and to help assure that the list was as complete as possible, the interviewer kept a list of the events visible to the respondent.

In addition, a later section of the interview continued questions about psychiatric symptoms, including the symptoms of PTSD. Questions about symptoms that required linkage to a specific traumatic event for the PTSD diagnosis to be made (for example, recurrent distressing dreams must be referable to the specific traumatic event or events to be symptoms of PTSD) were asked in such a way as not to force the respondent to link the event and the symptom. For example, when persons responding positively to the question asking whether they had experienced a period of "repeated bad dreams or nightmares," the interviewer then asked whether those dreams or nightmares reminded them in some way "of an experience or experiences that [they] had." Those who said yes were asked whether the experience was one that had been listed earlier (the respondent still had in front of him or her the "traumatic events list" that was created earlier). If so, the interviewer noted which experience it was and moved on; if not, the interviewer added this new event to the list and asked the standard probes about it. In this way, a more complete list of potentially traumatic events was developed.

All "traumatic events" described by respondents were subsequently rated for severity by a trained coder. The rating involved separate judgments about the two factors that Criterion A requires of a traumatic event: (1) that an event be "outside the range of usual human experience", and (2) that the event be capable of producing symptoms of distress in nearly anyone. Judgments about the former were made on a four point scale:

1 = commonplace event (happens frequently to many people)

2 = typical event (happens to many people, but not frequently)

3 = a typical event (not commonplace, but not clearly outside the range of usual human experience)

4 = event clearly outside the range of usual human experience

Judgments about the severity of the stress associated with the event were made using the stressor scale of Axis IV of DSM-III-R. This seven level scale contains the following values:

1 = not stressful
2 = minimal stress
3 = mild stress
4 = moderate stress
5 = severe stress
6 = extreme stress
7 = catastrophe

Coders were trained in using these scales, and we carefully monitored their ratings. Coding was done conservatively, so that ambiguities were resolved in favor of the lower rating. In addition, coders assigned content codes indicating the nature of the event to each reported event.

A lifetime traumatic events variable (Criterion A) was created by combining the values of the severity and content ratings and categorizing them into a four-level index:

1) No Traumatic Event
2) Possible Traumatic Event
3) Probable Traumatic Event
4) Definite Traumatic Event

Table III-1 in Volume II shows the NSVG group estimates for the traumatic events index and the results of contrasts among the major study groups and subgroups. These findings are summarized in Exhibits III-2 and III-3.

The results of the contrasts among male theater veterans, era veterans, and civilians were striking: theater veterans were significantly more likely to report ever having experienced traumatic events than era veterans and civilian counterparts. In fact, over four times as many male theater veterans as era veterans reported events that were judged to be definite trauma, while eight times as many male theater veterans as civilians reported clearly traumatic events. The magnitude of these statistically significant differences was even greater when male theater veterans who were exposed to high levels of war zone stress were compared to male era veterans and civilian counterparts. A remarkable 75.2 percent of male theater veterans who were exposed to high levels of war zone stress described at least one specific and clearly traumatic event. This is more than eight times greater than the estimate for male era veterans (9.2 percent), and 14 times greater than the rate for civilian counterparts (5.2 percent). Thus, three out of four men who were exposed to high levels of war zone stress in Vietnam also described one or more discrete events that were judged to be definitely traumatic.[2]

2/ In the NVVRS, war zone stress and traumatic events are separate variables that are aimed at measuring closely related concepts but are operationalized differently and assessed independently. War zone stress exposure is a dimensional measure of the degree of exposure to circumstances and events in Vietnam that were dangerous, threatening, and/or unpleasant. Therefore, it is a risk factor for the occurrence of traumatic events (that is, the higher the level of war zone stress exposure, the higher the probability of the occurrence of a traumatic event in the person's life). Traumatic events are defined as the respondent's report of the lifetime occurrence of one or more specific events that were clearly "outside the range of usual human experience and markedly distressing." Although the NVVRS research team recognizes that exposure to high levels of war zone stress (for example, frequent long-range patrols in hostile enemy territory) placed theater veterans at increased risk for exposure to specific traumatic events in Vietnam (for example, surviving an ambush in which several comrades were killed or wounded), we also recognize that the relationship between these two variables is not perfect. For example, some NSVG respondents who were exposed to high levels of war zone stress (based on their responses to questions about specific experiences on Vietnam) reported to the survey interviewer that they managed to complete their tour of duty in Vietnam without experiencing a specific event that they judged to be "extraordinarily stressful or disturbing, ... frightening, upsetting or distressing to almost anyone." Conversely, some theater veterans who were exposed to only low levels of war zone stress described one or more clearly traumatic experiences that occurred in the Vietnam war zone or elsewhere.

Nearly a third of Vietnam theater veterans who were exposed to low levels of war zone stress also reported definite traumatic experiences. Contrasts between low/moderate exposure theater veterans and male era veterans and male civilian counterparts on the traumatic events variable were statistically significant, in that low/moderate exposure theater veterans were more likely to report having experienced specific traumatic events. The finding that 32.9 percent of low/moderate exposure male theater veterans reported events that were classified as definite trauma indicates that a high proportion of the men who experienced comparatively low levels of overall stress in the Vietnam war zone nevertheless were exposed to specific traumatic events.

The contrasts for all male racial/ethnic subgroups followed identical patterns. All Hispanic, black, and white/other male theater veteran study groups (that is, overall, high war zone, and low war zone) were more likely to report specific traumatic events than their male racial/ethnic counterparts among era veterans and civilians. Contrasts between racial/ethnic subgroups of male theater veterans showed a single statistically significant difference for Hispanics versus white/others. However, comparing the distributions of the two groups on the traumatic events variable revealed a complex relationship with no clear trends.

The results for the female study groups were comparable to the findings for males. Female theater veterans as an group were significantly more likely to report exposure to trauma than female era veteran and civilian counterparts. As expected, the highest proportion (43.7 percent) of female theater veterans who suffered at least one clearly traumatic experience were theater veterans who were exposed to high levels of war zone stress. Contrasts between female theater veterans in both the high and low war zone stress subgroups and female era veteran and civilian counterparts were statistically significant, and this finding indicates that women who served in the war zone were much more vulnerable to exposure to traumatic experiences than their era veteran and civilian counterparts.

Not surprisingly, the theater veteran subgroup contrasts for high war zone versus low/moderate war zone stress exposure were statistically significant and in the expected direction for both males and females. Theater veterans with a diagnosis of PTSD were more than twice as likely to report exposure to a clearly traumatic event than theater veterans without PTSD.

In addition, male and female theater veterans with service connected physical disabilities (SCPDs) had were significantly more likely to report exposure to traumatic events than theater veterans without physical disabilities. Also, both male and female theater veterans with lifetime diagnoses of substance abuse disorder were more likely to report lifetime trauma than theater veterans who never abused alcohol or drugs.

B. Prevalence of Stress Reaction Symptoms

In addition to assessing exposure to trauma, the NSVG interview also assessed the occurrence of stress reaction symptoms. One component of the multimeasure approach to the assessment of PTSD in the NVVRS was a set of questions in the NSVG interview concerning the occurrence over the course of the respondent's lifetime of the symptoms of PTSD. These questions were keyed to the specific PTSD symptoms as defined by DSM-III-R, and provided information about both onset (that is, when did the symptom first occur?) and recency (when did the symptom occur most recently?). We created separate subscales representing the number of B, C, and D criterion symptoms the respondent has experienced during his or her life. NSVG findings concerning the three major symptom categories--re-experiencing, avoidance, and arousal--are provided in the following sections.

1. PTSD Criterion B: Symptoms of Re-experiencing

This section of the diagnostic criteria for PTSD addresses an often dramatic aspect of the disorder: the intrusion into awareness of painful thoughts and feelings that are associated with or directly related to the traumatic event. These recollections are dreaded by the individual, and their uncontrolled and intrusive nature is central to what makes the disorder so troubling, distressing, and disabling. The often unpredictable and unbidden manner in which painful memories intrude upon awareness is not limited to dreams or nightmares. Re-experiencing frequently occurs in waking states, arising either spontaneously or triggered by external stimuli that are reminiscent of the traumatic event.

The NSVG findings for the number of re-experiencing symptoms experienced are shown in Table III-2. The findings presented are lifetime occurrences of the following set of specific symptoms:

(a) recurrent and intrusive recollections of the event

(b) recurrent distressing dreams of the event

(c) sudden acting or feeling as if the trauma were recurring [for example, flashbacks]

(d) intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries of the trauma

For the diagnosis of PTSD to be made, according to the DSM-III-R criteria, only one of the four specific intrusive re-experiencing symptoms is required. Consequently, those individuals with two or more of the four symptoms might be considered to have a more severe manifestation of the symptom course. However, we must temper our observations by recognizing the differential routes of expression of the psychological sequelae of the experience of traumatic events.

The major contrasts among theater, era, and civilian males show a clear pattern. Theater males reported significantly more lifetime occurrences of intrusive symptoms than did era males or civilian counterpart males. The magnitude of this difference increased strikingly when theater males exposed to high war zone stressors were compared to era males and civilian counterparts. The high war zone stressor theater males average estimate of lifetime "B" symptoms is 1.5 as compared to the average estimate for era males of 0.48 and civilian counterpart males of 0.39. Not surprisingly the comparison between era males and theater males exposed to only low or moderate stressors was not significant. Neither group produced an estimate, when standardized to theater males, that was more than a mean of 0.50.

The pattern of results for the race/ethnicity breakdowns showed both similarities to and differences from the results for all males. The pattern for white/other was identical to that for all males. Theater veterans

have experienced significantly more intrusive symptoms than era males and civilian counterparts, and those exposed to high war zone stressors showed even more dramatic differences. We noted no significant difference between white/other era males and white/other theater males with low or moderate exposure to war zone stressors. The results for the Hispanic males were identical except that the nonsignificant difference between the era and low or moderate exposure theater groups in the pooled results was significant for the hispanic males. That is, Hispanic theater males with low or moderate exposure have a mean lifetime estimate of 0.65 as compared to the Hispanic era males whose standardized estimate is 0.18. The comparable estimate for all males was 0.55 versus 0.48. Thus, for Hispanics, the estimate for those with low or moderate war zone exposure was only slightly higher than for the total male sample, but the estimate for hispanic era veterans standardized to theater low/moderate exposure males was quite a bit lower than for the full male sample.

The picture for black males was more divergent from the results just presented. Surprisingly, for the black males, the experience of intrusive symptoms was not different for theater and era males. The mean estimates were 0.81 for theater and 0.66 for era males standardized to theater males. The contrast between those theater vets exposed to low/moderate war zone stressors as against era vets standardized to that group was not significant, in accord with the dominant pattern of results. Finally, high war zone theater vets have experienced more intrusive symptoms than either era vets or their civilian counterparts. As well, all theater veterans reported more lifetime intrusive symptoms than did their civilian counterparts, when pooled across race/ethnicity groups.

The results for female veterans did not closely parallel those for the males. Overall, the study did not find a significant difference in lifetime experience of intrusive symptoms between theater and era females, theater and civilian counterpart females, or theater females with low or moderate exposure to war zone stressors. The only significant differences were those between female theater veterans with high exposure to war zone stress and comparable era and civilian comparisons. The mean estimates were 1.36 versus 0.59 and 0.59 for the three groups respectively. These data suggested that the effect of exposure to war zone stressors was more

directly connected to the experience of intrusive symptoms for females than it was for males.

When we examined the results for theater veterans only, the comparisons among the male ethnic subgroups showed that Hispanics reported more intrusive symptoms than did either blacks or white/others; the latter two did not differ. For both males and females, as expected, very strong significant differences were present when we compared those with high war zone stressor exposure to those with moderate or low, and those with a current diagnosis of PTSD to those without a current diagnosis of PTSD. For the PTSD comparison, the average number of lifetime intrusive symptoms for males was four times higher in those with PTSD and for females it was five times higher. The contrast across the levels of war zone stress exposure also revealed significant differences for both males and females.

The effect of service connected disability on lifetime experience of intrusive symptoms was significant only for male veterans, and only when we those with high service connected disability were compared to those without any service connected disability. The average number of symptoms for the former group was 1.15, while for the latter it was only 0.76.

As would be anticipated, given the knowledge about PTSD and its manifestations, those male and female theater veterans having a positive lifetime diagnosis of substance abuse also more often experienced intrusive symptoms. For the males, those without the diagnosis reported an average level of intrusive symptoms of 0.59 as compared to 1.04 for those with the diagnosis. For females, the comparable figures were 0.73 versus 1.52. Though the effects are not quite as dramatic as for exposure to war zone stressors, substance abuse does appear to be connected to the increased experience of intrusive symptoms in these theater veterans.

For the most part, the lifetime experience of intrusive symptoms follows the pattern that would be predicted. Theater veterans reported higher levels than era veterans or civilians. Those theater veterans with high exposure to war zone stressors reported higher levels than those without or comparable non-theater groups. Though some racial/ethnic differences were found within the male sample, for the most part the findings did not change radically within ethnic groups. For females, the effect of exposure to war zone stressor seemed to have a more pronounced effect than for males.

Finally, a lifetime diagnosis of substance abuse for theater veterans, male and female, was associated with more experience of intrusive symptoms.

2. PTSD Criterion C: Symptoms of Avoidance

The C Criterion stress reaction symptoms focus on a phenomenon that is conceptually complementary to the re-experiencing symptoms included above under Criterion B. These are the symptoms of avoidance--avoidance of circumstances that might lead the sufferer to remember the trauma. The avoidance can be either cognitive or affective, and can be expressed directly (for example, by not talking about the experience) or indirectly (for example, through a generalized numbing of responsiveness). Avoidance symptomatology commonly takes the form of deliberate efforts to avoid thoughts or feelings about the traumatic event. The sufferer also avoids activities or situations that arouse recollections of the trauma. This avoidance of reminders is frequently reflected in psychogenic amnesia for an important aspect of the traumatic event.

Numbing of responsiveness, also described as "emotional anesthesia" is commonly expressed as:

- feelings of detachment or estrangement from other people
- loss of the ability to become interested and vitally involved in previously pleasurable activities
- diminished capacity to experience emotions of any type, particularly those associated with intimacy, tenderness, sexuality, and grief

The NSVG group estimates for the number of symptoms of avoidance and numbing of responsiveness (Criterion C) are shown in Table III-3. In examining the contrasts among major study groups for all males, much higher lifetime avoidance symptom reports were found for theater veterans when compared with their civilian counterparts. Theater veterans with high war zone stress exposure had much higher lifetime counts than both era veterans and civilian counterparts. These findings were consistent with the overall findings of greater stress symptomatology in theater veterans, particularly those with high exposure to war zone stress. Surprisingly, theater veter-

ans did not report greater avoidance symptomatology as a group when compared with era veteran males. This finding was somewhat perplexing given the highly significant difference in prevalence rates of PTSD in theater veteran males compared with era veteran males. This finding may reflect problems with the sensitivity of the survey interview PTSD symptom instrument.

The subgroup examinations for white/other men revealed that white/other theater men with high exposure to war zone stress reported significantly greater numbing and avoidance symptomatology when compared with era veteran males or civilian male counterparts. White/other male theater veterans, independent of level of exposure to war zone stress, showed higher rates of avoidance and numbing symptoms when compared with civilian male counterparts.

Contrasts for black males on avoidance and numbing symptomatology yielded the following results:

- Black male theater veterans showed significantly greater numbing and avoidance when compared with black civilian male counterparts.
- Black male theater veterans with high war zone stress exposure reported much higher avoidance and numbing symptoms than their civilian male counterparts.
- Black male theater veterans with low/moderate war zone stressor exposure showed much greater numbing and avoidance symptomatology when compared with black era veterans.

Contrary to the overall pattern of results, black era males reported significantly greater avoidance symptoms than black theater males.

For Hispanic male theater veterans, the contrasts among the major study groups showed the most consistent differences of the three male subgroups. Hispanic male theater veterans reported greater lifetime numbing and avoidance symptoms when compared with Hispanic era veterans. This group also showed a strong trend for greater symptomatology when compared with their civilian counterparts. Further, Hispanic male theater veterans with high war zone stress exposure showed much greater avoidance and numbing symptomatology when compared with Hispanic male era veterans and Hispanic male civilian counterparts. Finally, Hispanic male theater veterans who had

been exposed to low/moderate war zone stress also reported greater avoidance and numbing symptoms when compared with Hispanic era veterans. These findings for Hispanic male theater veterans are consistent with the overall high rate of PTSD in this subgroup.

For female theater veterans the most significant contrasts were found for the subgroup with high exposure to war zone stress. For that subgroup, higher lifetime avoidance and numbing symptoms were reported when compared with female era veterans and female civilian counterparts. Trends were noted for greater numbing and avoidance symptomatology for female theater veterans when compared with female era veterans and female civilian counterparts. When we contrasted theater veteran subgroups, the race/ethnicity contrasts were strong within male theater veteran groups. Hispanic male theater veterans reported greater avoidance and numbing symptoms when compared with both white/other and black male theater veterans. This finding was consistent with the overall greater rate of PTSD in Hispanic male theater veterans when compared with white/other and black male theater veterans.

The study also assessed the role of the level of war zone stressor exposure in mediating levels of avoidance and numbing symptomatology in male theater veterans. For both male and female theater veteran, highly significant differences emerged; greater war zone stressor exposure was associated with higher rates of numbing and avoidance for both males and females. The strength of these relationships was impressive. For example, for all male theater veterans, 44 percent of those with high war zone stress exposure reported two or more avoidance and numbing symptoms compared with only 17 percent of those exposed to low/moderate war zone stress. Similar distributions were found for female theater veterans. These findings underscore the important mediating role of the level of war zone stress exposure in the development of numbing and avoidance symptomatology, a finding consistent with other results for the impact of the level of war zone stress exposure on PTSD symptoms.

As was predicted, very marked differences were found in levels of avoidance and numbing symptoms for both male and female theater veterans when we compared those who met current PTSD diagnostic criteria with those who were negative for current PTSD diagnosis. For male theater veterans, 79 percent of those who met current PTSD diagnostic criterion reported one

or more lifetime numbing and avoidance symptoms compared with only 22 percent of those who did not meet current PTSD diagnostic criteria. Further, 40 percent of theater male veterans who met current PTSD diagnostic criteria reported four or more lifetime numbing and avoidance symptoms compared with only 4 percent of male theater veterans who did not meet current PTSD diagnostic criteria. Similarly striking findings were found for female theater veterans: 48 percent of those who met current PTSD diagnostic criteria reported four or more lifetime numbing and avoidance symptoms, compared with only 9 percent of female theater veterans in the group that did not meet current PTSD diagnostic criteria.

For both male and female theater veterans, level of service connected physical disability was not strongly related to the number of lifetime numbing and avoidance symptoms.

When lifetime substance abuse diagnosis was crossed with the number of lifetime avoidance and numbing symptoms, the results were striking. For both male and female theater veterans, those with lifetime substance abuse had much higher avoidance and numbing symptoms. This finding was consistent with the overall results of the study in which a strikingly high co-morbidity rate emerged for substance abuse and post-traumatic stress disorder. The use of alcohol and drugs in subjects with PTSD often reflected attempts at self-medication in an effort to increase denial and numbing, damp down nightmares and flashbacks, and diminish bothersome symptoms of chronic hyperarousal including irritability, hypervigilance, and startle reactions.

3. PTSD Criterion D: Symptoms of Increased Arousal

The third major cluster of PTSD symptoms are the following six symptoms of increased arousal that, by definition, were not present before the trauma:

(1) difficulty falling or staying asleep

(2) irritability or outbursts of anger

(3) difficulty concentrating

(4) hypervigilance

(5) exaggerated startle response

(6) physiological reactivity to events that symbolize or resemble an aspect of the event

In order to meet DSM-III-R criteria for a diagnosis of PTSD, two or more of these symptoms must be present.

Clinical experience suggests that Criterion D arousal symptoms are often linked to Criterion B re-experiencing symptoms. For example, a combat veteran who cannot fall asleep because he experiences vivid and distressing visualizations of combat events when he tries to sleep, often experiences both arousal and re-experiencing symptoms. Nevertheless, Criterion D arousal symptoms also occur at times in which they apparently are not associated with Criterion B re-experiencing symptoms, but rather reflect persistent arousal from chronic stress reaction. In addition, some preliminary evidence suggests that the Criterion D cluster of autonomic hyperarousal symptoms in chronic PTSD may be related to changes in physiology (for example, central and peripheral adrenergic regulation, Friedman, 1988).

In Volume II, Table III-4 shows the NSVG group estimates for the number of lifetime Criteria D symptoms of increased arousal and the results of contrasts among the study groups and subgroups. Contrasts among the three major male study groups revealed that differences in the distribution of lifetime Criterion D arousal symptoms were statistically significant, with male Vietnam theater veterans as a group reporting more symptoms of negative arousal than both male era-veterans and civilian counterparts.

When the subgroup of male Vietnam theater veterans who were exposed to high levels of war zone stress was compared with male era veterans and civilian counterparts on the number of Criterion D arousal symptoms, the contrasts were statistically significant. Among male Vietnam veterans with high levels of exposure to war zone stress only 37 percent reported that they had never experienced a PTSD arousal symptom, compared to 63 percent of era veterans and 69 percent of civilians. On the other hand, nearly 19 percent of this highly exposed subset of male Vietnam theater veterans reported four or more lifetime Criterion D symptoms, in contrast to only 3 percent of male era veterans and less than 2 percent of male civilians.

Among the NSVG female respondents, 38 percent of theater veterans exposed to high levels of war zone stress reported never experiencing a Criterion D arousal symptom, while another 38 percent reported experiencing two or more symptoms of increased arousal at some time in their lives. Contrasts revealed that the number of lifetime Criterion D symptoms reported by female theater veterans who were exposed to high levels of war zone stress differed significantly from the symptom distribution reported by female era veterans. Sixty percent of female era veterans had never experienced a Criterion D symptom in their lives, and over 60 percent of their female civilian counterparts had never suffered any of the PTSD symptoms of Criterion D.

For the male racial/ethnic subgroups, the contrasts revealed several statistically significant differences. Specifically, white/other male Vietnam theater veterans reported more lifetime arousal symptoms than either male era veterans or their male civilian counterparts. For black males, the distribution of arousal symptoms among theater veterans differed significantly from the distribution of arousal symptoms for black civilians, with theater veterans reporting more Criterion D symptoms.

Among Hispanic males, the percent distribution of the number of Criterion D symptoms for Vietnam theater veterans differed significantly from that of Vietnam era veterans, with theater veterans reporting a greater number of symptoms of adverse arousal. In contrast, the percent distributions of Hispanic theater veterans and civilians did not differ significantly across levels of Criterion D symptomatology. When male Hispanic Vietnam theater veterans who experienced high levels of war zone stress were compared to Hispanic male Vietnam era-veterans and civilians, the differences were strikingly large and statistically significant. Whereas only about 31 percent of high exposure Hispanic theater veterans reported never having experienced any PTSD arousal symptoms, 67 percent of era-veteran and 58 percent of civilian counterparts reported that they have never had a period in their lives when they were bothered by any Criterion D symptoms.

Table III-4 also shows the results of three contrasts for racial/ethnic subgroups of male Vietnam theater veterans: white/other versus black males; white/other versus Hispanic males; and black versus Hispanic males. From these contrasts one significant finding emerged: Hispanic male theater

veterans reported more Criterion D symptoms than white/other male theater veterans. Specifically, roughly 34 percent of Hispanic male theater veterans reported two or more lifetime PTSD arousal symptoms, compared to about 21 percent of white/other male theater veterans.

For both female and male Vietnam theater veterans, the contrasts on number of Criterion D symptoms by level of exposure to war zone stress were statistically significant. Examination of the subgroup estimates by level of war zone stress (see Table III-4) clearly shows that theater veterans who reported high levels of exposure to the stresses of war endorsed a greater number of Criterion D symptoms than low exposure veterans. In addition, contrasts on number of PTSD arousal symptoms by substance abuse were also significant. Consistent with the relationship between substance abuse and the number of Criteria B and C symptoms, male and female Vietnam theater veterans with a lifetime diagnosis of substance abuse disorder reported more Criteria D arousal symptoms than theater veterans who reported no lifetime problems with substance abuse.

4. Summary

This chapter has examined the component criteria of the diagnosis of PTSD and discussed several notable finding. First, the prevalence of definite traumatic events derived from the NSVG survey was significantly different among the various comparisons in the directions that were expected. For example, male theater veterans exposed to high war zone stress were nearly 15 times more likely to report definite traumatic events than their civilian counterparts. For both females and males, theater veterans with a diagnosis of PTSD were more than twice as likely to report at least one definite lifetime traumatic event than were theater veterans without PTSD.

Second, for the most part, the lifetime prevalence of symptoms of re-experiencing was greater in theater veterans than in era veterans or civilian counterparts. Theater veterans with high levels of exposure to war zone stressors have more lifetime intrusive symptoms than other theater, era, or civilian groups. Though some racial/ethnic differences existed for males, the findings, for the most part, did not change radically within racial/ethnic groups. High levels of exposure to war zone stressors seemed

to have a more pronounced effect for female theater veterans than for males.

Third, the lifetime prevalence of symptoms of numbing and avoidance for males was greater for theater veterans than for civilians, but did not differ from era veterans. As expected, the lifetime prevalence of numbing and avoidance symptoms was greater for male theatre veterans with high war zone stressor exposure than for either era or civilian males. The pattern of results for racial/ethnic groups on numbing and avoidance was consistent for the most part with the overall results for males. However, the impact of serving in the Vietnam theater on the development of avoidance symptoms was most striking for Hispanic males but somewhat less consistent for black males in that black era males reported slightly but significantly more symptoms than theater males. For female theater veterans, those with high war zone stressor exposure reported much greater lifetime numbing and avoidance symptoms than either era or civilian females.

Fourth, the lifetime prevalence of symptoms of increased arousal were greater in theater veterans than in era veterans or civilian counterparts. Theater veterans, both male and female, with high levels of exposure to war zone stressors showed more lifetime symptoms of increased arousal than other theater, era, or civilian groups. The results of contrasts between racial/ethnic subgroups of males essentially parallel the findings for the overall male population. Hispanic and white/other theater veterans with exposure to high levels of war zone stress reported significantly more adverse arousal symptoms than era veteran and civilian counterparts. Although black male theater veterans reported significantly more PTSD arousal symptoms than black male civilians, no difference existed between rates reported by black male theater and era veterans. Finally, the theater veteran contrasts for high war zone versus low war zone stress were statistically significant and in the expected direction for both males and females.

IV. THE PREVALENCE OF POST-TRAUMATIC STRESS DISORDER

A. Identifying Cases of PTSD in the NVVRS

Reflecting the emphasis on PTSD in the Congressional mandate, our research team wanted to create a research design for the Readjustment Study that would maximize the accuracy of the study's estimate of the prevalence of PTSD among Vietnam theater veterans. This concern was expressed through two important features of the NVVRS design. First, when the NVVRS was being planned, the American Psychiatric Association (APA) was in the process of revising its Diagnostic and Statistical Manual of Mental Disorders (DSM-III), the document that provides the "official" definition of psychiatric disorders in the United States. To assure that the NVVRS assessment of PTSD was consistent with the official definition of PTSD that would be in place when the NVVRS findings became available, the research team coordinated its efforts with the group working on revising the psychiatric taxonomy, APA's Work Group to Revise DSM-III. RTI co-sponsored the meeting of the Ad Hoc Panel on the Definition and Measurement of PTSD, whose recommendations for revising the diagnostic criteria for PTSD were incorporated into the revised PTSD definition. As a result of this coordination, the NVVRS clinical estimates of PTSD prevalence are estimates of the prevalence of the disorder as defined in the current official taxonomy (and therefore in use by the VA system).

Second, the bedrock of the accuracy of any diagnostic procedure is its validity--that is, the extent to which the procedure classifies individuals in whom the disorder is truly present as "cases," and those in whom the disorder is truly absent as "noncases." To achieve the objective of diagnostic accuracy, RTI proposed a double validation design that involved first conducting a preliminary validation study before launching the national survey (that is, the NSVG), and then conducting a second validation study to run concurrent with the national survey. In the following sections we summarize the nature and purposes of these validation components and the methods for integrating validation study findings with those of the national survey to formulate population prevalence estimates. (Full methodological details are provided in Appendices D and E.)

1. Preliminary Validation Study

One of the fundamental principles on which RTI's original proposal to conduct the NVVRS was founded was that the national survey component of the study should not go to the field until sufficient evidence existed that cases of PTSD could be validly identified on the basis of survey interview information. This restriction was critical because no published information existed concerning the validity of any of the existing survey instruments used to identify PTSD in earlier research.

Therefore, the NVVRS design called for a preliminary study to examine the ability of several candidate survey measures to discriminate "true" cases of PTSD from "true" noncases. This validation study involved administering a package of candidate PTSD instruments to a group of subjects whose diagnostic status was known. The diagnostic status of subjects, who were mostly veterans undergoing psychiatric treatment, was "known" because their chart diagnosis and the diagnosis made by an expert clinician agreed on the presence or absence of PTSD. The expert clinician's diagnosis was made on the basis of an independent diagnostic interview conducted blind to the chart diagnosis

Results of the study indicated that several instruments in the package could classify people as cases or noncases of PTSD with acceptable accuracy. These findings served as the basis for decisions about the package of instruments to be included in the NSVG (Appendix D details the design and findings of the preliminary validation study).

2. Clinical Subsample

The preliminary validation study provided information suggesting that we could proceed with the national survey component of the NVVRS. However, it did not (and we did not intend it to) provide complete information about every aspect of the validity of the survey-based PTSD measures. For example, the validation study's subjects were (of necessity) people who had sought treatment for their mental health problems, and evidence in the research literature suggests that people who seek mental health treatment are different in many ways from people who meet the diagnostic criteria for a psychiatric disorder but who do not seek treatment for it. Because the

national survey component of the NVVRS involved a community sample, rather than a treatment seeking sample, the relationship between the diagnostic measures and "true" diagnosis (that is, the validity of those measures) could be expected to be at least somewhat attenuated from the estimate made on the basis of a treatment-seeking population.

For this reason the NVVRS design contained a clinical subsample component. The primary purpose of the clinical subsample component was to provide additional information about the correspondence between PTSD measures included in the survey interview and "true" PTSD. The clinical subsample was designed as a multimethod validity study, in which multiple PTSD measures, including a semistructured interview conducted by an experienced mental health professional, could be brought to bear on the diagnostic decision. Thus, we planned a "triangulation" method for PTSD case identification, in which the diagnostic decision process would take into account information collected through a variety of methods and from a variety of sources.

Each clinical subsample respondent underwent a semistructured clinical interview that resulted in a diagnostic decision about PTSD. In addition, the clinician who conducted the interview completed several clinical scales describing his or her clinical impression of the respondent, and the respondent completed several self-report PTSD scales. In addition, the spouse/partner (if the respondent had one) of each clinical subsample respondent was also interviewed. As a result, the research team had at its disposal five self-report scales directly related to PTSD (plus a number of other psychiatric symptom scales related to PTSD but less directly so), and four clinical judgment scales, for clinical subsample respondents. This information base is what we used to make PTSD case determinations.

3. PTSD Diagnostic Procedures

Although the research team has great confidence in a PTSD diagnosis made by a trained and experienced mental health professional based on a thorough clinical interview, we also recognize that no diagnostic procedure is completely error free. Therefore, we sought to use information from the full range of PTSD indicators available in the clinical subsample to form a "composite" PTSD diagnosis. The basic idea of the composite diagnosis was

to examine the information available from multiple PTSD indicators, including but not limited to the clinical interviewer's diagnosis. In addition, in those cases where some discrepancy among the indicators existed, we used the full array of additional PTSD information to make a diagnostic decision.

Simply stated, composite diagnoses were made on the basis of a detailed review of the PTSD information for each individual clinical subsample subject. Review began by examining the study's three main indicators:

- the Mississippi Combat-Related PTSD (M-PTSD) scale
- the clinical interview (SCID) PTSD diagnosis
- the PTSD scale of the Minnesota Multiphasic Personality Inventory (MMPI)

When these three indicators agreed, the diagnosis was considered "settled" (decided). In the event of a discrepancy in PTSD diagnosis among the three indicators, we used information from the study's other PTSD indicators to resolve the discrepancy. We combined information from these other indicators statistically to create two additional main indicators for use in resolving discrepancies. (Details of the logic underlying the composite diagnosis procedure and of its relationship to other potential methods of case determination are discussed in Appendix D.) Application of this procedure resulted in a composite PTSD diagnosis for every subject in the clinical subsample. PTSD prevalence estimates presented in the following sections are based on the composite PTSD diagnosis (details of the procedure by which NVVRS prevalence estimates were formulated are presented in Appendix E).

B. National Estimates of PTSD Prevalence

By definition, a prevalence rate is the percent of a specified population group or subgroup that has a given disorder during a specified time period. To address more completely the "service needs assessment" aspect of the Congressional mandate, we decided to present prevalence estimates for two "types" of PTSD: the full PTSD syndrome (as defined by DSM-III-R) and "partial" PTSD. Estimates of the prevalence of "partial" PTSD are esti-

mates of the percent whose stress reaction symptoms are either of insufficient intensity or breadth to qualify as the full PTSD syndrome, yet that still warrant professional attention. People with partial PTSD today may have had a full syndrome in the past that is currently in partial remission, or they may have never met the full criteria. Nevertheless, they do have clinically significant stress-reaction symptoms that could benefit from treatment, and they represent an important component of the total spectrum of "need for treatment."

We have opted to present in this report prevalence rates with respect to two specific reference periods: current prevalence and lifetime prevalence. Current PTSD prevalence is operationally defined as the percent of the specified population group or subgroup (for example, male Vietnam theater veterans) who met the criteria for the PTSD diagnosis during the six-month period preceding their participation in the NVVRS. The consensus of clinicians involved in the study was that this rate was the most accurate way to identify those who have the disorder today.

The lifetime prevalence rate, on the other hand, represents the percent of the specified population group or subgroup who have met the diagnostic criteria for the PTSD diagnosis at some time during their lives. Thus the lifetime prevalence rate counts all those who have ever had PTSD, while the current prevalence counts only those who have PTSD today.

Current and lifetime prevalence rates are reported because they provide two different perspectives on the problem. Given that the Readjustment Study was conducted 15 or more years after most veterans' Vietnam service, the lifetime prevalence rate may be thought of as an index of the "total" PTSD problem: what proportion of the men and women who served in Vietnam ever had PTSD? Current prevalence, on the other hand, provides an index of the magnitude of the problem today. Taken together, lifetime and current prevalence of full and partial PTSD provide a relatively complete picture of the stress reaction sequelae of exposure to trauma.

Additionally, the ratio of current to lifetime prevalence provides some information about the course of the disorder. A finding that only a small portion of those theater veterans who ever had PTSD have it today would be consistent with the notion of PTSD as a relatively acute, or time-limited, disorder. Alternatively, a finding that a substantial proportion of

theater veterans who ever had PTSD still have it today would be more consistent with the view of PTSD as a chronic disorder.

1. Current PTSD Prevalence

Table IV-1 (in Volume II) shows the estimated current PTSD prevalence rates for the study's major groups and subgroups. An estimated 15.2 percent of all male theater veterans are current cases of PTSD. This represents about 479,000 of the estimated 3.14 million men who served in the Vietnam theater. Among theater veteran females, the prevalence is estimated to be 8.5 percent of the estimated 7,166 women who served, or about 610 current cases.

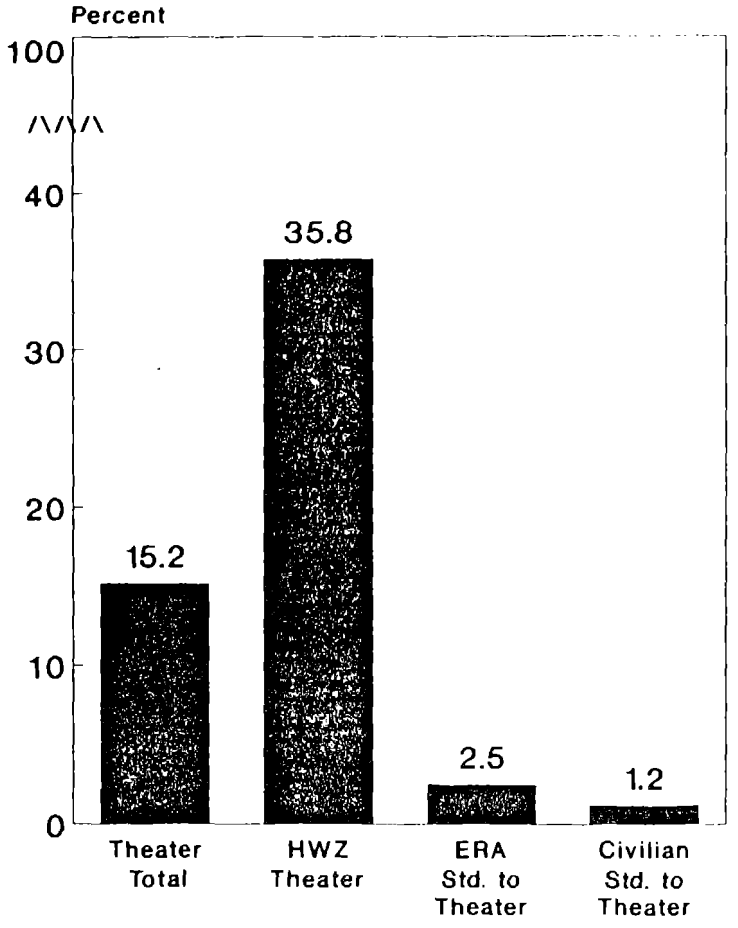
Among both male and female theater veterans, the current PTSD prevalence is:

- higher for those exposed to high levels of war zone stress than for those with low/moderate stress exposure (a fourfold difference for men and sevenfold for women)
- higher for men who have a service connected physical disability than for those without such a disability, but not different for women with and without service connected disability
- higher for those with a positive lifetime substance abuse diagnosis than for those without (more than a twofold difference for men and nearly a fivefold difference for women).

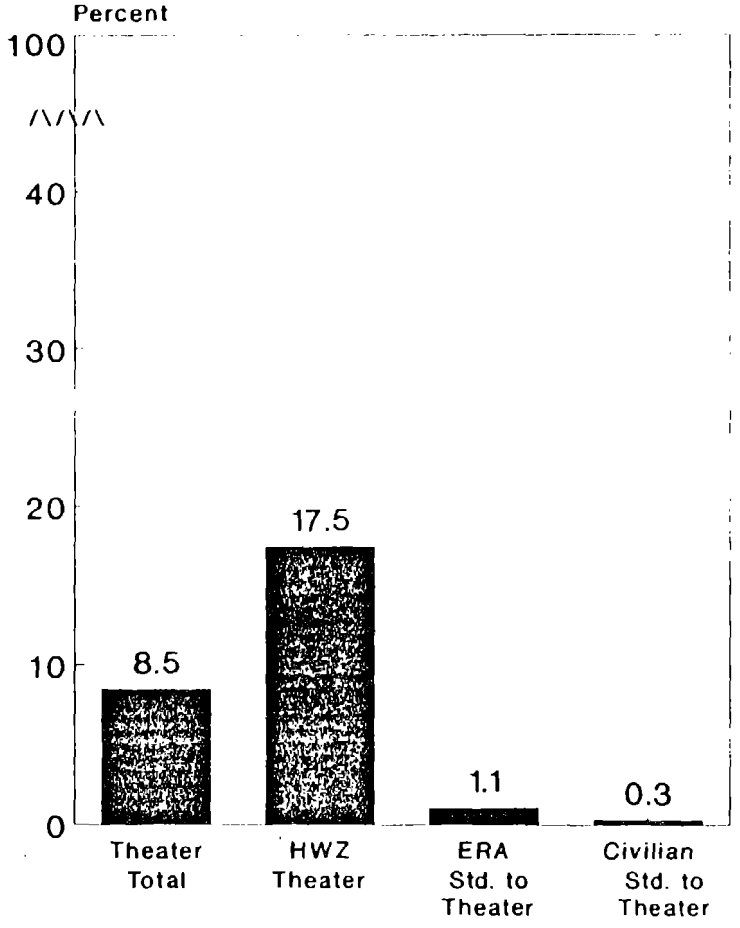
Also for both sexes, current PTSD prevalence rates for theater veterans are consistently higher than rates for comparable era veterans (2.5 percent male, 1.1 percent female) or civilian counterparts (1.2 percent male, 0.3 percent female). These rate differences become even wider when era veterans and civilians are compared with theater veterans with high war zone stress exposure. The current PTSD prevalence findings for the major study groups are shown graphically in Exhibit IV-1.

Among male theater veterans, the current PTSD prevalence rate is 27.9 percent among Hispanics, 20.6 percent among blacks, and 13.7 percent among white/others. The relationship between theater veterans, era veterans, and civilian counterparts also holds within the race/ethnicity subgroups: theater veteran rates are consistently higher than rates for era veterans

Exhibit IV-1
Current PTSD Prevalence Estimates for Major Study Groups



Males



Females

or civilians. The current PTSD prevalence estimates for the male racial/ethnic subgroups are presented graphically in Exhibit IV-2.

The only group or subgroup contrasts of current PTSD rates that do not indicate significant differences are the service connected physical disability contrasts for female theater veterans. No significant difference exists in the current PTSD prevalence between female theater veterans with and without service connected physical disability, nor between those with high disability and those with no disability.

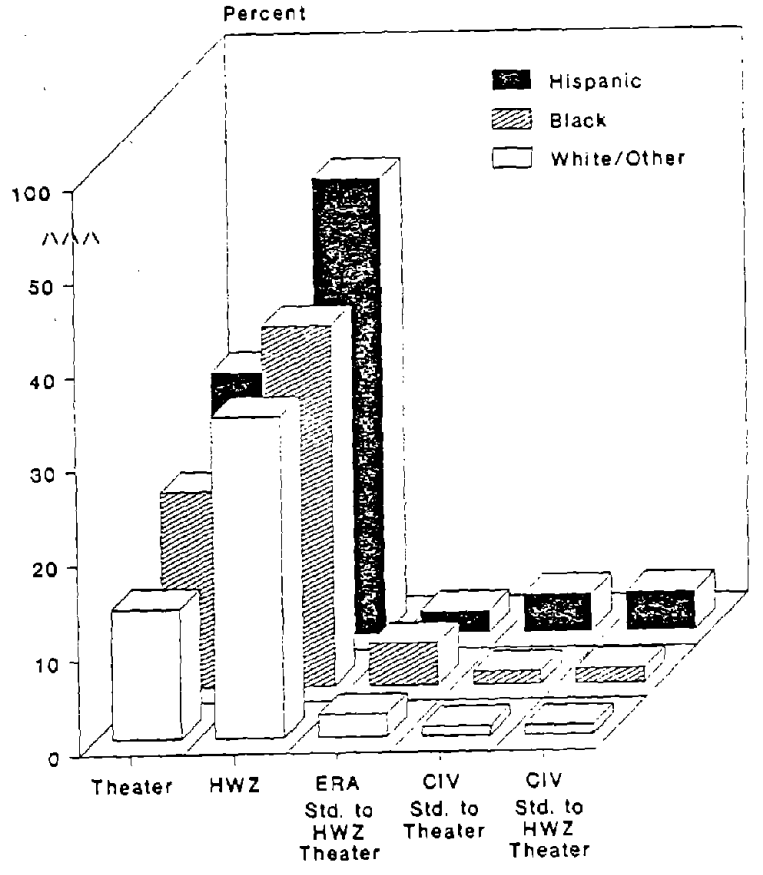
Additionally, NVVRS findings indicate that the current prevalence of partial PTSD is 11.1 percent among male theater veterans and 7.8 percent among female theater veterans. Together, this represents about 350,000 veterans--in addition to the 480,000 who have the full PTSD syndrome today--who have trauma-related symptoms that could benefit from professional treatment. The combined findings for the current prevalence of partial PTSD and of the full PTSD syndrome are presented graphically in Exhibit IV-3.

2. Lifetime PTSD Prevalence

NVVRS findings indicate that the lifetime prevalence of PTSD is 30.9 percent among male theater veterans and 26.9 percent among females. The lifetime prevalence of partial PTSD among male theater veterans is 22.5 percent, and among female theater veterans 21.2 percent. These findings, also depicted graphically in Exhibit IV-3, mean that over the course of their lives, more than half (30.9 + 22.5 = 53.4 percent) of male theater veterans and nearly half (26.9 + 21.2 = 48.1 percent) of female theater veterans have experienced clinically significant stress reaction symptoms. This represents about 1.7 million war veterans.

Also presented graphically in Exhibit IV-3 are the findings for the current prevalence of PTSD and partial PTSD. Comparison of the current and lifetime prevalence rates shows that about one-half (49.2 percent) of the male theater veterans and one-third (31.6 percent) of the female theater veterans who have ever had PTSD still have it today. Also, of those theater veterans who have ever had significant stress reaction symptoms (full or partial PTSD), about half (49.3 percent) of males and about one-third (33.9 percent) of females are experiencing some degree of

Exhibit IV-2
Current PTSD Prevalence Estimates for
Racial/Ethnic Subgroups of
Male Theater Veterans

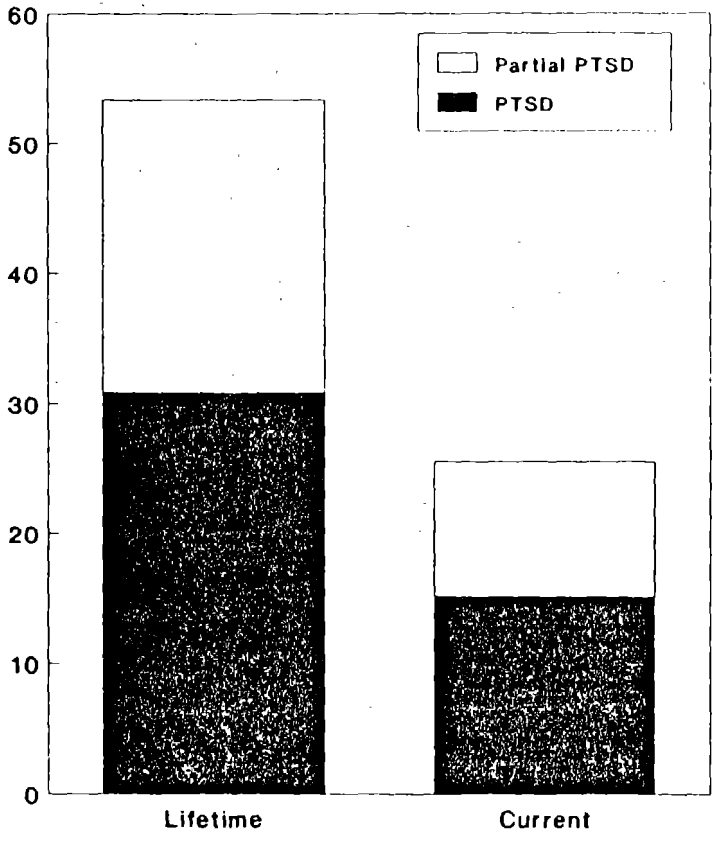


clinically significant stress reaction symptoms today. These findings are consistent with the conceptualization of PTSD as a chronic, rather than acute, disorder.

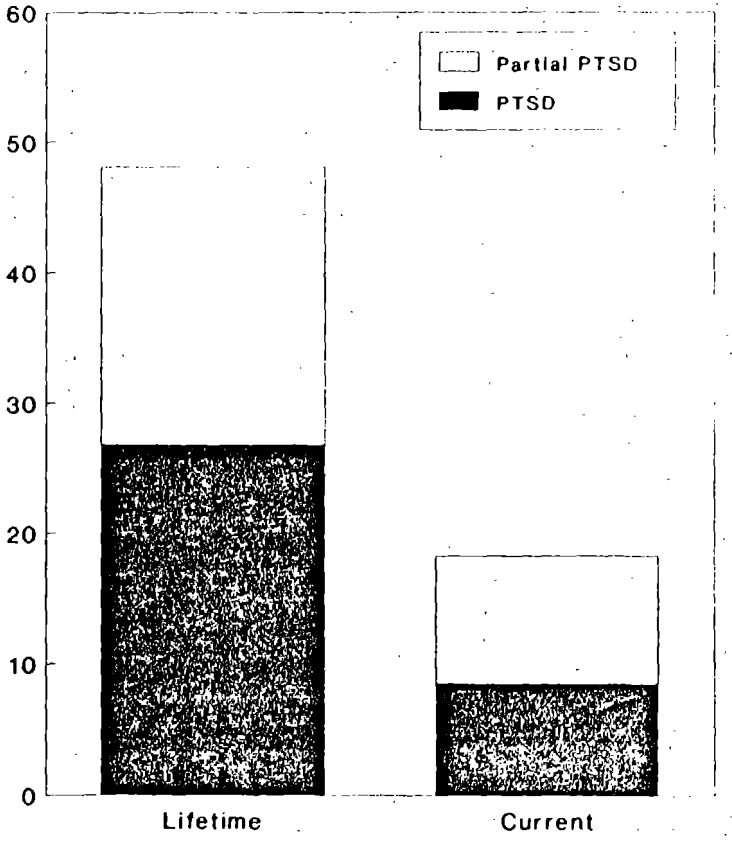
C. The Distribution of PTSD Among Vietnam Theater Veterans

Having established the prevalence of PTSD among the major study groups, we conducted a series of descriptive analyses designed to establish potential differences in the distribution of PTSD among Vietnam theater veterans on a broad range of other characteristics. These analyses help to clarify who among theater veterans have PTSD today. These results are both

Exhibit IV-3
Lifetime and Current Prevalence of PTSD and Partial PTSD among Male and Female Vietnam Theater Veterans



Males



Females

descriptive and tentative because, although standard errors are provided for all group prevalence estimates, no formal statistical tests of group differences were performed. Nevertheless, as an overall "profile" of the characteristics of Vietnam veterans with PTSD, these analyses are of considerable interest. The full tabulation of these results is presented in Table IV-2 in Volume II. We present here a general summary of the distribution of PTSD according to selected background characteristics, characteristics of military service and service in Vietnam, and some current sociodemographic characteristics. The findings are summarized separately for men and women serving in the Vietnam theater.

1. Male Theater Veterans

a. Background Characteristics. As noted earlier in this chapter, PTSD prevalence rates vary considerably by race and ethnicity, with 20.6 percent of blacks meeting current criteria for PTSD and 27.9 percent of Hispanics, compared to 13.7 percent of white/other men serving in Vietnam. A further breakdown of veterans of Hispanic origin revealed equally high current rates of PTSD among the two primary Hispanic populations in the U.S.: Mexican Americans and Puerto Ricans.

A notable finding was evident, however, by year of birth, whereby men born before 1945 have lower current rates of PTSD (4-10 percent), while 18-19 percent of those born after 1945 currently have PTSD.

b. Characteristics of Military Service and Post-Service. While a substantially lower current PTSD rate was found for those who entered the military other than by induction or enlistment (e.g., direct commission), the sample sizes for these groups were small. Of greater significance, perhaps, was that those who enlisted (either voluntarily or to avoid the draft) have essentially the same rates of current PTSD as draftees and one another. In contrast, men who served in the Army or Marine Corps are considerably more likely than those who served in the other branches of the Armed Forces to have current PTSD (16.2 and 24.8 percent, respectively), as were those served in the junior enlisted pay grades (E1-E3), among whom one in four currently have PTSD. By far the lowest rate of PTSD is among those who served on active duty 20 or more years (5.6 percent), while those who

served more than four but less than 20 years have the highest rate (24.8 percent). There were no clear differences in PTSD prevalence among those who had combat duty other than in Vietnam and those who did not, nor among those discharged with a "tactical" (e.g., Infantry, Armor, Artillery) versus "nontactical" MOS (military occupational specialty).

The prevalence of current PTSD is higher, however, among those male theater veterans who are current members of veterans organizations (20.1 percent compared to 12.6 percent for those who have never been members). Similarly, Vietnam veterans who have had at least some contact with the Veterans Administration (VA) after leaving the military have twice the rate of PTSD of those who have not contacted the VA (16.7 versus 8.3 percent, respectively).

c. Characteristics of Vietnam Service. Somewhat surprisingly, the particular time period during which male theater veterans served in Vietnam (for example, during the 1968 Tet Offensive) is not related to variation in current rates of PTSD. In contrast, age at entry to Vietnam clearly is. Those who were 17-19 years of age when they first entered Vietnam are much more likely to have current PTSD (25.2 percent) than those who were older at the time of entry. Those who served in Vietnam 13 months (the conventional tour of duty for Marines) or longer are also more likely to meet criteria for current PTSD (19-20 percent) than those who served 12 months or less (12.7-15.3 percent).

In addition to length of service, the nature of Vietnam service also appeared to exert a major influence on the prevalence of current PTSD. For example, among those who served in I Corps (the military region in which the Marine Corps was predominant), the current prevalence of PTSD is 22.5 percent. A more obvious example of the importance of the nature of Vietnam experiences--degree of exposure to combat and other war zone stressors--has already been noted earlier in this chapter. Male theater veterans with high exposure to war zone stressors are more than four times as likely to suffer from PTSD today as are those with low or moderate exposure. Similarly, those who were wounded or injured in combat are two to three times as likely to have current PTSD, and the likelihood of having current PTSD is also greater for those receiving a Purple Heart (over one-third) or any combat medal (almost one in four).

d. Current Sociodemographic Characteristics. There are also several current characteristics of veterans that are related to the current prevalence of PTSD. The prevalence of PTSD is higher among theater veteran men who are currently separated or living with someone as though they were married. The rate of disorder is also higher among those who never finished high school (28.7 percent), who are currently unemployed (34.5 percent), and those who have incomes of less than $20,000 per year (26.2 percent). Conversely, rates of current PTSD are particularly low among those who are currently married, college graduates, employed or retired, and have incomes of $30,000 or higher. The prevalence rate is also higher than average for men who reside in the West (23.3) and in very large or medium-sized cities (24.8 and 21.2 percent, respectively). Comparisons by current religious preference suggest that men who declare no religious preference are those at highest risk for current PTSD.

2. Female Theater Veterans

Fewer characteristics are associated with an increased prevalence of PTSD among Vietnam theater veteran women than among men. This may reflect the greater homogeneity of this subgroup, in that most were nurses. The small sample size prohibited comparisons by race and ethnicity, but comparisons by year of birth revealed that, similar to the pattern observed for men, those born before 1940 have PTSD rates under five percent, while those born during the forties (1940-1949) have essentially twice that rate (approximately 10 percent).

There was also little variation in current PTSD rates among women by type of entry to military service, branch of service, or service in the Reserves or National Guard. However, as with men, those who served on active duty more than 20 years have especially low rates of the disorder, while those serving 4-19 years have somewhat elevated rates. Interestingly, women who served in the junior officer pay grades (01-03) have almost twice the rate of current PTSD as the more senior officers (04-06).

Like the men, women also showed little variation in PTSD prevalence by year of entry to Vietnam, but also no substantial differences by age at entry or length of service. However, those who served in I Corp and II Corps have higher rates of PTSD than those who served elsewhere. As noted earlier in this chapter, women exposed to high levels of war zone stress, such as exposure to the wounded and dead, have seven times the rate of current PTSD as those with low or moderate levels of exposure. Moreover, although the sample sizes are small, those who were wounded (20.3 percent) or received combat medals (15.0 percent) also have higher than average current rates of PTSD. Women who are current or past members of veterans organizations and those who have had some contact with the VA also have essentially twice the rate of current PTSD of nonmembers and those who have not contacted the VA, respectively.

Women who are divorced, separated, or living as married also have substantially higher rates of PTSD than those who are married, and, unlike the findings for men, the prevalence of current PTSD is higher among female theater veterans with some college (11 percent) or postgraduate training (10 percent) than among high school or college graduates (3.8 and 6.4 percent, respectively). The prevalence of current PTSD is also higher among theater veteran women with incomes of less than $20,000 per year (10.4 percent), those who currently reside in the West (14.7 percent) or in medium-sized cities (14.3 percent), and those who state no religious preference (26.8 percent)

D. PTSD Case Examples

To illustrate how the PTSD prevalence rates translate into individual human terms, several case examples were drawn from the NSVG theater veteran sample. These cases are ones for which all five of the primary indicators of PTSD were positive; these are clearly current cases of PTSD. The selection of the cases was based on two factors: (a) each was judged by the research team clinicians to embody the hallmark features of PTSD in theater veterans, and (b) each was sufficiently typical that even with changes made for the purposes of disguising individual identities, the essential attributes of the disorder and their impact on work and interpersonal functioning was recognizably retained. Each case description represents a real

veteran who participated in the survey and clinical interviews. We have changed a number of specific details and identifying characteristics (including the initials) to preserve the confidentiality and anonymity of each respondent while retaining the richness and vividness of his or her individual human experience.

1. Example Case 1

J.S., an Hispanic male veteran in his late thirties, has been married for almost twenty years, has three children, and works as a semi-skilled laborer. He lives in a large metropolitan area in the Northeast. He is the eldest of four children and grew up in a poor but stable and supportive family environment. He was drafted into the US Army in 1966 and served one tour of duty in Vietnam, which end in 1968.

His primary duty was reconnaissance in an infantry unit. He experienced high and sustained war zone stress exposure; he walked point, was frequently under fire, witnessed the death and injury of close buddies, witnessed the mutilation of the bodies of American troops, and was wounded in combat. He received several decorations, including the Purple Heart.

J.S. reports that his experience in Vietnam matured him, but that he had difficulty coping and began to drink heavily for the first time during his tour. On his return to civilian life, his problems with alcohol intensified; he was treated medically for alcohol-related pancreatic disease several years after his return. Alcohol abuse remains a serious problem to the present time.

With respect to the psychological impact of the war, he reported "I developed a nasty temper, became very nervous, and have bad dreams that take me back into the war, like it's happening all over--then I can't get back to sleep". When reminded of the war, he becomes upset and vividly imagines the sights and smells of the battle field, including the discovery of bodies that had been left for several days in the jungle heat. He describes himself as frightened by his urges, easily startled, frequently on guard for no reason, emotionally withdrawn, and using alcohol to help forget about his wartime memories. His wife concurs, reporting that he has frequent nightmares, becomes enraged over minor irritations, avoids remind-

ers of the war, and is reluctant to be emotionally close. He says he is fortunate that his wife continues to be supportive, despite his volatility and withdrawal.

He has managed to maintain steady employment and finds satisfaction in his relationship with his children. At present he is most troubled by nightmares, intrusive reliving of painful war memories, alcohol abuse, flashes of temper, difficulty opening up to his wife, and bad nerves as he is frequently on guard, easily startled, has difficulty concentrating, and sleeps poorly.

He has never been treated for emotional problems. He has intermittently received treatment for alcohol abuse, but his drinking problems have not been addressed in the context of his overall post-war psychological adjustment problems.

2. Example Case 2

T.L. is a 38-year-old black male living in a primarily blue-collar, working-class suburb of a major city. He has worked for a municipal airport for nearly 15 years and has been married to his second wife for more than 10 years. T. L.'s parents separated when he was 12 years old, and he and three siblings were raised by his mother in an inner city neighborhood, which he described as "rather poor." He indicated that his relationship with his mother was "good," and that there was no known history of mental illness in his family of origin. Soon after graduating from high school in 1967 he enlisted into the United States Marine Corps.

From early 1968 to early 1969, T.L. served with the US Marine Corps in the Republic of Vietnam, primarily in the vicinity of the DMZ. He reported heavy combat exposure ("daily encounters with booby traps, a lot of firefights"), as well as the experience of multiple combat trauma. At one point in the NVVRS interview, T.L. described his experience in Vietnam in the following way. "It seemed like every time I turned around someone was getting shot, or had a limb blown off, or their guts hanging out. There was nothing that you could do for them." He described one of many specific traumatic incidents in these words: "One time on a mission, a land mine

exploded. Three guys were killed ... blown up ... guys on the ground, screaming." T.L.'s voice faded to a barely audible whisper as he described this event to the NVVRS interviewer.

T.L. reported that severe and persistent problems in his daily functioning began within a few months of his return from Vietnam to the United States. From 1970 to the present, he has been plagued relentlessly by symptoms of post-traumatic stress disorder, the impact of which he has attempted to mollify through chronic substance abuse. He painfully acknowledged the continuing presence of distressing, intrusive memories of death and dying in the combat zone ("Sometimes my thoughts take me right back to what happened to guys there. I wish I could have helped them."). In a voice choked with emotion, he said that he currently attempts to avoid thoughts and reminders of Vietnam, but with little success. "I try (to avoid), but it's hard. In my job I deal with the public and it seems like someone or something is always bringing it up." He also clearly described several discrete episodes during which specific, intrusive, traumatic memories of Vietnam overwhelmed his capacity to cope, precipitating what he described as "nervous breakdowns." These episodes were principally characterized by gut-wrenching pangs of guilt, shame, and despair related to the traumatic memories, persistent agitation and sleep disturbance, and desperate attempts to escape and avoid through social withdrawal and alcohol binges. During these periods of debilitating PTSD symptomatology, T.L. consulted his family physician, asking for pills for his unspecified "nerves." At the time of the NVVRS interviews, T.L. was found to meet diagnostic criteria for severe combat-related PTSD, yet he had not been under any physician's care for almost two years. Moreover, he had never sought help for PTSD and associated symptoms of distress from any mental health professional or from the Veterans Administration.

3. Example Case 3

This currently unmarried Vietnam veteran who lives in a large metropolitan area was in her late forties at the time of her participation in the study. She was in the service for more than 15 years and received numerous decorations and commendations. She was one of six children raised

by both parents in a happy home. She was trained as a nurse and enlisted in the Air Force because it "sounded interesting."

B.R. volunteered for duty in Vietnam and served one tour in 1966-67 as a nurse, primarily caring for wounded soldiers in the area of her nursing expertise. Periodically, however, she was assigned to care for patients with injuries or trauma that required expertise outside of her primary area of skills. These episodes were very stressful; sometimes they involved supportive care of obviously terminal patients. She was exposed to mortars infrequently, but when shelling occurred it was always totally unexpected and B.R. found these frightening.

She experienced the death of several people with whom she had developed deep attachments--both professionally and personally. Her account of her reactions to these mounting losses was a gnawing lack of time and privacy to mourn because of the exhausting and grinding nursing care she was asked to and willingly agreed to provide. She described her Vietnam service as both the most exciting part of her Air Force career as well as the most distressing, damaging, and traumatic. B.R. recounted that she felt it was especially hard for her to deal with the experiences of what she felt were pointless deaths and injuries and the denial of impending death by those who were terminally injured.

Her return from Vietnam was distressing--she was ostracized, shouted at, and felt ashamed, though she continued her military service. She received commendations for her post-Vietnam service, and reported few psychological signs or symptoms of upset during the span of 10-15 years before she returned to civilian life. She did report, however, a persistent sense of distance and social withdrawal, though she did not seem to connect these to her service in Vietnam during that period.

Only upon her return to civilian life and her selection of a job that exposed her daily to people dealing with their own traumas, past and present, did her functioning began to deteriorate. B.R. became increasingly withdrawn, irritable, and depressed. She began to have intrusive thoughts about her war experiences and began awakening in early morning from dreams of her time in Vietnam. She could not concentrate, was jumpy and easily startled, felt numb inside, and was prone to angry outbursts.

She felt that no one could understand how she felt and that she could not feel close to anyone. Though she desired closer contact with both men and women, B.R. was unable to reach out or trust enough to get closer. Her episode of PTSD was a clear case of delayed-onset PTSD; most symptoms began well over a decade after the trauma.

Because both her work and interpersonal functioning were impeded, she was encouraged to seek treatment, which she reluctantly did. Though finding the treatment program she selected in the VA system helpful, she is aware that her recovery will be a long process. She now sees that she has buried and avoided a number of powerful and painful feelings for a long time and that she must take time to deal with each one in turn.

V. THE ROLE OF "RISK FACTORS" IN CURRENT PTSD PREVALENCE

A. Introduction

A literal interpretation of the Readjustment Study's Congressional mandate would suggest that the mandate could be fulfilled with respect to PTSD simply by determining the PTSD prevalence rate among Vietnam theater veterans. However, a broader interpretation of the intent of the mandate suggests that more is required. In addition to knowing the current prevalence of PTSD among theater veterans, it is important to the Readjustment Study's "needs assessment" function to determine: (1) whether that rate is different from the PTSD prevalence rate among era veterans and civilian counterparts, and (2) if so, whether the higher prevalence among theater veterans is due to their experiences in Vietnam. Findings indicating that current PTSD prevalence is significantly higher among theater veterans than among era veterans or civilian counterparts, and that the PTSD prevalence rate is significantly related to war zone stressor exposure, would provide powerful evidence that PTSD in theater veterans is indeed a service connected disability.

Findings presented in Chapter IV demonstrate clearly that the current prevalence of PTSD among theater veterans is much higher than the prevalence among era veterans or civilian counterparts. These findings demonstrate that Vietnam theater veterans as a group are much more "at risk" for having PTSD than are era veterans or civilian counterparts.

These findings lead to an important question: what is it about the characteristics or experiences of Vietnam veterans that puts them "at risk"? The contrasts of PTSD prevalence rates between theater veterans and the era veteran and civilian counterpart comparison groups provide some information in this regard. However, those comparisons are not completely satisfying, because people were not assigned at random to the study's major groups (theater veteran, era veteran, or civilian counterpart status). On the contrary, many powerful social forces operated to determine who served in the military, and, within the military, who served in Vietnam. Because of this nonrandom assignment, differences that we observe today in current PTSD prevalence between the study groups may be attributable to differences in the experiences of the groups (for example, service in Vietnam), but

they may also result from differences in some characteristics or experiences that theater veterans brought with them to their military service.

Additionally, within the group of Vietnam theater veterans, we know that there was great heterogeneity in their experiences while in Vietnam. Therefore it is of interest to know whether differences in PTSD prevalence between Vietnam veteran subgroups (for example, black versus white/other males) reflect differences in premilitary characteristics, differences in their experiences while in Vietnam, or both. A finding that exposure to war zone stress is significantly related to current PTSD would further increase our confidence that the higher PTSD prevalence among theater veterans results from their war experiences.

For convenience, we refer to the collection of characteristics, experiences, etc., that predate military or Vietnam experience and that might conceivably account for differences between the study groups in current PTSD prevalence rates as "potential predisposing factors." To capture variability in experiences while in Vietnam, we will use the measures of exposure to war zone stress that are described in detail in Appendix C.

The problem of nonrandom assignment to study groups is one that is frequently encountered in applied social research. However, by using multivariate statistical techniques, we can partially overcome the problem of nonrandom assignment and thus increase confidence that differences between the groups are attributable to differences in the experiences by which the groups were defined (that is, participation in the military or the war). By examining the study group contrasts in a multivariate analysis framework, we can assess the extent to which potential predisposing factors account for (or explain) the group differences in current PTSD rates that we have observed.

In essence, such analyses allow us to make the group comparisons while controlling for the effects of the potential predisposing factors. For example, if the observed differences in current PTSD prevalence rates between theater and era veterans were to be greatly decreased (or even wiped out completely) when the potential predisposing factors are controlled for, then we could see the PTSD rate differences between the two groups as largely a function of the characteristics or experiences that theater veterans had before the war and not as a function of their

experiences in Vietnam. On the other hand, if the theater versus era veteran differences in PTSD rate were not greatly reduced (or were increased) by controlling for predisposing factors, then confidence would be increased that the difference we observed are due to group differences in exposure to the Vietnam experience (service in the war zone).

B. The Role of Potential Predisposing Factors

In principle, the list of potential predisposing factors that could be examined is infinite--that is, any number of background characteristics might plausibly be hypothesized to influence the current PTSD prevalence estimates. To address this problem, the NSVG interview included questions about a broad range of potential mental health risk factors and other background characteristics that might predispose a person to develop PTSD. A large group of such variables was selected as candidates for analysis of the impact of predisposing factors on the group prevalence rates. These variables can be divided into those that are appropriate for the specific study group contrasts: childhood and family background factors (characteristics and experiences of the person up to the age of 18), that are relevant to all contrasts; premilitary factors, that are relevant to the theater versus era veteran contrast; pre-Vietnam military factors and Vietnam experience factors, that are relevant to the within-theater veteran subgroup contrasts. The major categories of variables that we have included, and some illustrative examples of variables from each category, are shown in Exhibit V-1. (The full list of potential predisposing factors that were included in the analysis is shown in Appendix F.)

To examine the extent to which potential predisposing factors might account for observed study group differences, we conducted a series of multivariate statistical analyses. These analyses provided estimates of the difference in current PTSD prevalence for each of the standard study group contrasts, taking into account (or "adjusting for") differences between the groups in the set of potential predisposing variables. Table IV-1 presents the results of these analyses as the "adjusted" contrasts. Appendix F provides details of the statistical procedures involved in making these adjustments.

Exhibit V-1

Major Categories of Potential Predisposing Factors for PTSD Contrasts

Category		Example Variables
I.	Childhood and Family Background Factors	
	A. Demographic Characteristics	Age, race, family religious background
	B. Family Socioeconomic Status	Parents' education, father's occupation
	C. Family Social Environment	Relationship with parents, health/mental health problems of family/household members, child abuse
	D. Biopsychosocial Factors	Health/mental health problems among first degree relatives
	E. Childhood Behavior Problems	"Delinquent" behaviors index
	F. Childhood Health and Mental Health Status	Health/mental health symptoms during childhood/adolescence
II.	Premilitary Factors	
	A. Role Status	Age, educational attainment, marital status at time of entry into military
	B. Health and Mental Health Status	Health and mental health problems prior to entry into military
III.	Military Factors	
	A. General--Non-Vietnam	Non-Vietnam combat duty, other overseas military duty
	B. Pre-Vietnam Role Status	Age, educational attainment of beginning of Vietnam service
	C. Pre-Vietnam Health and Mental Health Status	Health/mental health problems prior to beginning of Vietnam service
	D. Vietnam	War zone stress exposure indices

One way of interpreting the effect of the adjustment for potential predisposing factors is to examine the extent to which the adjustment changes--either reduces or increases--the difference in current PTSD prevalence rates between the groups. A hypothetical example may be useful in highlighting the critical aspects of these analyses. Suppose that we were contrasting the current PTSD prevalence rates of groups A and B, and had found the prevalence for group A to be 36 percent and the prevalence for group B to be 12 percent. The difference in prevalence between these groups then is 36 - 12 = 24 percentage points. It is this difference between the groups in current PTSD prevalence that is the focus of these analyses.

Now suppose that after adjusting for potential predisposing factors, we found that the difference in prevalence was only 18 percentage points. We could then say that the adjustment for potential predisposing factors had reduced the prevalence difference from 24 to 18 percentage points which is a 25 percent reduction of [(24 - 18) ÷ 24 = .25].

It is important to note that the larger the change in the prevalence difference after adjustment, the greater the net effect of selection factors in determining who served in the military or who went to Vietnam. Also, a decrease in the PTSD prevalence difference between theater veterans and the comparison groups resulting from the adjustment would suggest adverse selection, in that those who actually went to war had characteristics that made them more likely to develop PTSD. Conversely, an increase in the PTSD prevalence difference would suggest favorable selection, in that those who served had characteristics that made them less likely to develop PTSD.

1. Theater Veteran Versus Era Veteran and Civilian Counterpart Contrasts

Exhibit V-2 shows for each of the study's major contrasts the current PTSD prevalence rate difference before and after the adjustment for potential predisposing factors, and expresses the change resulting from the adjustment as a percentage (percent change from the unadjusted difference). Generally, the predisposition adjustment decreased the PTSD prevalence rate difference between theater veterans and the comparison groups. The effect was more pronounced for theater veteran versus civilian counterpart

Exhibit V-2

Comparison Group PTSD Prevalence Rate Differences Before and After Adjustment for Potential Predisposing Factors

Group	Contrast	Group PTSD Prevalence Rate Difference: Before Adjustment	After Adjustment	Percent Change from Adjustment
Males (total)	Theater vs. Era	12.7	12.1	-4.7
	Theater HWZ vs. Era	32.9	28.8	-12.5
	Theater vs. Civilian	14.0	10.4	-25.7
	Theater HWZ vs. Civilian	34.5	26.8	-22.3
White/ Other Males	Theater vs. Era	11.4	11.3	-0.9
	Theater HWZ vs. Era	31.6	27.1	-14.2
	Theater vs. Civilian	12.7	9.0	-29.1
	Theater HWZ vs. Civilian	33.1	23.7	-28.4
Black Males	Theater vs. Era	16.2	14.8	-8.6
	Theater HWZ vs. Era	33.2	31.3	-5.7
	Theater vs. Civilian	19.3	18.1	-6.2
	Theater HWZ vs. Civilian	36.8	28.5	-22.6
Hispanic Males	Theater vs. Era	25.8	24.3	-5.8
	Theater HWZ vs. Era	46.2	44.5	-3.7
	Theater vs. Civilian	24.0	19.9	-17.1
	Theater HWZ vs. Civilian	44.4	39.6	-10.8
Females	Theater vs. Era	7.4	7.9	+6.8
	Theater HWZ vs. Era	16.4	16.4	0.0
	Theater vs. Civilian	8.2	8.1	-1.2
	Theater HWZ vs. Civilian	17.2	16.4	-4.7
Theater Males	White/Other vs. Black	-6.9	-6.2	-10.1
	White/Other vs. Hispanic	-14.2	-6.1	-57.0
	Black vs. Hispanic	-7.3	-2.4*	-67.1
	High vs. Low/Moderate WZ	27.3	18.4	-32.6
	SCPD: Yes vs. No	6.9	6.8	-1.4
	SCPD: High vs. No	9.0	9.3	+3.3
	Substance Abuse: Pos vs. Neg	13.9	4.9	-64.7
Theater Females	High vs. Low/Moderate WZ	14.9	13.2	-11.4
	SCPD: Yes vs. No	5.4*	7.1	+31.5
	SCPD: High vs. No	3.7*	7.8*	+110.8
	Substance Abuse: Pos vs. Neg	24.2	21.0	-13.2

*Prevalence rate difference not statistically distinguishable from zero--i.e., there is no difference in current PTSD prevalence between the contrasted groups.

contrasts than for theater versus era veteran contrasts, suggesting that theater and era veterans were more alike in terms of these background characteristics than theater veterans and civilian counterparts.

For total theater males, the percent change in prevalence for both theater versus civilian contrasts (theater versus civilian and theater high war zone stress exposure versus civilian) exceeds 20 percent, while for theater versus era contrasts the percent change is 4.7 and 12.5 percent for the overall and high war zone stress exposure contrasts, respectively. This pattern generally holds for the racial/ethnic subgroups as well.

The effect of the predisposition adjustment is generally smaller for women than men, possibly reflecting the greater occupational (and therefore educational and socioeconomic status) homogeneity of the female study groups. In fact, the female theater high war zone stress exposure versus era veteran contrast is unchanged by the adjustment, and the PTSD prevalence difference between female theater and era veterans is increased by the adjustment, as are the differences between female service connected physical disability groups. The prevalence differences for the female disability groups, which were not significant before adjustment, are significantly different after adjustment for predisposing variables.

The characteristics that typically contribute significantly to the adjustment models across contrasts include: number of problem behaviors in childhood, meeting the criteria for a diagnosis of antisocial personality disorder before age 18, having been a member of a family that had trouble making (economic) ends meet, and having one or more first degree relatives with a mental disorder. Thus, both socioeconomic factors and mental health factors are important in the adjustment. (Full details of the models and their coefficients for each contrast are provided in Appendix F.)

To summarize, the findings of the adjusted theater versus era veteran and civilian counterpart contrasts indicate that there is a significant predisposition effect. However, the current prevalence of PTSD among Vietnam theater veterans is much higher than among era veterans and civilian counterparts even after we take into account differences in a large group of potential predisposing factors. Thus, we cannot explain the high current prevalence of PTSD among Vietnam veterans solely on the basis of characteristics that they brought with them to the war. This finding is consistent with the hypothesis that the experiences to which theater

veterans were exposed in Vietnam play an important role in determining current PTSD prevalence.

2. Contrasts Among Theater Veteran Subgroups

The greatest impact of the predisposition adjustment was on the contrasts within the theater veteran group. The adjustment reduced the current PTSD prevalence difference between white/other and Hispanic male theater veterans by 57 percent, and the difference between black and Hispanic males by 67 percent. Additionally, the adjustment reduced the difference in current PTSD prevalence between black and Hispanic males to 2.4 percent, a difference that is not significantly different from zero. In other words, the adjustment for potential predisposing factors greatly reduced the current PTSD prevalence differential between white/others and both Hispanics and blacks, and wiped out (reduced to zero) the PTSD prevalence difference between blacks and Hispanics. Also, the difference between high and low/moderate war zone stress exposure groups was reduced by 33 percent and the differences between lifetime substance abuse groups by 65 percent.

The variables that consistently contributed to these theater veteran subgroup predisposition adjustment models include having grown up in a family that had a hard time making ends meet, having had symptoms of drug abuse or dependence before entering the military, having had symptoms of an affective disorder before going to Vietnam, and the index of problem behaviors of childhood. Thus again the variables being controlled for are a mixture of economic and mental health symptom variables.

C. The Role of Vietnam Experience

The fact that current PTSD prevalence rates for theater veterans are consistently and substantially higher than those of era veterans or civilian counterparts, combined with the fact that the prevalence difference between theater veterans exposed to higher levels of war zone stress and the era veteran and civilian counterpart comparison groups are even higher--even with potential predisposing factors controlled--suggests an important role for Vietnam experience in theater veteran PTSD.

We can gain additional information about the role of Vietnam experience in theater veterans' PTSD by examining the contrasts between subgroups of theater veterans. Exhibit V-2 shows clearly that, even after potential predisposing factors are controlled, the current PTSD prevalence rate among theater veterans exposed to high levels of war zone stress is much higher than the rate among those exposed to low or moderate levels: 18 percentage points for males, 13 percentage points for females. This suggests a substantial role for war zone stress exposure in determining who gets PTSD.

In an effort to obtain a clearer understanding of the role of Vietnam experience in current PTSD prevalence rate among theater males, we extended the multivariate analyses that accomplished the adjustment for the potential predisposing factors one additional step. This step involved adding the global war zone stress exposure variable[1] to the predisposition adjustment models for the male theater veteran racial/ethnic subgroup contrasts. Doing so allowed us to determine whether the between-group differences in current PTSD prevalence rate that remained after the predisposition adjustment could be further reduced by taking account of exposure to war zone stress.

With the predisposing variables and exposure to war zone stress controlled, the difference in current PTSD prevalence between white/other and black theater veterans was reduced to the point that it was not significantly different from zero. Thus when a set of potential predisposing factors and a global measure of exposure to war zone stress were controlled, there was no difference in current PTSD prevalence rate between black and white/other theater veterans.

Adjusting for war zone stress exposure had a different effect on the white/other versus Hispanic contrast and the black versus Hispanic contrast, however. The difference in current PTSD prevalence between white/other and Hispanic males was reduced slightly, from 6.1 percent (adjusted for predisposition) to 5.4 percent. This difference remains statistically significant. The difference for the black versus Hispanic contrast, which was reduced to zero by the predisposition adjustment,

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1/ Additional analyses conducted using the specific dimensional measures of war zone stress exposure, rather than the single overall index, yielded the same essential results.

became 6.3 percent (Hispanics higher than blacks) when war zone stress exposure was controlled.

Thus after adjusting for potentially predisposing variables and for exposure to war zone stress, there is no difference in the current PTSD prevalence of white/other and black theater veterans. However, even after adjusting for a large number of potentially predisposing variables and for exposure to war zone stress, the current prevalence of PTSD among Hispanics is about 5 percent higher than among whites and about 6 percent higher than among blacks. It remains for further analysis to identify the factors that account for these differences.

Several conclusions seem warranted from this set of analyses of the role of potential predisposing factors and Vietnam experience factors in current PTSD prevalence. First, the current prevalence of PTSD is much higher among Vietnam theater veterans than among era veterans or civilian counterparts. Second, theater veterans differed from era veterans and civilian counterparts on some background characteristics that are related to current PTSD and that might have rendered theater veterans more vulnerable to the development of PTSD. Nevertheless the current PTSD prevalence rate is much higher among theater veterans even after these differences in potential predisposing factors are taken into account. Third, exposure to war zone stress in Vietnam plays a significant role in determining who among theater veterans has PTSD today, even after a broad array of potential predisposing factors have been controlled for.

Taken together, these results are consistent with a model of PTSD that posits a role for individual vulnerability (potentially including biological, psychological, and sociodemographic factors) and a role for exposure to environmental factors (specifically, war zone stressors), in determining who among theater veterans gets PTSD. However, it is clear that exposure to war zone stress makes a substantial contribution to the development of PTSD in war veterans that is independent of a broad range of potential predisposing factors.

VI. THE PREVALENCE OF OTHER PSYCHIATRIC DISORDERS AND NONSPECIFIC DISTRESS

This chapter reports on the prevalence of psychiatric disorders other than PTSD among Vietnam theater and era veterans and their civilian counterparts. Starting from the more general and moving to the more specific, the chapter begins in Section A with a discussion of the levels of nonspecific psychological distress among the main study groups. Section B describes the measures used in the NSVG to assess the specific psychiatric disorders. Sections C through E describe findings related to the prevalence of these specific psychiatric disorders and variations among the main study groups. Section F summarizes findings related to the presence of any of these psychiatric disorders among the study groups. Finally, Section G summarizes results that were presented in the chapter and attempts to integrate these findings.

A. Patterns of Nonspecific Psychological Distress

"Nonspecific psychological distress" refers to symptomatology that may be associated with a variety of different psychiatric disorders, rather than with only one specific diagnostic category, such as post-traumatic stress with disorder or major depressive disorder. Thus, an examination of nonspecific distress entails an assessment of levels of psychological distress experienced by individuals across psychiatric disorders, analogous to the role of body temperature as an indicator of general illness rather than of any specific condition.

To assess nonspecific psychological distress in the NSVG, we included in the interview an index to assess level of "demoralization." This scale was taken from the Psychiatric Epidemiology Research Interview (PERI), which was developed as part of a general research effort to provide measures of multiple dimensions of psychopathology in the general population (Dohrenwend et al., 1980). Items were initially grouped into 25 scales that had been evaluated for clinical meaningfulness, reliability, and empirical distinctiveness. A subset of eight of these scales (dread, anxiety, sadness, helplessness, hopelessness, psychophysiological symptoms,

perceived physical health, poor self-esteem and confused thinking) correlated quite highly with one another (Dohrenwend et al., 1980; Dohrenwend and Shrout, 1981; Dohrenwend, Levav and Shrout, 1986). Together they appeared to reflect a latent construct very similar to "demoralization" as originally described by Frank (1973). The investigators therefore combined these eight scales into a single scale of "demoralization" and subsequently developed a 27-item short form. This version was adapted for the NSVG. A summary of findings related to this Demoralization Scale is found in Exhibit VI-1. (The full data are found in Table VI-1 in Volume II.)

1. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Almost 17 percent of male Vietnam theater veterans reported high levels of nonspecific psychological distress (PERI Demoralization scores of 1.5 or higher), but their scores were not significantly higher than those reported by comparable era veterans (16 percent "high"), either for males overall or within the three racial/ethnic subgroups examined. In contrast, male theater veterans reported significantly higher levels of distress than their civilian counterparts. This difference achieved statistical significance among men overall and among Hispanic men, and approached statistical significance among white/other men. Moreover, as one might expect, men most directly involved in the war (those exposed to high levels of war zone stress) reported significantly higher demoralization scores than both era veterans and civilians. Men exposed to high war stress were almost twice as likely as Vietnam era veterans (32.2 versus 16.9 percent) to score at the highest level on demoralization and over four times as likely as civilians (7.1 percent). We examined these differences within each racial/ethnic subgroup, and found that theater veterans who were exposed to high war stress had scores that were significantly higher than those of their civilian counterparts within all groups and that were significantly higher than those of era veterans among both white/others and Hispanics, though not among blacks. The greatest differences between groups were those involving Hispanic men. For this group, the mean

Exhibit VI-1

Summary of Contrasts Among Major Study Groups and
Vietnam Theater Veteran Subgroups for PERI Demoralization Scores

A. Males--Total

1.	Thr vs. Era	NS
2.	HWZ vs. Era	HWZ > Era***
3.	LWZ vs. Era	NS
4.	Thr vs. Civ	Thr > Civ*
5.	HWC vs. Civ	HWZ > Civ***

B. Males--White/Other

1.	Thr vs. Era	NS
2.	HWZ vs. Era	HWZ > Era***
3.	LWZ vs. Era	NS
4.	Thr vs. Civ	NS
5.	HWZ vs. Civ	HWZ > Civ***

C. Males--Black

1.	Thr vs. Era	NS
2.	HWZ vs. Era	NS
3.	LWZ vs. Era	NS
4.	Thr vs. Civ	NS
5.	HWZ vs. Civ	HWZ > Civ**

D. Males--Hispanic

1.	Thr vs. Era	NS
2.	HWZ vs. Era	HWZ > Era**
3.	LWZ vs. Era	NS
4.	Thr vs. Civ	Thr > Civ**
5.	HWZ vs. Civ	HWZ > Civ***

E. Females--Total

1.	Thr vs. Era	NS
2.	HWZ vs. Era	NS
3.	LWZ vs. Era	Era > LWZ***
4.	Thr vs. Civ	NS
5.	HWZ vs. Civ	NS

F. Race/Ethnicity

1.	W/O vs. Blk	Blk > W/O**
2.	W/O vs Hisp	Hisp > W/O***
3.	Blk vs. Hisp	NS

G. High vs. Low Warzone Stress

1.	Males	HWZ > LWZ***
2.	Females	HWZ > LWZ***

H. PTSD vs. No PTSD

1.	Males	PTSD > No PTSD***
2.	Females	PTSD > No PTSD***

I. Service-Connected Physical Disability

1.	Males	
	a. SCPD vs. None	NS
	b. High SCPD vs. None	High SCPD > None*
2.	Females	
	a. SCPD vs. None	NS
	B. High SCPD vs. None	NS

J. Substance Abuse vs. None

1.	Males	SAB > None***
2.	Females	SAB > None***

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

demoralization score for men who were exposed to high war stress was 50 percent higher than the score for either Hispanic male Vietnam era veterans or civilians.

For women, 14 percent of those serving in the Vietnam theater reported high levels of nonspecific distress, a level not significantly higher than those reported by either era veteran or civilian women. Although somewhat larger differences were observed between women who were exposed to high levels of war zone stress and these two comparison groups, neither of these achieved statistical significance. In fact, among females, the only significant difference was between theater veteran women who were exposed to low-to-moderate levels of war zone stress and era veteran women, with the former reporting significantly lower levels of nonspecific psychological distress.

2. Contrasts Among Vietnam Theater Veterans

Males. Minority group members, both blacks and Hispanics, had significantly higher demoralization scores than white/others, but they did not differ significantly from one another. Those with high levels of war zone stress, with high percentages of service connected disabilities (SCPD), with PTSD, and with a history of substance abuse (SAB) all had higher levels of nonspecific distress than those with low war zone stress, with no SCPD or PTSD, and no SAB history, respectively. This difference was particularly striking for those with PTSD. Among men with PTSD, 56 percent scored in the highest category on demoralization, compared to only 10 percent of those without PTSD.

Females. Demoralization scores for women with high war zone stress exposure were significantly higher than those with low or moderate war zone stress exposure. As with males, female theater veterans with PTSD and/or a history of substance abuse also reported significantly higher levels of demoralization than those without those conditions. For example, almost two-thirds of women veterans with PTSD scored at the highest level on demoralization, almost eight times higher than those without the disorder.

B. Measurement of Specific Psychiatric Disorders

The instrument used to assess the prevalence of specific mental disorders in the NSVG was the National Institute of Mental Health (NIMH) Diagnostic Interview Schedule (DIS) (Robins et al., 1981). The DIS is a standardized psychiatric interview designed for use by lay interviewers in community survey settings. The DIS gathers data on symptoms that are germane to the diagnosis of a large range of major mental disorders and can be scored according to the criteria of the third edition of the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-III). The DIS was first used in the NIMH-sponsored Epidemiologic Catchment Area (ECA) collaborative research program (Eaton and Kessler, 1985; Regier et al., 1984), which surveyed the mental health status of community and institutional populations at five sites (New Haven, Baltimore, St. Louis, the Piedmont area of North Carolina, and Los Angeles). The ECA studies established benchmark community prevalence estimates of psychiatric disorder against which prevalence estimates of psychiatric disorder in other studies could be compared.

The DIS has a number of separate modules, each used for diagnosing a different psychiatric disorder. A subset of these modules was used in the NSVG to assess nine psychiatric disorders (discussed below) that are subsumed under the diagnostic categories of affective disorders, anxiety disorders, substance abuse disorders, and personality disorders.[1]

Affective Disorders. The affective disorders (mood disorders) assessed in the NSVG were major depressive episodes, manic episodes, and dysthymia. A Major Depressive Episode is characterized by a pervasive feeling of being down, sad, or blue as well as by a profound loss of interest in everyday activities. Such a period must last at least two weeks and predominate for virtually the whole two-week period, although a major depressive episode

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1/ Not all of the diagnostic modules of the DIS were included in the NSVG instrumentation to avoid further lengthening the NSVG interview. The DIS modules omitted were those used to assess disorders that were expected to be rare in the population of Vietnam veterans (e.g. the schizophrenic disorders), and/or less important in understanding the post-war readjustment problems of veterans (e.g. simple phobias).

frequently lasts for months at a time. Associated symptoms include sleep disturbances, appetite change, feelings of worthlessness, and hopelessness about the future. A major depressive episode is not the same as the vague or temporary feelings of being sad or blue that individuals often experience in their everyday lives. Rather, it is a major and debilitating psychiatric disorder.

A Manic Episode is usually characterized by an abnormally euphoric mood, although occasionally anger and irritability are present. Thoughts race through the mind and the individual feels endowed with special powers and abilities. Frequently, there is an abnormal increase in ordinary activities such as talking and movement, along with a decreased need for sleep. The irrational beliefs and behaviors associated with a manic episode often have serious negative outcomes for the individual and his or her family.

Dysthymia, or dysthymic disorder, is characterized by a depressive mood and other feelings of being down, blue, sad or worthless. In contrast to a major depressive episode, dysthymia is longer lasting (at least two years) but less debilitating. There is usually less disruption in ordinary activities than in a major depressive episode, and physiological symptoms, such as changes in appetite and sleep patterns, are less frequent or severe than in major depression. Nonetheless, dysthymia also has a major negative impact on the individual's life for a prolonged period, often several years.

Anxiety Disorders. The anxiety disorders that are assessed in the NSVG and discussed in the presentation to follow are obsessive compulsive disorders, panic disorders, and generalized anxiety disorders. Obsessive-Compulsive Disorder is a combination of two distinct phenomena. Obsessions are recurrent thoughts that are irrational and unwanted. These thoughts both interfere with ordinary functioning and come to dominate the person's life. An example of an obsession is an overwhelming fear of contamination by germs or dirt. Compulsions are sets of repetitive behaviors that the individuals feels compelled to repeat over and over, and, often, in exactly the same order each time. However, the fears that the behaviors are meant to assuage are not alleviated by the behaviors. An example of a compulsion

is the need to check and re-check doors that are known to be locked to deter intruders, and yet the anxiety about intruders is not abated. Obsessive-compulsive disorder is a relatively rare psychiatric disorder.

Panic Disorder is uniquely characterized by unexplained, overwhelming, and "out-of-the-blue" experiences of fear or terror that are not rational or comprehensible. The attacks occur during distinct, deliminated "spells" and are unpredictable, although they may come to be associated with the settings (for example, shopping centers) in which they initially occurred. There are major physiological symptoms such as dizziness and chest pain, typically accompanied by fearful thoughts such as thoughts that one is going to die or pass out. People with panic disorder often come to the attention of mental health professionals through the Emergency Room or medical centers to which they come seeking treatment for their symptoms.

Generalized Anxiety Disorder is marked by chronic feelings of uneasiness, worry, or severe anxiety about future events which are hypothetical and/or unspecified. Symptoms include sweaty palms, tremor, tenseness, restlessness, and vague foreboding of such severity that it impairs the individual's social, occupational, or school functioning.

Substance Abuse Disorders. The substance abuse disorders assessed in the NSVG include Alcohol Abuse and Dependence and Drug Abuse and Dependence. Substance abuse disorders are characterized by behavioral changes that result from regular and/or heavy use of drugs or alcohol. These behaviors include inability to stop using the substance (that is, feeling dependent); feeling like one needs larger amounts of the substance to get an effect; inability to function normally at work, at school or among friends or family; withdrawal symptoms when one tries to cut down on the substance; and use of the substance frequently or in large amounts. Although alcohol dependence and abuse and drug dependence and abuse are in fact four separate disorders, dependence and abuse are combined in the analyses presented in this report to provide rates of dependence or abuse, consistent with the ECA studies.

Personality Disorders. The only personality disorder that is assessed by the DIS (and in the NSVG) is Antisocial Personality Disorder (ASP). The

Diagnostic and Statistical Manual, Version III (DSM-III) of the American Psychiatric Association states that the essential feature of ASP is "a history of continuous and chronic antisocial behavior in which the rights of others are violated, persistence into adult life of a pattern of antisocial behaviors that began before the age of 15, and failure to sustain good job performance over a period of several years." To meet the diagnostic criteria for ASP, one must have at least three antisocial symptoms before age 15. These "conduct disorder symptoms" include truancy, persistent lying, delinquency, theft, vandalism, and starting fights. After reaching age 18, the individual must exhibit at least four more symptoms to receive a diagnosis of ASP. The adult symptoms include the inability to maintain a relationship, recklessness, persistent lying, aggressiveness, and inability to obey rules and/or laws.

Any NSVG/DIS Disorder. This category includes the eight affective, anxiety, and substance abuse disorders described above, as well as ASP. Because of the high level of alcohol abuse and dependence in the male sample, it was felt these disorders might overshadow the other disorders. We therefore felt that it was important to examine also a "combined disorders" measure, which excluded the alcohol disorders. Thus, "any NSVG/DIS disorder excluding alcohol abuse and dependence" includes the same disorders as "any NSVG/DIS disorder" except alcohol abuse and dependence.

Lifetime and Current Diagnoses. In the NSVG, data from the DIS were scored by a computer diagnostic algorithm originally written at the St. Louis ECA site. This diagnostic algorithm yields both "lifetime" and "current" diagnoses for each of the specific psychiatric disorders. A "lifetime" diagnosis for a disorder means that the DSM-III criteria for that disorder were met at some point in the respondent's life. It should be noted that while "lifetime" diagnoses are meant to assess the prevalence of psychiatric disorder at any time during a person's life, there is reason to believe that lifetime diagnoses are not as reliable as "current" diagnosis, due to problems such as recall.

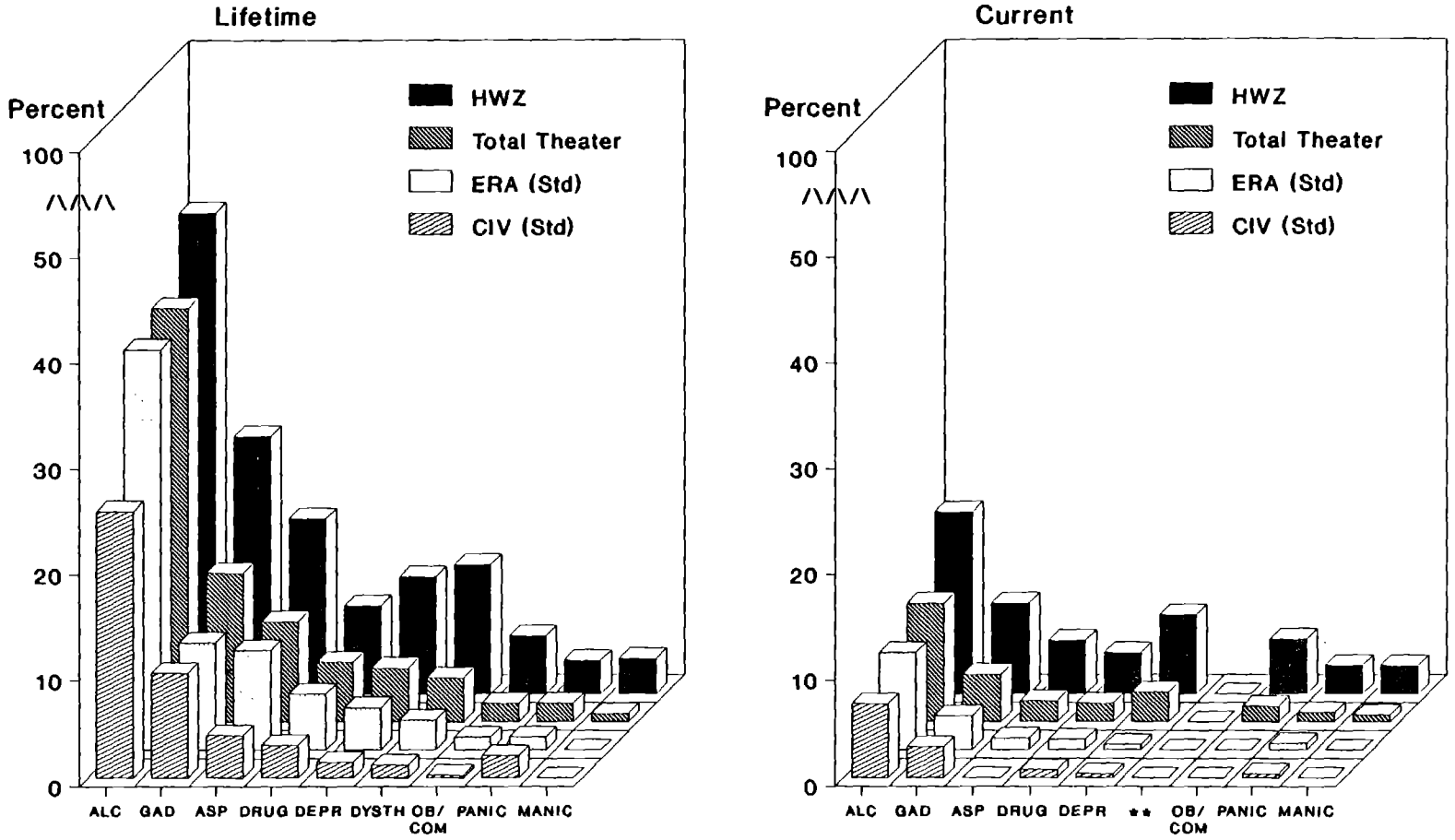
Those who meet the criteria for a "lifetime" diagnosis are then assessed for a "current" diagnosis. Those not meeting the lifetime criteria are set to negative for the "current" diagnosis. "Current"

diagnoses can be established for several time periods (for example, within the past year, six months, one month). To yield data directly comparable to the community prevalence rates reported by the ECA research program, we elected to report as "current" diagnoses those established within the past six months. To receive a "current" diagnosis, the respondent must have experienced at least one symptom associated with that disorder in the past six months. Because of the way in which the DIS is structured, dysthymic disorder is only assessed "lifetime." Further, although ASP is usually considered to be a disorder that is present throughout an individual's life, both "lifetime" and "current" ASP are assessed. As with the other disorders, "current" ASP indicates the presence in the past six months of at least one symptom of the disorder.

Appendix G in this volume provides information on validity studies of the various DIS modules. It also presents a table which allows a comparison of the DIS prevalence estimates from the NSVG with those from other relevant studies. Specifically, these are community prevalence estimates from the ECA and Vietnam theater and era veteran prevalence estimates from the Centers for Disease Control's Vietnam Experience Study (VES). Finally, in reading the discussion that follows for contrasts for the various disorders, it is important to remember that the tests of significance were done on era veteran and civilian data that were standardized to theater veterans on age and race/ethnicity for males, and on age and occupation for females. Since statistical contrasts used the standardized data, the rates quoted for theater veterans and civilians were from the relevant standardized data, that is, a discussion of theater/era veteran contrasts would cite era "standardized-to-theater" data, while high war zone theater/era veteran differences would cite data on era veterans standardized to high war zone stress exposed theater veterans. Unstandardized as well as standardized data for era veterans are presented in the tables provided in Volume II. See the introduction to that volume for a further discussion of standardization.

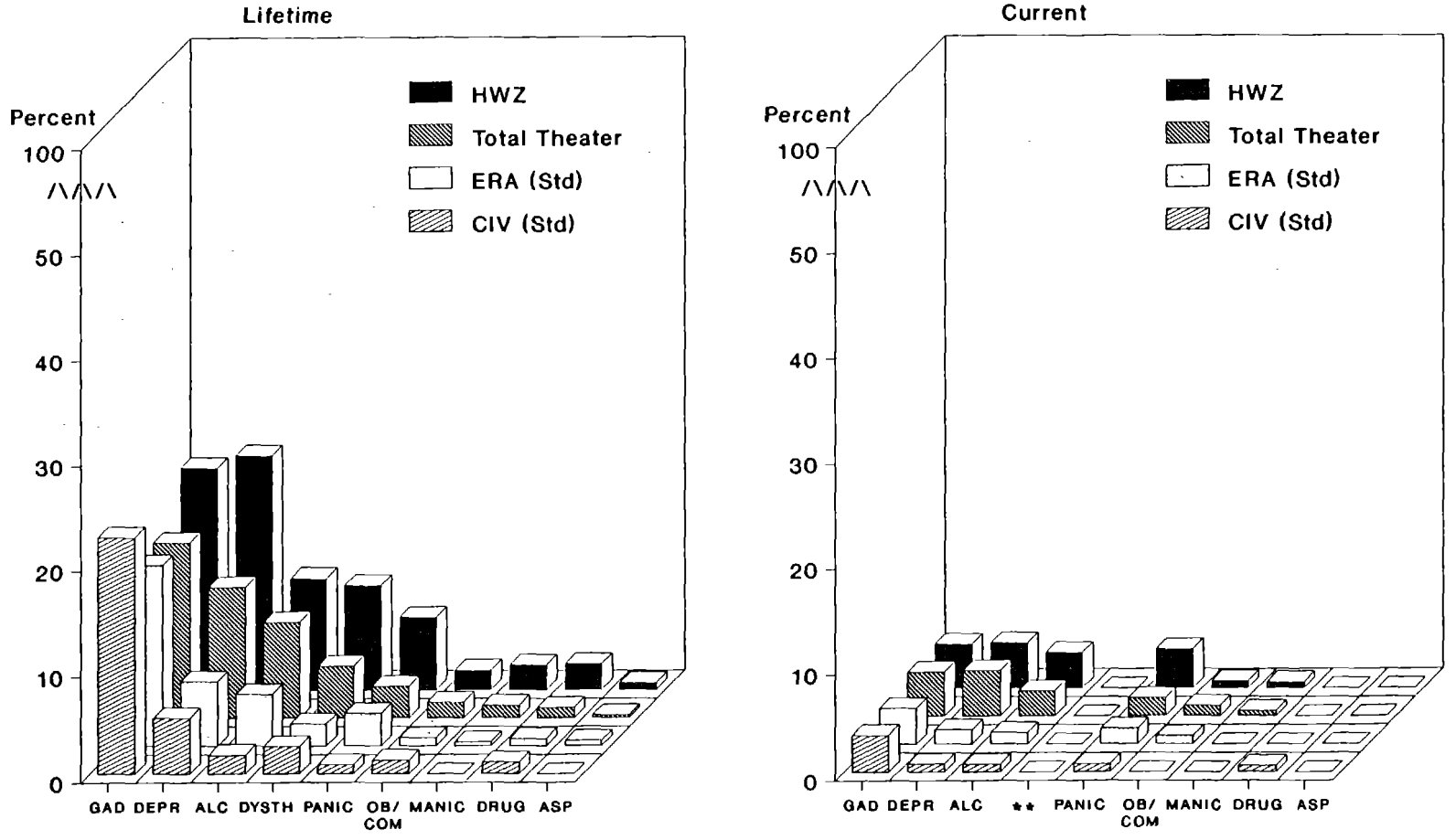
Exhibits VI-2 through VI-6 present in graphical form, prevalence estimates of the nine specific psychiatric disorders for the various study groups. For males, these graphs present these disorders in descending order of their prevalence among male theater veterans; for females, they

Exhibit VI-2
Prevalence of the Specific Psychiatric Disorders: Major Male Study Groups*



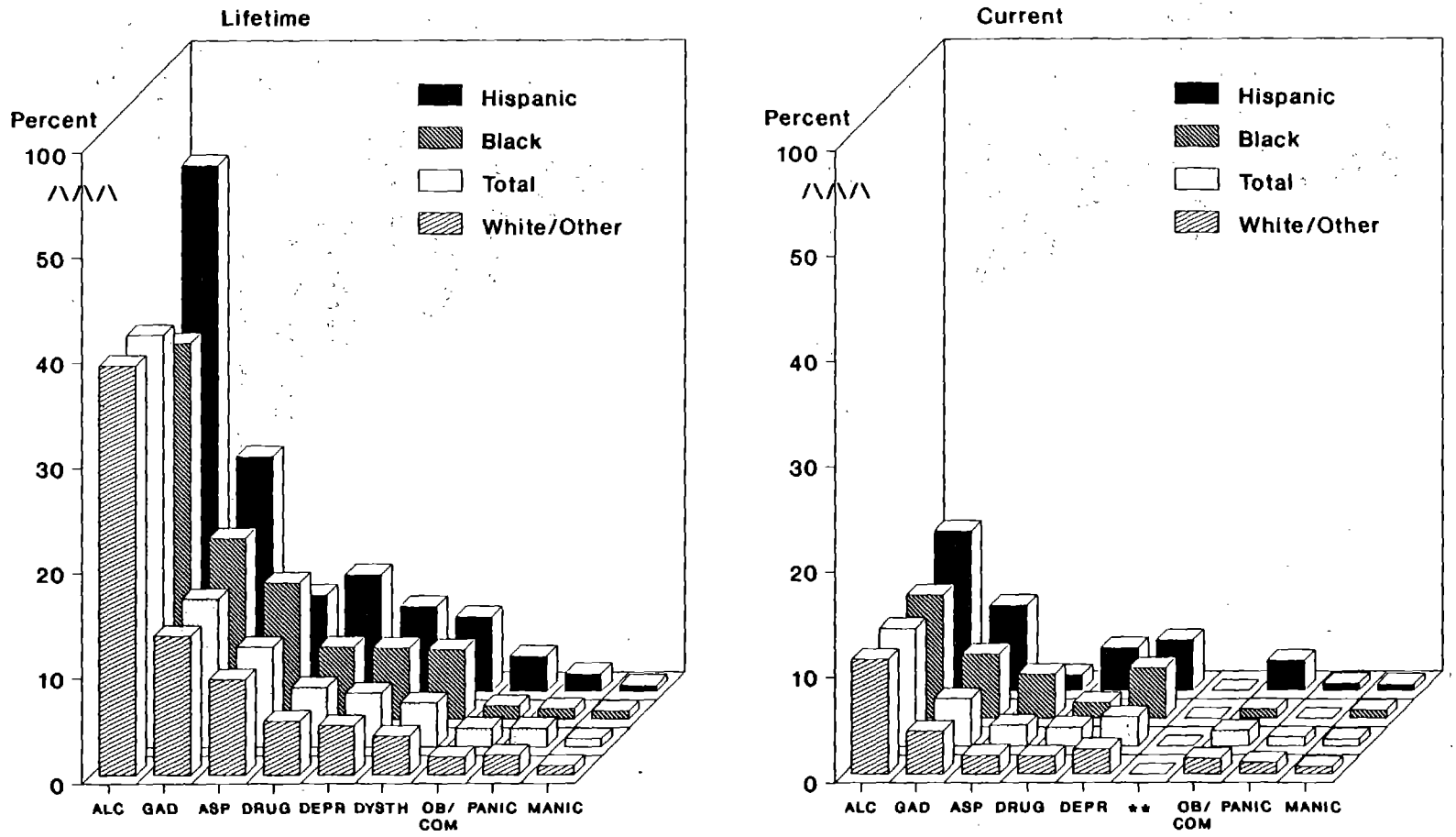
*In order of lifetime prevalence among male theater veterans.
**Current dysthymia is not assessed.

Exhibit VI-3
Prevalence of the Specific Psychiatric Disorders: Major Female Study Groups*



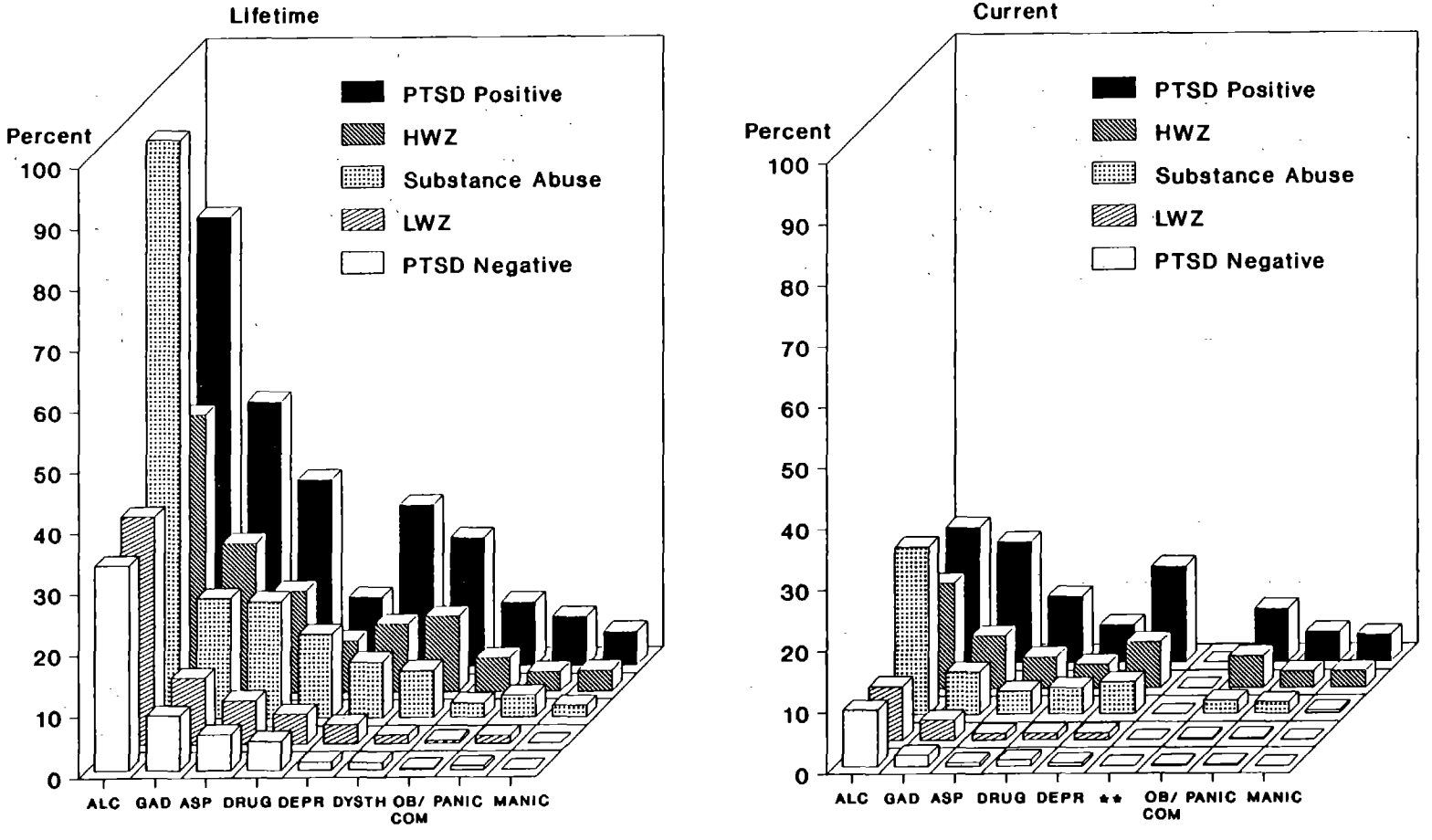
*In order of lifetime prevalence among female theater veterans.
**Current dysthymia is not assessed.

Exhibit VI-4
Prevalence of the Specific Psychiatric Disorders: Racial/Ethnic Groups of Male Theater Veterans*



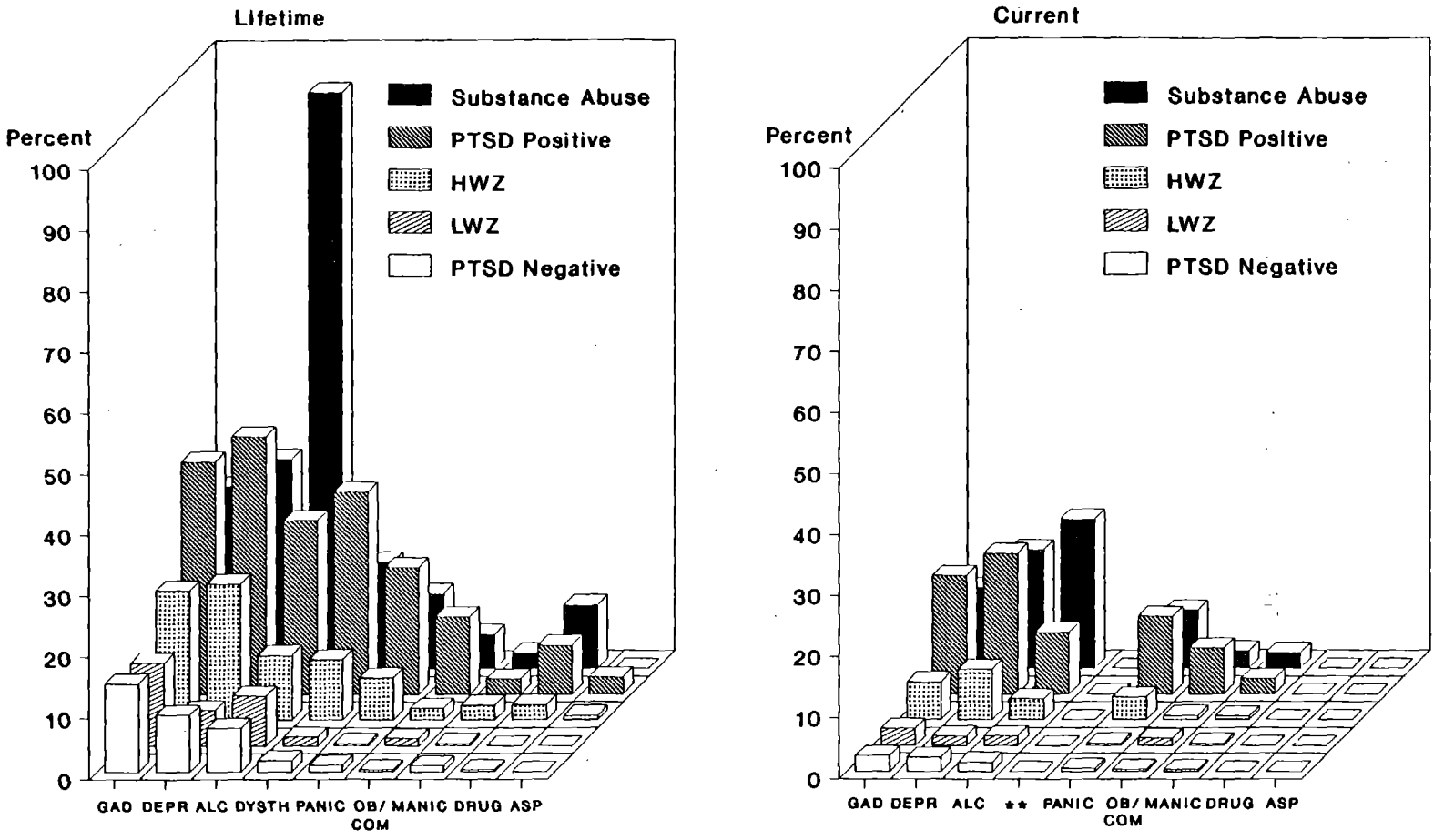
*In order of lifetime prevalence among male theater veterans.
**Current dysthymia is not assessed.

Exhibit VI-5
Prevalence of the Specific Psychiatric Disorders: Other Subgroups of Male Theater Veterans*



*In order of lifetime prevalence among male theater veterans.
**Current dysthymia is not assessed.

Exhibit VI-6
Prevalence of the Specific Psychiatric Disorders: Subgroups of Female Theater Veterans*



*In order of lifetime prevalence among female theater veterans.
**Current dysthymia is not assessed.

present these disorders in descending order of their prevalence among women theater veterans. These graphs are particularly useful in gaining a general understanding of the magnitude of the differences between groups. Detail prevalence estimates and contrasts can be found in Volume II, Tables VI-2 through VI-22.

C. The Affective Disorders

Exhibits VI-7 and VI-8 summarize the contrasts among groups for the three affective disorders: depressive episode, manic episode, and dysthymia. Full prevalence estimates and contrasts can be found in Volume II, Tables VI-2 through VI-6.

It is important to note that the prevalence rate estimates for manic episode (lifetime and current) for both era veterans and civilians were zero, so that contrasts with these groups were not tested for this disorder. Even among theater veterans these rates were low, and zero in some subgroups, so that, for many subgroups, these relationships were also not tested.

1. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Prevalence rates among Vietnam theater veterans for the three affective disorders assessed in the NSVG are:

	Lifetime	Current
Major Depressive Episode		
Males	5.1	2.8
Females	12.4	4.3
Manic Episode		
Males	0.8	0.7
Females	1.2	0.5
Dysthymia		
Males	4.2	--
Females	4.9	--

Exhibit VI-7

Summary of Contrasts for Major Study Groups for the Affective Disorders

Major Study Groups	Major Depressive Episode Lifetime	Major Depressive Episode Current	Manic Episode Lifetime	Manic Episode Current	Dysthymia Lifetime
A. Males--Total					
1. Thr vs. Era	NS	Thr > Era**	NT	NT	NS
2. HWZ vs. Era	HWZ > Era**	HWZ > Era***	NT	NT	HWZ > Era***
3. LWZ vs. Era	NS	NS	NT	NT	NS
4. Thr vs. Civ	Thr > Civ**	Thr > Civ***	NT	NT	Thr > Era**
5. HWZ vs. Civ	HWZ > Civ***	HWZ > Civ***	NT	NT	HWZ > Civ***
B. Males--White/Other					
1. Thr vs. Era	NS	Thr > Era*	NT	NT	NS
2. HWZ vs. Era	NS	HWZ > Era**	NT	NT	HWZ > Era**
3. LWZ vs. Era	NS	NS	NT	NT	NS
4. Thr vs. Civ	Thr > Civ*	Thr > Civ***	NT	NT	NS
5. HWZ vs. Civ	HWZ > Civ**	HWZ > Civ**	NT	NT	HWZ > Civ**
C. Males--Black					
1. Thr vs. Era	Thr > Era***	Thr > Era**	NT	NT	NS
2. HWZ vs. Era	HWZ > Era***	HWZ > Era**	NT	NT	NS
3. LWZ vs. Era	NS	NS	NT	NT	NS
4. Thr vs. Civ	NT	NT	NT	NT	NT
5. HWZ vs. Civ	NT	NT	NT	NT	NT
D. Males--Hispanic					
1. Thr vs. Era	Thr > Era**	Thr > Era*	NT	NT	NT
2. HWZ vs. Era	HWZ > Era*	HWZ > Era*	NT	NT	NT
3. LWZ vs. Era	NS	NS	NT	NT	NT
4. Thr vs. Civ	NS	NS	NT	NT	Thr > Civ**
5. HWZ vs. Civ	NS	NS	NT	NT	HWZ > Civ*
E. Females--Total					
1. Thr vs. Era	Thr > Era**	Thr > Era*	NS	NT	NS
2. HWZ vs. Era	HWZ > Era***	HWZ > Era**	NS	NT	HWZ > Era**
3. LWZ vs. Era	NS	NS	NS	NT	NS
4. Thr vs. Civ	Thr > Civ**	Thr > Civ**	NT	NT	NS
5. HWZ vs. Civ	HWZ > Civ***	HWZ > Civ**	NT	NT	HWZ > Civ**

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .08; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

Exhibit VI-8

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for the Affective Disorders

Contrasts Among Major Study Groups	Major Depressive Episode		Manic Episode		Dysthymia
	Lifetime	Current	Lifetime	Current	(Lifetime)
A. Race/Ethnicity					
1. W/O vs. Blk	NS	NS	NS	NS	NS
2. W/O vs. Hisp	NS	NS	NS	NS	NS
3. Blk vs. Hisp	NS	NS	NS	NS	NS
B. High vs. Low Warzone Stress					
1. Males	HWZ > LWZ**	HWZ > LWZ***	NT	NT	HWZ > LWZ***
2. Females	HWZ > LWZ***	HWZ > LWZ**	NS	NS	HWZ > LWZ**
C. PTSD vs. No PTSD					
1. Males	PTSD > No PTSD***	PTSD > No PTSD***	NT	NT	PTSD > No PTSD***
2. Females	PTSD > No PTSD***	PTSD > No PTSD**	NS	NS	PTSD > No PTSD***
D. Service-Connected Physical Disability					
1. Males					
a. SCPD vs. None	NS	NS	NS	NS	NS
b. High SCPD vs None	NS	NS	NS	NS	NS
2. Females					
a. SCPD vs. None	NS	NS	NS	NT	NS
b. High SCPD vs. None	NS	NS	NS	NT	NS
E. Substance Abuse vs. None					
1. Males	SubAbuse > None**	SubAbuse > None**	SubAbuse > None*	SubAbuse > None*	SubAbuse > None***
2. Females	SubAbuse > None**	SubAbuse > None**	NS	NS	SubAbuse > None*

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

Theater and Era Veterans. When the prevalence of specific NSVG/DIS affective disorders were compared for all male theater and era veterans, the only diagnosis for which there was a statistically significant difference among these two groups was current major depressive episode. A similar pattern was found among all racial/ethnic subgroups. Among white/other men, only current major depression was more common in the Vietnam theater than in the era veterans. In contrast, both black and Hispanic male theater veterans had significantly higher rates of current and lifetime major depressive episode than did their era veteran counterparts. For females veterans as well, Vietnam theater veterans had a significantly higher prevalence of lifetime and current major depression than era veterans.

Theater Veterans and Civilians. When the rates of affective disorders of male theater veterans were compared with their civilian counterparts, more statistically significant differences were found. Theater veteran men had significantly higher rates than their civilian counterparts, not only of lifetime and current major depression, but also of dysthymia. When examined by race/ethnicity, only the lifetime and current major depression differences were significant and only among white/other males. None of these differences were tested among blacks, because no black civilian men were diagnosed as either depressed or dysthymic. Among blacks, however, the differences between the rates for theater veterans (for example, 6.8 percent for lifetime depression and 6.6 percent for dysthymia) and those for civilians (i.e., 0.0 percent) were larger than the differences found between theater and civilian males overall would almost certainly have been found to be significant if they had been tested. In contrast, even though Hispanic theater veterans had the highest rate of lifetime depression among the racial/ethnic subgroups (8.1 percent), theater veteran Hispanic males had higher rates of dysthymia, but not of depression, than their civilian counterparts. This appeared to result from the fact that Hispanic civilians had the highest rate of depression among the various racial/ethnic subgroups of civilian men (5.7 percent lifetime). The contrast between female theater veterans and their civilian counterparts

was essentially the same as that for theater and era veterans: theater veteran women had significantly higher of both lifetime and current major depression rates than their civilian counterparts.

High War Zone Stress Theater Veterans. It might be expected that theater veterans exposed to high levels of war zone stress would report significantly more psychiatric problems than their era veteran and civilian counterparts. This was, in fact, the case. Compared to era veteran and civilian counterpart populations, both male and female veterans with high war zone stress exposure had higher rates of all of the affective disorders. While these differences were statistically significant for depression (both lifetime and current) and dysthmia, they were not tested for manic episode because the rate among era veterans and civilians was zero.

2. Contrasts Among Vietnam Theater Veterans on Race/Ethnicity, War Zone Stress, and Disability

For male theater veterans, no significant differences in rates of the affective disorders were found across the race/ethnicity these groups. For either men or women theater veterans, there were no significant differences between those with and without a service connected physical disability (SCPD) or between those with a high SCPD and none. In contrast, for both men and women, theater veterans exposed to high levels of war zone stress in Vietnam had significantly higher rates of affective disorder than those exposed to lower levels. Theater veteran males exposed to high war stress had higher rates of prevalence for all affective disorders than those with low/moderate war zone stress. Again, these differences were significant for both lifetime and current major depression and dysthymia, but were not tested for manic episodes, due to rates of zero among those with low war stress. For female theater veterans, high war zone stress was also significantly related to elevated rates of lifetime and current major depression and dysthymia. Moreover, as shown in Exhibits VI-5 and VI-6, these differences were quite large for both men and women. For men and women theater veterans exposed to high levels of war zone stress, the affective disorder prevalence rates were four or more times greater than those for theater veterans exposed to low or moderate levels.

3. Co-Occurrence With PTSD and Substance Abuse Among Theater Veterans

For males, PTSD appears to be closely linked to all of the affective disorders. The relationships between PTSD and the affective disorders were shown to be statistically significant for lifetime and current major depressive episode and dysthymia. Differences were not tested for manic episode since the prevalence rate among those without PTSD was zero. However, the rate of 5.5 percent for lifetime manic episode among male theater veterans with PTSD was the highest of any study group or subgroup in the NSVG and would appear to be clearly different from the zero percent observed for those without PTSD. For females, PTSD was also strongly related to lifetime and current depression and dysthymia. The dramatic impact of having PTSD on rates of affective disorders can be seen in Exhibits VI-5 and VI-6. For most of the comparisons for depression and dysthymia, the rates for both men and women those PTSD were ten to fifteen times greater than the rates for those without.

A history of substance abuse also appears to be strongly linked to affective disorders, particularly among males. Both male and female theater veterans with a history of substance abuse problems reported higher rates of lifetime and current major depression and dysthymia. For males, a substance abuse disorder was also significantly related to lifetime and current manic episodes. Again, these differences were not only statistically significant but also quite large.

4. Summary: Affective Disorders

Among Vietnam era veterans and civilians, the rates of lifetime and current depression and dysthymia, and, for females, lifetime manic episode, appeared to be within the range of the prevalence rates for

community samples of the same gender in the ECA program (See Appendix G).[2] However, a number of theater veteran subgroups had rates that were higher than those among the era veteran and civilian samples. Virtually all theater veteran subgroups, except those exposed to low war zone stress, had rates of current depression that were higher than their era veteran and civilian counterparts. The magnitude of the difference was particularly dramatic for those exposed to high war zone stress, with PTSD, and with a history of substance abuse. In fact, a major finding was that those exposed to high war stress, those with PTSD, and those with substance abuse tended to have substantially higher rates for all of the affective disorders. Among male theater veterans, however, there did not appear to be any racial/ethnic differences in rates of the affective disorders.

D. The Anxiety Disorders

Exhibits VI-9 and VI-10 summarize group contrasts for the three anxiety disorders: panic disorder, obsessive compulsive disorder, and generalized anxiety disorder. Full prevalence estimates and contrasts can be found in Volume II, Tables VI-7 through VI-12.

It is important to note that the prevalence rate estimates for panic disorder and obsessive compulsive disorder for both era veterans (current) and for civilians (lifetime and current) were zero, so that contrasts with these groups were not tested for these two disorders. These rates were low, even among theater veterans and zero in some subgroups, so that, for some subgroups, those relationships were also not tested.

2/ Although there were no cases of manic episode in the male civilian or era veteran samples, because of the relative rarity of manic episode in general community populations, even in randomly drawn community populations one would expect to find no more than 1 to 4 individuals with a manic episode in a sample of 400 men or 200 women, the sample sizes for male era veterans and civilians, respectively. In samples such as the NSVG, drawn according to specific criteria such as age restrictions, the rates may be even smaller and thereby undetectable in such small samples.

Exhibit VI-9

Summary of Contrasts Among Major Study Groups for the Anxiety Disorders

Contrasts Among Major Study Groups	Panic Disorder		Obsessive Compulsive Disorder		Generalized Anxiety Disorder	
	Lifetime	Current	Lifetime	Current	Lifetime	Current
A. Males--Total						
1. Thr vs. Era	NS	NS	NS	Thr > Era**	NS	NS
2. HWZ vs. Era	NS	NS	HWZ > Era*	HWZ > Era**	HWZ > Era***	HWZ > Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	NS	Thr > Civ*	NT	NS	NS
5. HWZ vs. Civ	NS	NS	HWZ > Civ**	NT	HWZ > Civ***	HWZ > Civ*
B. Males--White/Other						
1. Thr vs. Era	NS	NT	NS	NT	NS	NS
2. HWZ vs. Era	NS	NT	HWZ > Era*	NT	HWZ > Era**	NS
3. LWZ vs. Era	NS	NT	NS	NT	NS	NS
4. Thr vs. Civ	NS	NS	Thr > Civ*	NT	NS	NS
5. HWZ vs. Civ	NS	NS	HWZ > Civ*	NT	HWZ > Civ**	NS
C. Males--Black						
1. Thr vs. Era	NS	NT	NS	NS	NS	NS
2. HWZ vs. Era	NS	NT	NS	NS	NS	NS
3. LWZ vs. Era	NS	NT	NS	NT	NS	NS
4. Thr vs. Civ	NT	NT	NT	NT	Thr > Civ**	NS
5. HWZ vs. Civ	NT	NT	NT	NT	HWZ > Civ***	NS
D. Males--Hispanic						
1. Thr vs. Era	NT	NT	NS	NT	Thr > Era**	NS
2. HWZ vs. Era	NT	NT	NS	NT	HWZ > Era***	HWZ > Era*
3. LWZ vs. Era	NT	NT	NS	NT	NS	NS
4. Thr vs. Civ	NS	NS	NT	NT	NS	Thr > Civ*
5. HWZ vs. Civ	NS	NS	NT	NT	NS	HWZ > Civ*
E. Females--Total						
1. Thr vs. Era	NS	NS	NS	NS	NS	Thr > Era*
2. HWZ vs. Era	NS	NS	NS	NS	NS	HWZ > Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	NS	NS	NT	NS	NS
5. HWZ vs. Civ	HWZ > Civ**	NS	NS	NT	NS	NS

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

Exhibit VI-10

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for the Anxiety Disorders

Contrasts Among Major Study Groups	Panic Disorder		Obsessive Compulsive Disorder		Generalized Anxiety Disorder	
	Lifetime	Current	Lifetime	Current	Lifetime	Current
A. Race/Ethnicity						
1. W/O vs. Blk	NS	NT	NS	NS	NS	NS
2. W/O vs. Hisp	NS	NS	NS	NS	Hisp > W/O*	NS
3. Blk vs. Hisp	NS	NT	NS	NS	NS	NS
B. High vs. Low Warzone Stress						
1. Males	NS	HWZ > LWZ*	HWZ > LWZ**	HWZ > LWZ**	HWZ > LWZ***	HWZ > LWZ*
2. Females	HWZ > LWZ**	HWZ > LWZ*	NS	NS	NS	NS
C. PTSD vs. No PTSD						
1. Males	PTSD > No PTSD**	PTSD > No PTSD**	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***
2. Females	PTSD > No PTSD**	PTSD > No PTSD*	PTSD > No PTSD*	NS	PTSD > No PTSD**	PTSD > No PTSD*
D. Service-Connected Physical Disability						
1. Males						
a. SCPD vs. None	NS	NS	NS	NS	SCPD > None*	NS
b. High SCPD vs None	NS	NS	NS	NS	High > None*	NS
2. Females						
a. SCPD vs. None	NS	NS	NS	NS	NS	NS
b. High SCPD vs. None	NS	NS	NS	NT	NS	NS
E. Substance Abuse vs. None						
1. Males	SubAbuse > None**	SubAbuse > None*	NS	NS	SubAbuse > None**	SubAbuse > None*
2. Females	SubAbuse > None*	NS	NS	NS	SubAbuse > None*	NS

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

1. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Prevalence rates among Vietnam theater veterans for the three anxiety disorders assessed in the NSVG are:

	Lifetime	Current
Panic Disorder		
Males	1.8	0.9
Females	3.0	1.7
Obsessive Compulsive Disorder		
Males	1.8	1.5
Females	1.5	1.0
Generalized Anxiety Disorder		
Males	14.1	4.5
Females	16.6	4.2

Theater and Era Veterans. Current obsessive compulsive disorder was the only anxiety disorder for which rates among total male theater veteran group and rates among era veterans differed significantly. For both white/others and Hispanics, this specific contrast was not tested because of a zero value for era veterans. However, the magnitude of the difference for white/others and Hispanics was the same or higher than that for the total theater/era veteran contrast. This difference was not found for blacks. The only other significant contrast within the three racial/ethnic subgroups was a higher rate of lifetime generalized anxiety disorder for Hispanic theater veterans in comparison to era veterans. In all cases, however, male theater veterans had higher rates of anxiety disorder than male era veterans. Among women veterans, theater veterans had significantly higher rates of current generalized anxiety disorder than female era veterans, the only statistically significant difference observed.

Theater Veterans and Civilians. The major difference between male theater veterans and civilians was, again, between their respective rates of obsessive compulsive disorder. Theater veteran men had significantly higher rates of lifetime obsessive compulsive disorder than their civilian

counterparts and also appeared to have higher rates of current disorder. Although the latter was not tested because of a zero rate for civilians, the magnitude of the difference was about the same as that for the theater/era veteran contrast, which was found to be statistically significant. The difference between rates of lifetime disorder was significant among white/other males, but not among blacks or Hispanics. However, two other differences were significant within these minority subgroups. First, Hispanic theater veterans had higher rates of current generalized anxiety disorder than civilians. Second, black theater veteran men had higher rates of lifetime generalized anxiety disorder than civilians. Among women, there were no statistically significant differences between Vietnam theater veterans and civilian females.

High War Zone Stress Theater Veterans. Although the difference for current obsessive compulsive disorder between high war zone stress theater veterans and civilians was not tested because of a zero rate for civilians, men exposed to high war zone stress appeared to have significantly higher rates of obsessive compulsive disorder and generalized anxiety disorder (both current and lifetime) than either era veterans or civilians. In contrast to the zero rate for civilians, theater veterans exposed to high war stress had a 5.2 percent prevalence rate of current obsessive compulsive disorder. All other contrasts for obsessive compulsive disorder and GAD for males were tested and found to be statistically significant. Differences in rates of panic disorder among men by war zone stress exposure were not significant. In contrast, for females, only lifetime panic disorder was higher among women exposed to high war zone stress than their civilian counterparts, and no disorder was significantly higher among the high war stress group than among era veterans.

2. Contrasts Among Vietnam Theater Veterans on Race/Ethnicity, War Zone Stress, and Disability

The only difference between rates by race/ethnicity that was observed within the male theater veteran group was a higher rate of lifetime generalized anxiety disorder among Hispanics than among white/other males. The only one of the nine NSVG/DIS disorders for which men with a service-connected disability had higher prevalence rates than

those without a SCPD was also lifetime generalized anxiety disorder. Similar differences were found between the high SCPD and "none" groups. In contrast, for the anxiety disorders, the only difference between the high and low/moderate war zone stress exposed males that was not significant was lifetime panic disorder. For generalized anxiety disorder, for example, rates for those exposed to high war zone stress were over twice as high as those with low/moderate war zone stress exposure.

For women, the only significant differences between rates for those exposed to high and low war zone stress were for panic disorder, both lifetime and current, with the high war zone stress group having higher rates. While the rates of GAD among women with high war zone stress were approximately twice those of women with low to moderate war stress, the contrasts were not statistically significant, although the contrast for lifetime GAD was marginal ($p=.051$). There were no significant differences among rates in women by disability status.

3. Co-Occurrence With PTSD and Substance Abuse Among Theater Veterans

The relationship between PTSD and anxiety disorders was once again quite strong. The magnitude of this relationship is shown in Exhibits VI-5 and VI-6. Those with PTSD had rates of disorder up to twenty times higher than those without PTSD. Both men and women with PTSD were significantly more likely to have had each of the anxiety disorders, other than current obsessive compulsive disorder among women, than men and women without PTSD, including panic disorder--both lifetime and current.

Males with a history of substance abuse were also more likely to have had panic disorder and generalized anxiety disorder, both current and lifetime, than men without a history of substance abuse. They were no more likely, however, to have had obsessive compulsive disorder. Females with a lifetime substance abuse diagnosis were more likely to have had both disorders and lifetime generalized anxiety disorder lifetime panic disorder than those without.

4. Summary: Anxiety Disorders

No ECA data on generalized anxiety disorder were available to compare with the NSVG data. For panic disorder, among both males and females, prevalence rates not only for Vietnam era veterans and civilians, but also for theater veterans overall, appeared not to be significantly different from those for the ECA community samples. This was also true of males for obsessive compulsive disorder, except for the zero rates observed for Vietnam era veterans and civilians. The latter appeared to reflect the same problem described for manic episode, that is, the rates in community populations were extremely low, such that cases of the disorder may not be found unless one uses very large samples. For obsessive compulsive disorder, the rates for females appeared to be low in comparison to the ECA community samples.[3]

Prevalence rates for the anxiety disorders for some theater veteran subgroups, particularly among male theater veterans, however, appeared to be significantly higher than those for the ECA community samples and for the NSVG era veterans, civilians, and theater veterans overall. Again, a major finding was the significantly elevated rates observed for most or all anxiety disorders among those with high war zone stress exposure , and those with PTSD or a history of substance abuse. As with the affective disorders, few differences were found between the various racial/ethnic

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3/ One may only speculate on the possible reasons for this. One possible reason is that the female samples are primarily nurses, which would imply that these women are more highly educated and perhaps come from more highly educated or successful families than similarly aged women found in the general populations. Many are never married professional women. These characteristics could well have an effect on mental health outcomes. Differences for current disorder may also result, in part, from the fact that rates of obsessive compulsive disorder are generally higher in the lower age groups. Our female theater veteran group contained few women under 35, and the majority were significantly older. Era veterans and civilians were matched on age with the theater women, and so are also older.

subgroups. Higher rates of lifetime generalized anxiety disorder were also found among those with service-connected physical disabilities than among those without.

E. Substance Abuse Disorders and Antisocial Personality Disorder

Exhibits VI-11 and VI-12 summarize the group contrasts for alcohol and drug abuse or dependence and antisocial personality disorder (ASP). Full prevalence estimates and contrasts may be found in Volume II, Tables VI-13 through VI-18.

1. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Prevalence rates among Vietnam theater veterans for the substance abuse disorders and antisocial personality disorder in the NSVG are:

	Lifetime	Current
Alcohol Abuse or Dependence		
Males	39.2	11.2
Females	9.1	2.4
Drug Abuse or Dependence		
Males	5.7	1.8
Females	1.0	0.0
Antisocial Personality Disorder (ASP)		
Males	9.5	2.0
Females	0.3	0.0

Theater and Era Veterans. Both Vietnam theater and era veteran males had relatively high levels of alcohol abuse or dependence lifetime (approximately 40 percent), compared to civilian males (25 percent). There were no significant differences overall between Vietnam theater and era veteran males for either type of substance abuse or for antisocial personality disorder. This was also true for white/other males. In contrast, black theater veteran men had higher current rates of ASP than era veteran males, and Hispanic theater veterans had higher rates for both current alcohol disorder and lifetime drug disorder than Hispanic era veteran men. It also appeared that Hispanic theater veterans had

Exhibit VI-11

Summary of Contrasts Among Major Study Groups for Substance Abuse and Antisocial Personality

Contrasts Among Major Study Groups	Alcohol Abuse/Dependence		Drug Abuse/Dependence		Antisocial Personality Disorder	
	Lifetime	Current	Lifetime	Current	Lifetime	Current
A. Males--Total						
1. Thr vs. Era	NS	NS	NS	NS	NS	NS
2. HWZ vs. Era	NS	HWZ > Era*	NS	NS	HWZ > Era*	HWZ > Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	Thr > Civ***	NS	NS	NS	Thr > Civ**	Thr > Civ***
5. HWZ vs. Civ	HWZ > Civ***	HWZ > Civ*	HWZ > Civ*	NS	HWZ > Civ***	HWZ > Civ**
B. Males--White/Other						
1. Thr vs. Era	NS	NS	NS	NS	NS	NS
2. HWZ vs. Era	NS	NS	NS	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	Thr > Civ**	NS	NS	NS	Thr > Civ*	NT
5. HWZ vs. Civ	HWZ > Civ**	HWZ > Civ*	NS	NS	HWZ > Civ**	NT
C. Males--Black						
1. Thr vs. Era	NS	NS	NS	NT	NS	Thr > Era*
2. HWZ vs. Era	NS	NS	NS	NT	NS	HWZ > Era**
3. LWZ vs. Era	NS	NS	NS	NT	NS	NS
4. Thr vs. Civ	NS	NS	Thr > Civ*	NS	NS	Thr > Civ**
5. HWZ vs. Civ	NS	NS	HWZ > Civ**	NS	HWZ > Civ*	HWZ > Civ**
D. Males--Hispanic						
1. Thr vs. Era	NS	Thr > Era*	Thr > Era*	NT	NS	NS
2. HWZ vs. Era	NS	HWZ > Era*	HWZ > Era*	NT	NS	NS
3. LWZ vs. Era	NS	NS	NS	NT	NS	NS
4. Thr vs. Civ	Thr > Civ*	NS	NS	Thr > Civ*	Thr > Civ***	Thr > Civ*
5. HWZ vs. Civ	NS	NS	NS	HWZ > Civ*	HWZ > Civ*	NS
E. Females--Total						
1. Thr vs. Era	Thr > Era*	NS	NS	NT	NS	NT
2. HWZ vs. Era	HWZ > Era*	NS	NS	NT	NS	NT
3. LWZ vs. Era	NS	NS	NT	NT	NT	NT
4. Thr vs. Civ	Thr > Civ***	NS	NS	NT	NT	NT
5. HWZ vs. Civ	HWZ > Civ***	NS	NS	NT	NT	NT

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

Exhibit VI-12

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for Substance Abuse and Antisocial Personality

Contrasts Among Major Study Groups	Alcohol Abuse/Dependence		Drug Abuse/Dependence		Antisocial Personality Disorder	
	Lifetime	Current	Lifetime	Current	Lifetime	Current
A. Race/Ethnicity						
1. W/O vs. Blk	NS	NS	NS	NS	NS	NS
2. W/O vs. Hisp	Hisp > W/O*	NS	NS	NS	NS	NS
3. Blk vs. Hisp	Hisp > Blk**	NS	NS	NS	NS	Blk > Hisp*
B. High vs. Low Warzone Stress						
1. Males	HWZ > LWZ*	HWZ > LWZ**	NS	NS	HWZ > LWZ**	HWZ > LWZ*
2. Females	NS	NS	NT	NT	NT	NT
C. PTSD vs. No PTSD						
1. Males	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD*	PTSD > No PTSD*	PTSD > No PTSD***	PTSD > No PTSD***
2. Females	PTSD > No PTSD**	NS	NS	NT	NT	NT
D. Service-Connected Physical Disability						
1. Males						
a. SCPD vs. None	NS	NS	NS	NS	NS	NS
b. High SCPD vs None	NS	NS	NS	NS	NS	NS
2. Females						
a. SCPD vs. None	NS	NS	NS	NT	NT	NT
b. High SCPD vs. None	NS	NS	NS	NT	NT	NT
E. Substance Abuse vs. None						
1. Males	NT	NT	NT	NT	SubAbuse > None***	SubAbuse > None*
2. Females	NT	NT	NT	NT	NT	NT

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

significantly higher rates of current drug disorders, although, because of a zero rate for era veteran males, the difference was not tested. The only significant difference between Vietnam theater and era veteran women was for lifetime alcohol abuse, with theater veterans having higher rates than era veterans.

Theater Veterans and Civilians. Overall, male theater veterans had higher rates of lifetime and current ASP and lifetime alcohol abuse or dependence than their civilian counterparts. These differences were evident among both Hispanics and white/other males, although the current ASP comparison was not tested for the latter because of a zero rate among civilian white/other men. Minority theater veteran men were also more likely to have had a drug problem than civilians: This was true of lifetime drug problems for blacks and current drug problems for Hispanics. In comparison with civilian black males, rates for black theater veterans were also elevated for current ASP. However, it is important to note that the differences observed in all groups for current ASP may result in part from the nature of the civilian sample. Unlike the veteran sample, which was selected from military records, the civilian sample was household-based. A household sample is less likely to include individuals with current ASP because of their transience, the likelihood of their not having a home at all, and their high rates of incarceration. The only difference between Vietnam theater veteran and civilian women was the same as that found between theater and era veteran women: theater women were more likely to have lifetime alcohol abuse or dependence than their civilian counterparts.

High War Zone Stress Theater Veterans. Theater veteran men who were exposed to high levels of war zone stress had significantly higher rates of ASP (lifetime and current) and current alcohol abuse or dependence, and had marginally elevated rates of current drug abuse, as compared to both male Vietnam era veterans and civilians. Theater veteran men who were exposed to high war stress also had higher rates of both substance abuse disorders than civilian males. The only consistent finding across all racial/ethnic subgroups groups was a higher rate of lifetime ASP for men exposed to high war stress in comparison to the civilian males. Black theater veteran men

who were exposed to high war stress also had higher current rates of antisocial personality disorder than black civilian males, while white/other men who were exposed to high war stress had higher rates of alcohol abuse or dependence than their civilian counterparts. Hispanic men who were exposed to high war stress had higher current rates of alcohol disorder and higher lifetime rates of drug disorder than Hispanic era veterans, as well as higher current rates of drug abuse or dependence than Hispanic civilian men. The only statistically significant difference found in women who were exposed to high war zone stress and their era veteran and civilian counterparts was for lifetime alcohol abuse or dependence, with the former having higher rates.

2. Contrasts Among Vietnam Theater Veterans on Race/Ethnicity, War Zone Stress, and Disability

No significant differences were observed by levels of service-connected disability. Blacks had higher rates of current ASP than Hispanics, while Hispanics had higher rates of lifetime alcohol abuse or dependence than either white/others or blacks. Except for lifetime drug dependence or abuse, men exposed to high war zone stress had significantly higher rates of all these disorders, although the contrast for current drug abuse was marginal ($p=.051$). For example, the rate of current alcohol abuse or dependence among those exposed to high war stress was twice that of men exposed to lower levels (17.2 versus 8.8 percent).

There were no statistically significant differences for women by war zone stress exposure, although several of these comparisons were not tested due to zero rates among those exposed to low/moderate war stress. For example, the rates of lifetime drug abuse were 2.5 percent for theater veterans and 0.0 percent for era veterans, which may be statistically significant, as may the difference observed for lifetime ASP (2.8 versus 0.0 percent).

3. Co-Occurrence With PTSD and Substance Abuse Among Theater Veterans

As has frequently been documented in the literature, substance abuse disorders tend to co-occur with PTSD. It has also been hypothesized that abuse of substances may be a part of the "avoidance syndrome"

associated with PTSD. In addition, in the NSVG, prevalence rates for the substance abuse disorders were substantially higher among male theater veterans with PTSD than among male veterans without PTSD. In fact, almost three fourths of male veterans with PTSD had a lifetime alcohol abuse or dependence disorder, and 22 percent of those with PTSD had these disorders currently. Among women with PTSD, only rates of lifetime alcohol disorders were elevated in comparison with those without the PTSD.

A more unexpected finding was that those with PTSD were also significantly more likely to have antisocial personality disorder. Of those with PTSD, 31 percent had a lifetime ASP diagnosis, and 11 percent had symptoms of ASP in the last six months, all of latter having also met criteria for the disorder lifetime. In part, this probably reflected a selection process, since, as noted above, those with ASP were also more likely to have experienced high levels of war zone stress. It may also reflect, however, a vulnerability among those with ASP to trauma and the subsequent development of PTSD.

Differences between those with and without a history of substance abuse could not be tested for the substance abuse disorders, since, by definition, there are no respondents with an alcohol or drug disorder in the "no substance abuse" group. Since substance abuse is also a symptom of ASP, one might expect that the relationship between ASP and substance abuse disorders would be substantial. However, only 19 percent of men with a history of substance abuse also had ASP, and none of these contrasts were tested for women.

4. Summary: Substance Abuse and Antisocial Personality Disorder

The rates of alcohol abuse or dependence and ASP found in NSVG civilians appeared to be similar to the rates found in community ECA populations, although the rates of these disorders among veterans, both theater and era, appeared to be somewhat elevated in comparison to the ECA community rates. This could result from a number factors: a selection bias for those who entered the military during the Vietnam era; the sociocultural environment of the military at that time, which may have encouraged drinking; and differences between the NSVG veteran and civilian samples, as described previously (that is, the community household sample

would be less likely to pick up those with ASP or chronic homeless alcoholics than would the veteran list sample). In general, rates of drug abuse and dependence for the NSVG civilian sample appeared to be somewhat low in comparison with the ECA community samples. The rates for Vietnam theater and era veterans were similar to those for the ECA community samples. This appeared to indicate an underreporting of drug use among veterans as well, based on the presumption of high levels of drug use in Vietnam.[4]

Because of the relatively high rates of alcohol abuse or dependence found among both Vietnam theater and era veteran males, the only significant difference by veteran status for the alcohol disorders among males overall was that between Vietnam theater veteran males and civilians for the lifetime disorder. The only group with notably high rates for drug abuse or dependence were Hispanic men, particularly those exposed to high war zone stress (a prevalence of 10.9 percent). As with virtually all of the disorders discussed so far, men exposed to high war stress were more likely to have both an alcohol disorder and ASP than those exposed to lower levels of war zone stress. The elevated rates of ASP among those experiencing high war zone stress might be due to a selection factor for those sent into combat.

The most pronounced differences by race/ethnicity were the greater apparent difficulties for Hispanic theater veteran men with alcohol and

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4/ Even among those exposed to high war zone stress, the rate was only 8.4 percent. Again, we can only hypothesize the reason for these low rates. One factor might be that the ECA data was collected several years ago, before the major anti-drug campaigns, drug testing, etc. that we have seen in the past few years. In this new strongly anti-drug environment individuals might be less likely to admit to any drug use. Another factor for the lifetime rates is that data for lifetime disorders are less reliable--individuals may have forgotten (especially if they no longer use drugs) or tend to downplay the amount of drugs they used in the past. With regard to current rates, it appears that the rate of drug use for the population overall is declining, and that individuals in these age categories might be less likely to use drugs now than when they were younger, when the national climate was also more accepting of drug use.

drug disorders, in comparison with blacks and white/others and/or Hispanic era veterans and civilians, and higher rates of current ASP among black male theater veterans. There were also very high levels of co-occurrence of PTSD among theater veteran men with both the substance abuse disorders and with ASP. This co-morbidity of PTSD with substance abuse has already been well established among treatment-seeking samples of Vietnam veterans. The relationship observed with ASP is probably, at least in part, due to a selection bias, since those with ASP were also more likely to have experienced high war zone stress. It may also reflect a particular vulnerability to PTSD among those with ASP. ASP may occur in those with low self-esteem, with the manipulative and self-centered behaviors characteristic of ASP reflecting efforts to enhance self-esteem. If this is true, it may be that, when such individuals are confronted with a hostile environment which they are not able to control are instead helpless, they are less able to emotionally cope with the high levels of traumatic stress that they experience.

F. The Prevalence of "Any Specific NSVG/DIS Psychiatric Disorder"

To summarize our examination of specific psychiatric disorders, the rates of experiencing any of these nine specific disorders were also computed, as noted in Section B. Exhibits VI-13 and VI-14 summarize the group contrasts for the prevalence of any NSVG/DIS diagnosis, with or without alcohol disorder. Exhibits VI-15 and VI-16 present these prevalence estimates for any NSVG/DIS disorder (with and without alcohol abuse or dependence, respectively) in graphical form for the various study groups. Full prevalence estimates and contrasts can be found in Volume II, Tables VI-19 through VI-22.

1. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

As shown in Exhibit VI-7, 49 percent of male Vietnam theater veterans met the criteria at some point in their lives for at least one of the DIS DSM-III disorders assessed in the NSVG, and 17 percent (over one third of the former) received a current diagnosis (within the past six months) for one of these disorders. Alcohol abuse or dependence accounts

Exhibit VI-13

Summary of Contrasts Among Major Study Groups for Any NSVG/DIS Disorder

Contrasts Among Major Study Groups	Any NSVG/DIS Disorder		Any NSVG/DIS Disorder Excluding Alcohol Disorder	
	Lifetime	Current	Lifetime	Current
A. Males--Total				
1. Thr vs. Era	NS	NS	NS	NS
2. HWZ vs. Era	HWZ > Era***	HWZ > Era***	HWZ > Era***	HWZ > Era***
3. LWZ vs. Era	NS	NS	NS	NS
4. Thr vs. Civ	Thr > Civ**	NS	Thr > Civ**	Thr > Civ*
5. HWZ vs. Civ	HWZ > Civ***	HWZ > Civ***	HWZ > Civ***	HWZ > Civ***
B. Males--White/Other				
1. Thr vs. Era	NS	NS	NS	NS
2. HWZ vs. Era	HWZ > Era**	HWZ > Era**	HWZ > Era**	HWZ > Era**
3. LWZ vs. Era	NS	NS	NS	NS
4. Thr vs. Civ	Thr > Civ**	NS	Thr > Civ*	NS
5. HWZ vs. Civ	HWZ > Civ***	HWZ > Civ**	HWZ > Civ***	HWZ > Civ**
C. Males--Black				
1. Thr vs. Era	NS	NS	NS	NS
2. HWZ vs. Era	NS	HWZ > Era*	NS	HWZ > Era*
3. LWZ vs. Era	NS	NS	NS	NS
4. Thr vs. Civ	NS	NS	Thr > Civ**	Thr > Civ***
5. HWZ vs. Civ	HWZ > Civ**	HWZ > Civ**	HWZ > Civ***	HWZ > Civ***
D. Males--Hispanic				
1. Thr vs. Era	Thr > Era*	Thr > Era***	Thr > Era**	Thr > Era**
2. HWZ vs. Era	HWZ > Era**	HWZ > Era***	HWZ > Era***	HWZ > Era***
3. LWZ vs. Era	NS	LWZ > Era*	NS	NS
4. Thr vs. Civ	NS	NS	NS	NS
5. HWZ vs. Civ	HWZ > Civ*	HWZ > Civ**	HWZ > Civ*	HWZ > Civ*
E. Females--Total				
1. Thr vs. Era	NS	Thr > Era*	NS	Thr > Era*
2. HWZ vs. Era	HWZ > Era**	HWZ > Era**	HWZ > Era*	HWZ > Era**
3. LWZ vs. Era	NS	NS	NS	NS
4. Thr vs. Civ	NS	NS	NS	NS
5. HWZ vs. Civ	NS	HWZ > Civ**	NS	HWZ > Civ*

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

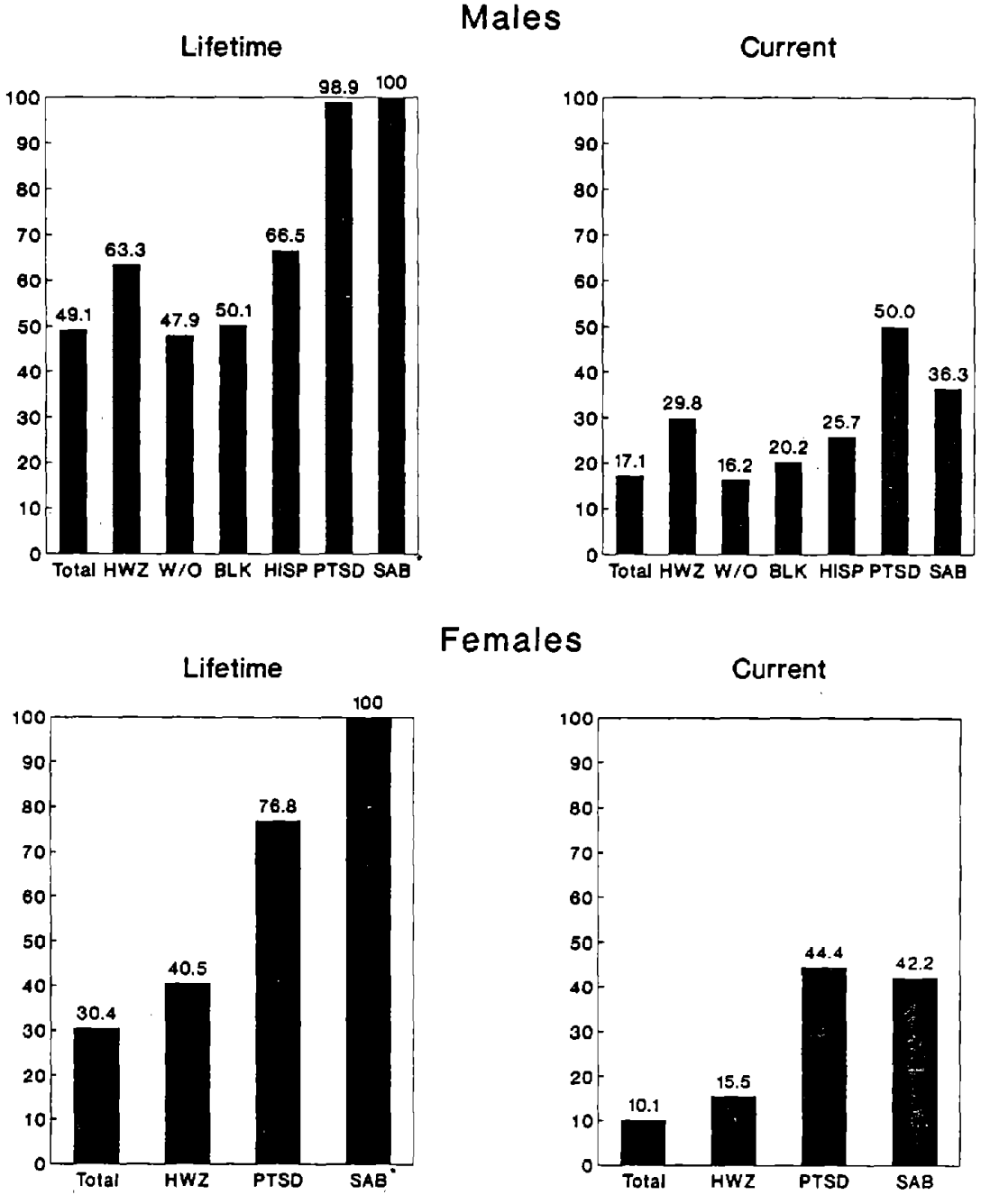
Exhibit VI-14

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for Any NSVG/DIS Disorder

Contrasts Among Major Study Groups	Any NSVG/DIS Disorder		Any NSVG/DIS Disorder Excluding Alcohol Disorder	
	Lifetime	Current	Lifetime	Current
A. Race/Ethnicity				
1. W/O vs. Blk	NS	NS	NS	NS
2. W/O vs. Hisp	Hisp > W/O***	Hisp > W/O*	Hisp > W/O*	NS
3. Blk vs. Hisp	Hisp > Blk**	NS	NS	NS
B. High vs. Low Warzone Stress				
1. Males	HWZ > LWC***	HWZ > LWZ***	HWZ > LWZ***	HWZ > LWZ***
2. Females	HWZ > LWC***	HWZ > LWZ**	HWZ > LWZ***	HWZ > LWZ**
C. PTSD vs. No PTSD				
1. Males	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***
2. Females	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***
D. Service-Connected Physical Disability				
1. Males				
a. SCPD vs. None	SCPD > None*	NS	NS	NS
b. High SCPD vs None	NS	NS	NS	NS
2. Females				
a. SCPD vs. None	NS	NS	NS	NS
b. High SCPD vs. None	NS	NS	NS	NS
E. Substance Abuse vs. None				
1. Males	NT	SubAbuse > None***	SubAbuse > None***	SubAbuse > None***
2. Females	NT	SubAbuse > None***	SubAbuse > None***	SubAbuse > None***

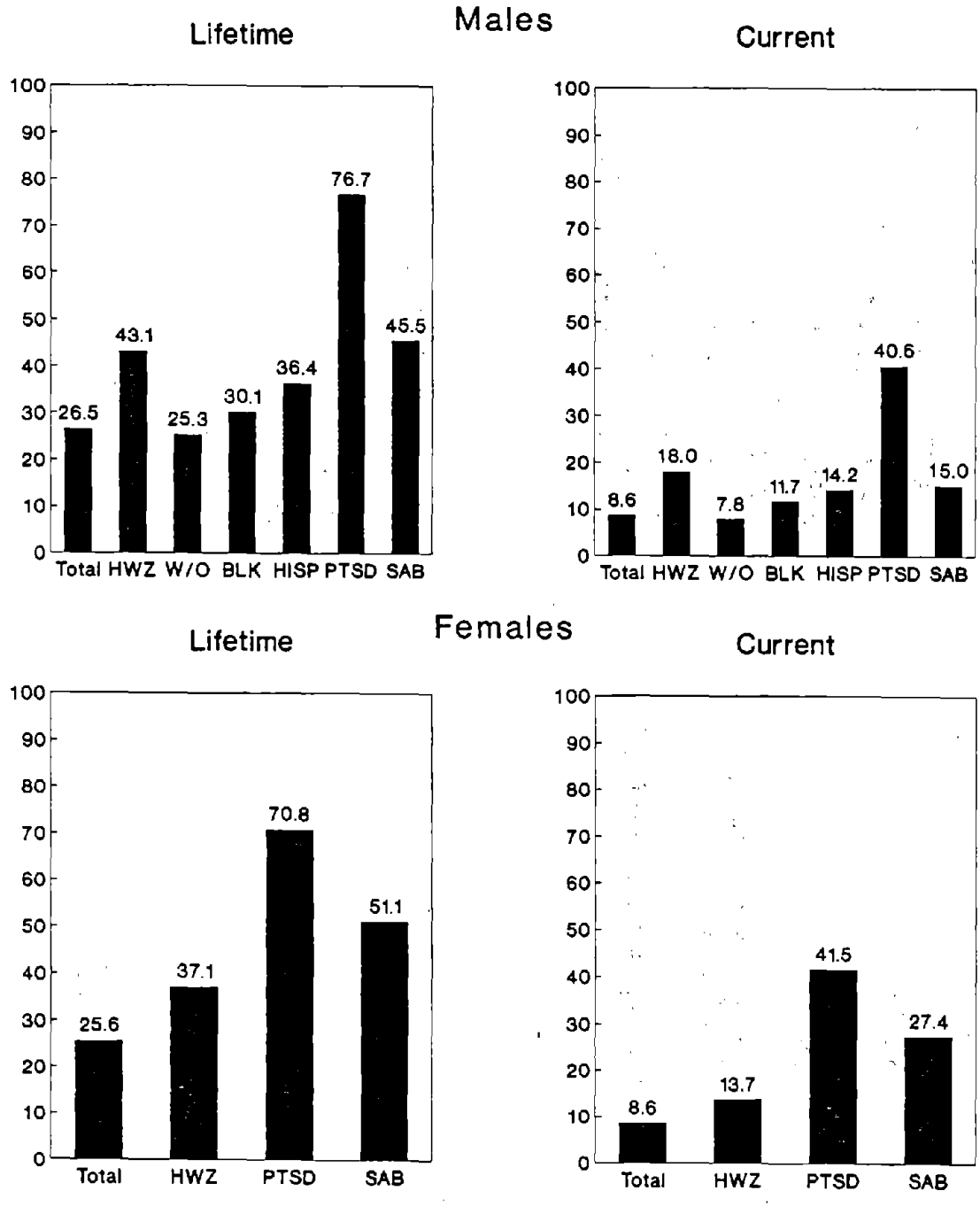
NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

Exhibit VI-15
Proportion of Theater Veterans With Any DIS/DSM-III Disorder



*By definition, those with a substance abuse disorder have a lifetime DIS/DSM-III disorder.

Exhibit VI-16
Proportion of Theater Veterans with Any DIS/DSM-III Disorder Excluding Alcohol Disorders



for much of this "any disorder" category among males, as can be seen by an examination of the prevalence rates for the "any NSVG/DIS disorder" measures in Exhibits VI-7 and VI-8. When the alcohol disorders are excluded from the "total disorders" variable, rates for males decrease from 49.1 percent to 26.5 percent, lifetime, and from 17.1 percent to 8.6 percent, current. A similar effect is evident for females, although of a somewhat smaller magnitude. When the alcohol disorders are excluded from the "total disorder" rates for women, rates decrease from 30.4 percent to 25.6 percent, lifetime, and from 10.1 percent to 8.6 percent, current.

Differences between male Vietnam theater and era veterans for any NSVG/DIS disorder were not significant for either lifetime or current disorder, although the male theater veterans did report significantly higher rates of lifetime disorder than their civilian counterparts. If one excludes the alcohol disorders, the theater versus civilian contrasts were significant for both lifetime and current disorder, and the theater versus era veteran contrast was also marginal ($p=.051$) for any current NSVG/DIS disorder. In all cases, significant differences represented higher rates of disorder for male theater veterans than their counterparts. It appears that the relatively high level of alcohol consumption among all male study groups tends to obscure the differences for the other disorders.

Differences between male theater veterans and their era veteran counterparts by race/ethnicity reached statistical significance only among Hispanics, for whom all four contrasts (current/lifetime by with/without alcohol disorder) were significant. As shown in Exhibit VI-7, two-thirds of Hispanic theater veteran men had at least one lifetime disorder and over one-fourth had a current disorder, both significantly higher than the rates observed for Hispanic era veteran men. Although some of the differences observed were marginal, Hispanic theater veteran men did not have significantly higher rates of disorder than their civilian counterparts. In contrast, white/other theater veterans had significantly higher rates of lifetime disorder than their civilian counterparts, either including or excluding alcohol disorders, and, when alcohol disorders were excluded, black theater veteran men reported higher rates of both lifetime and current disorder than black civilian men.

Among women, Vietnam theater versus era veteran contrasts for "any current NSVG/DIS disorder" and "any current NSVG/DIS disorder excluding alcohol abuse or dependence" were both statistically significant, although contrasts for lifetime rates were not. In both cases, female Vietnam theater veterans had higher rates of disorder than female era veterans. Although current prevalence rates for the civilian women and era veteran women were of a similar magnitude, contrasts with civilians did not quite reach significance for either "any current NSVG/DIS disorder" or for "any current NSVG/DIS disorder excluding alcohol abuse or dependence." The lifetime contrasts were also not significant.

If one contrasts men who were exposed to high levels of war zone stress with their era veteran and civilian counterparts, all of these differences are statistically significant. In fact, in moving from "total theater males" to "total high war zone males," the rates for any NSVG/DIS disorder jump from 49.1 to 63.3 percent, lifetime, and from 17.1 to 29.8 percent, current. Within specific racial/ethnic subgroups they may go even higher, for example, to 72 percent lifetime and 43 percent current for Hispanic men. Overall, however, the pattern of these differences is quite similar within all racial/ethnic subgroups, repeated exactly among white/others and Hispanics and with only two exceptions (lifetime rates in comparison to era veterans) among black men. For women, those exposed to high war zone stress also had significantly higher rates of both current and lifetime disorder (with or without alcohol disorders) than era veterans and significantly higher current rates than civilian women.

2. Contrasts Among Vietnam Theater Veterans on Race/Ethnicity and War Zone Stress

An examination of the effects of minority status on rates of disorder indicates that being an Hispanic male theater veteran significantly increases one's risk of disorder, while being black does not. Exhibit VI-7 shows that the rates for Hispanic theater veteran men are significantly higher than those of both white/other and black men. Prevalence rates for Hispanics for any NSVG/DIS disorder were 66.5 percent (lifetime) and 25.7 percent (current). For Hispanics who had experienced high levels of war zone stress, the rates of any NSVG/DIS disorder were 71.8 percent lifetime and 43.2 percent current.

Exposure to war zone stress in general greatly increased the risk for these NSVG/DIS disorders. Almost two-thirds of male theater veterans exposed to high levels of war zone stress were classified as having had one of these diagnoses at some point in their lives, and almost three in ten currently had at least one of these disorders. For women, exposure to high war zone stress had an equally important effect. Prevalence estimates for women exposed to high levels of war zone stress were 40.5 percent, for any lifetime NSVG/DIS disorder, and 15.5 percent for any current NSVG/DIS disorder. All of these contrasts between the high and low/moderate war zone stress exposure groups were statistically significant for both men and women. In fact, for both men and women, the current rate of "any NSVG/DIS disorder" among those exposed to high war stress was more than twice as high as that for theater veterans exposed to low/moderate levels of war zone stress.

3. Co-occurrence With PTSD and Substance Abuse Among Theater Veterans

Having PTSD also dramatically increases the probability of having another NSVG/DIS disorder. Virtually all male theater veterans with PTSD have met the criteria for another psychiatric disorder at some time in their lives, and half have another disorder currently. Among women, three-fourths of those with PTSD have had another disorder at some time in their lives, and four in ten have another disorder currently. All of these differences between those with and without PTSD were highly significant.

By definition, anyone with a substance abuse disorder has had a lifetime NSVG/DIS disorder. Therefore, all of those with a substance abuse disorder were so classified. However, those with a substance abuse disorder, lifetime, were also more likely than those without to have a current disorder, regardless of whether alcohol disorders are included in the "any NSVG/DIS current disorder" category.

G. Summary and Discussion

In examining patterns of nonspecific distress (demoralization), we found that the major elevations in rates of nonspecific distress were among those exposed to high levels of war zone stress, those with PTSD, those with a lifetime substance abuse disorder, and, for men, those with a high

level of service-connected physical disability. Theater veteran men who were members of a minority group (black or Hispanic) also had higher rates of distress than white/others. However, those with PTSD had the highest rates of demoralization, among both men and women.

For the nine specific psychiatric disorders (other than PTSD) assessed in the NSVG, those that occurred most frequently among male Vietnam theater veterans were alcohol abuse or dependence, generalized anxiety disorder (GAD) and antisocial personality disorder (ASP). The lifetime prevalence rates for all three of these disorders was greater than 10 percent, and the rate for alcohol abuse and dependence was 39 percent. Yet none of these rates was significantly different from the rates observed for male Vietnam era veterans, even though the theater veteran rates for ASP and alcohol abuse or dependence were higher than those for male civilians. The most prevalent current disorders among male theater veterans were alcohol abuse or dependence and GAD, both of which were at rates of above five percent. However, for neither disorder were the rates for Vietnam theater veteran males higher than those for era veteran males or male civilians. Recent symptoms of antisocial personality disorder are present in only two percent of male theater veterans.

Among women Vietnam theater veterans, the most frequently occurring lifetime disorders, were GAD, depression, and alcohol abuse or dependence. The lifetime prevalence for all three of these disorders was greater than nine percent, and the rate for GAD was almost 17 percent. The lifetime rates for both depression and alcohol abuse or dependence were significantly higher for women theater veterans than for women era veterans or civilians. This was not true for GAD. The most prevalent current disorders among female theater veterans were depression and GAD, both of which were at rates of just over four percent. These rates were significantly higher than those for era veteran women or civilians for depression but not for GAD.

Overall, the rates for the various psychiatric disorders among Vietnam era veterans, civilians, and low war zone stress theater veterans were within the range for the ECA community samples. Important exceptions were drug abuse or dependence and, for women, obsessive compulsive disorder. NSVG civilians appeared to have lower rates of these disorders than found

in the ECA samples. Also, like theater veterans, era veterans had high rates of ASP and alcohol abuse or dependence compared to the ECA community residents.

Both men and women Vietnam theater veterans had higher levels of current depression than either civilians or Vietnam era veterans. When the era veteran and civilian groups were standardized to theater veterans on age and race for men, and age and occupation for women, there was no disorder for which the rates of era veterans and civilians were higher than those of theater veterans. In contrast, there were several disorders for which rates for theater veterans, overall, were higher than for era veterans or civilians. Besides current depression, the disorders for which theater veterans had higher rates differ by gender and comparison group (that is, era veterans or civilians). Based on these results, it appears that being classified as a "Vietnam theater veteran" did not greatly increase the risk for the NSVG/DIS disorders, as compared to being classified as having served elsewhere in the military during the Vietnam era. However, the number of psychiatric disorders for which theater veterans had elevated rates as compared to civilian rates, indicated that serving in the military during that time period was in and of itself a risk factor for some disorders.

In contrast to the few differences found between theater veterans overall and their Vietnam era veteran counterparts, an examination of the data for those most commonly thought of as "Vietnam veterans", that is, those exposed to high war zone stress, produced much more dramatic findings. Male theater veterans who experienced high war zone stress had higher rates of almost all other psychiatric disorders than Vietnam era veterans and civilians. The rates of virtually all of the same disorders were elevated for theater veteran males exposed to high war zone stress, in comparison with the rates in low/moderate war zone stress theater males, further validating the finding of elevated rates for these disorders among theater males exposed to high levels of war zone stress.

Among female Vietnam theater veterans, fewer disorders were associated with war zone stress exposure, although the prevalence rates for some disorders in the high war stress group appeared to be quite high. Of women exposed to high levels of war zone stress, 22 percent had a major depressive episode at some time in their lives, 21 percent had lifetime

GAD, and 10 percent had dysthymia. The rates for lifetime depression and dysthymia were significantly higher than the rates for era veterans, civilians, and theater veteran women exposed to low/moderate levels of war zone stress. Major depressive episode was the one current disorder with significantly higher rates among women exposed to high war zone stress than for all other groups: era veterans, civilians, and low/moderate war zone stress females.

Having a service connected physical disability (SCPD) appeared to have very little effect on the prevalence rates of psychiatric disorder: males with a high level of SCPD had higher rates only for lifetime generalized anxiety, and females with a SCPD did not have higher rates for any disorder. Being black also had little effect on rates of disorder, although blacks did tend to have significantly elevated rates of current ASP. Being Hispanic had a somewhat greater impact. Hispanic men had rates of these various disorders, combined, that were 10 to 15 percent higher than rates for blacks or white/others, regardless of whether the analysis included alcohol disorders. However, Hispanic theater veterans tended to be particularly troubled by problems with alcohol and drugs.

A very high degree of co-occurrence between PTSD, substance abuse, and these other disorders was perhaps the major finding for these specific psychiatric disorders. Male theater veterans with PTSD had significantly higher rates of all disorders except for manic episode, which was not tested. Female theater veterans with PTSD had significantly higher rates of most of the other disorders as well. Differences between those with and without PTSD were statistically significant; they were also quite dramatic. Three-fourths of the men with PTSD had a lifetime diagnosis of alcohol abuse or dependence, 44 percent had lifetime diagnosis of GAD, and more than 20 percent had a lifetime diagnoses of depression, dysthymia, or ASP. Currently, prevalence rates of other NSVG/DIS disorders among males with PTSD are 20 percent with a current alcohol disorder, 20 percent with current GAD, and 16 percent with current depression. Women with PTSD had a 42 percent rate of lifetime depression, and a 23 percent rate of current depression. Of these women, 38 percent had lifetime GAD and 20 percent had current GAD. Other disorders for which women with PTSD had lifetime rates of greater than 20 percent were: dysthymia (33 percent), panic disorder

(21 percent), and alcohol disorders (29 percent). Other disorders with current rates of 10 percent or higher in this group were panic disorder (13 percent), and alcohol disorders (10 percent).

This degree of co-occurrence may raise issues about the uniqueness of the PTSD diagnosis. However, the disorders that have the highest degree of co-morbidity (for example, alcohol abuse or dependence, depression, dysthymia, and generalized anxiety) are those that have considerable symptom overlap with PTSD and are likely to co-occur with the disorder. In addition, substance abuse in the NSVG had a high degree of co-morbidity with other disorders. Previous studies have found that having almost any psychiatric disorder increases the risk for having another disorder.

Another important finding was that veterans with PTSD were more likely than those without PTSD to have a lifetime diagnosis of antisocial personality disorder (ASP). High rates of ASP among those with PTSD was probably, at least in part, due to a selection bias, since those with ASP were more likely to have experienced high war zone stress as well. It may also reflect a vulnerability to PTSD among those with ASP.

Those with a lifetime substance abuse disorder also tended to have high rates for other disorders. Males with a history of substance abuse had higher rates for most other disorders than males without such a history, and women with substance abuse also had higher rates for several disorders, although differences for a number of other disorders were not tested because of zero rates for the "no substance abuse" group.

We also compared NSVG findings with prevalence rates of these DIS disorders reported in the CDC's Vietnam Experience Study. As described in Appendix G, some major differences existed between the NSVG and VES in prevalence rates for the various psychiatric disorders. For most of the psychiatric disorders under discussion, lifetime prevalence rates in the VES were much higher than those for the NSVG samples or for the ECA community samples. Among both VES theater and era veterans, lifetime rates of depression, manic episode, generalized anxiety disorder, drug abuse or dependence, and antisocial personality disorder were much higher than in either the ECA community or NSVG veteran samples. For VES theater veterans, lifetime panic disorder and dysthymia also appeared to be higher than in the other samples. Except for depression, current rates for the

disorders under discussion tended to be more similar than lifetime rates for the NSVG and the VES. In fact, reports of current drug abuse or dependence were even lower in the VES than in the NSVG.

The reasons for these elevations in lifetime rates in the VES are not clear. Since the prevalence rates in the VES sample appear closer to the NSVG high war zone stress exposure group than they do the NSVG total theater veteran group, it might be hypothesized that sample differences between the VES and NSVG might account for these results. However, when an NSVG subsample of theater veterans was created which matched the characteristics of VES theater veterans, it was found that the rates for this subsample were not similar to those for the VES, although lifetime rates for antisocial personality disorder and drug abuse or dependence did increase. Our only other hypothesis is that the rate differences may result from modifications made to the DIS during the development of the VES instrument.

VII. THE PREVALENCE OF OTHER POSTWAR READJUSTMENT PROBLEMS

Although the primary focus of the Readjustment Study was to establish the prevalence of post-traumatic stress disorder and its correlates among Vietnam veterans, a parallel focus on "other psychological problems in readjusting to civilian life" has also been of considerable importance to this study since its inception. The range of such "other" problems that might be examined is extremely broad, and several have already been examined in the preceding chapter, namely other forms of psychiatric disorder as defined in DSM-III, as well as more general, non-specific forms of psychological distress.

In addition to these categories of "post-war psychological problems," the study's basic objectives specified an examination of "malfunctions in marital, familial, vocational, and educational roles and careers," as well as more general "feelings of life satisfaction, dissatisfaction and feelings about quality of life." To round out this general picture of the relative post-war adjustment of Vietnam veterans, several other indicators of problem behaviors or circumstances often speculated to be especially common among Vietnam veterans were also selected from among the multitude of other possible measures under the rubric of "post-war psychological problems." These included measures of social isolation, homelessness or vagrancy, hostility and violent behavior, and involvement with the criminal justice system.

A. Readjustment Problems in General: The Readjustment Indices

1. Measures

In order to ultimately facilitate comparing of NVVRS findings with those of previous research, the NSVG survey interview included twelve items on various "problems of returning to civilian life" originally used in the Myths and Realities study of veterans of the Vietnam era conducted by Louis Harris and Associates in 1980 (Fisher, Boyle, Bucuvalas, & Schulman, 1980) and later (in a slightly different form) in the CBS News-New York Times Poll of Vietnam veterans conducted on the tenth anniversary

of the end of the Vietnam war. These items asked whether the veteran had problems with finding and holding jobs, not having enough money to live on, using drugs or drinking too much, maintaining mental and physical health, finding meaning in life, being in trouble with the law, finishing school, being discriminated against because of being in the military, and having a relationship with family. All items were coded into four-level ordinal variables in ascending order according to current "seriousness:"

(1) never had the problem

(2) had problem only in the past and it was not serious

(3) had a serious problem in the past but not currently

(4) currently has a serious problem in this area

Consistent with the previous studies from which these items were derived, whether or not each problem was regarded as "serious" was left to the discretion of the responding veteran.

Index of readjustment problems. To derive an overall picture of the level of readjustment problems experienced by veterans in the NVVRS, three separate measures were developed from these items. The first, designated the "Index of Readjustment Problems," was based on a principal-components analysis of these items, and was conducted separately for males and females. For men, all twelve items and was loaded on a single general factor, suggesting that, in combination, they tapped a general dimension of "readjustment problems" and could be combined into a single measure. For women, this was not the case for three of the items: problems with drugs, with the law, and with discrimination based on military service (primarily due to low occurrence). The Index was thus created as the mean of all twelve items for men and (the remaining) nine items for women. Respondents with high scores on this index (that is 1.5+) endorsed more readjustment problems and/or more current or serious readjustment problems than those with low scores (1.0, indicating never having had any readjustment problems).

Number of serious readjustment problems. Two other indices focused specifically on reports of serious post-military readjustment problems (as defined by the veteran)--past or present. The first index represented a count of the number of such problems ever experienced after leaving the military and regarded by the veteran as serious, that is, the number of problems coded (3) or (4), as described above. The second was an index of current problems and was represented by a count of the number of serious readjustment problems still being experienced, that is, the number of problems coded (4), as described above.

The results of comparisons between Vietnam theater veterans and era veterans on these three indices, as well as comparisons among various subgroups of Vietnam theater veterans, are presented in Tables VII-1 through VII-3 of Volume II, respectively.

2. Contrasts Among Vietnam Theater and Era Veteran

Before examining contrasts among groups, we must mention the overall prevalence of readjustment problems among Vietnam theater veterans. A substantial minority of both men and women serving in the Vietnam theater reported having at least one serious postwar readjustment problem, 44.5 and 37.1 percent, respectively. Moreover, approximately 60 percent of these veterans reported that they have continued to experience at least one such problem, 26.0 and 23.6 percent, respectively. Overall, then, approximately one in four Vietnam theater veterans currently has at least one serious postwar readjustment problem.

A summary of all comparisons among Vietnam theater veterans and the comparison sample of era veterans is presented in Exhibit VII-1 for all three measures of readjustment problems. The results of comparing of these theater veterans with era veterans for all three measures are on the whole quite consistent. For males, no significant differences between Vietnam theater and era veterans existed on any of these measures. However, for each measure, those who actually fought the war--theater veterans exposed to high levels of war zone stress--were substantially more likely than era veterans to have experienced readjustment problems. Theater veterans exposed to high war zone stress were almost twice as

Exhibit VII-1

Summary of Contrasts Among Major Study Groups for Readjustment Problems

Contrasts Among Major Study Groups	Index of Readjustment Problems	No. of Serious Readj. Problems Postmilitary	No. of Current Serious Readjustment Problems
A. Males--Total			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	HWZ > Era***	HWZ > Era***	HWZ > Era***
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	--	--	--
5. HWZ vs. Civ	--	--	--
B. Males--White/Other			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	HWZ > Era***	HWZ > Era***	HWZ > Era***
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	--	--	--
5. HWZ vs. Civ	--	--	--
C. Males--Black			
1. Thr vs. Era	NS	NS	Thr < Era*
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	LWZ < Era*	LWZ < Era*	LWZ < Era*
4. Thr vs. Civ	--	--	--
5. HWZ vs. Civ	--	--	--
D. Males--Hispanic			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	HWZ > Era**	HWZ > Era**	HWZ > Era**
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	--	--	--
5. HWZ vs. Civ	--	--	--
E. Females--Total			
1. Thr vs. Era	Thr > Era*	Thr > Era*	Thr > Era***
2. HWZ vs. Era	HWZ > Era***	HWZ > Era***	HWZ > Era***
3. LWZ vs. Era	LWZ < Era**	NS	NS
4. Thr vs. Civ	--	--	--
5. HWZ vs. Civ	--	--	--

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p <.05; **p <.01; ***p <.001; NS = Not statistically significant.

KEY: Thr = Vietnam theater veterans.
Era = Vietnam era veterans
Civ = Civilian counterparts
HWZ = Theater veterans exposed to high levels of war zone stress
LWZ = Theater veterans exposed to low-to-moderate levels of war zone stress.

likely as comparable era veterans to score at the highest level on the Index of Readjustment Problems (42.3 vs. 21.8 percent) and to report four or more serious readjustment problems since leaving the military (23.6 vs. 11.2 percent). Moreover, over four in ten (42.1 percent) theater veterans exposed to high war zone stress reported having at least one current serious readjustment problem, and almost one-third of these reported four or more (13.6 percent). By comparison, only one in four era veterans reported currently experiencing any serious readjustment problems, and only 5.3 percent reported four or more. None of the comparisons between era veterans and theater veterans exposed to low or moderate levels of war zone stress was statistically significant.

A further examination of these comparisons by race/ethnicity indicates that the pattern observed for all males is repeated exactly among both Hispanic and white/other males. In each group, theater veterans in general and those exposed to moderate or low levels of war stress did not differ significantly from era veterans, while theater veterans exposed to high levels of war stress reported substantially more readjustment problems. By contrast, this heretofore consistent pattern is essentially reversed for black theater veterans, among whom differences between veterans exposed to high war zone stress and era veterans were not statistically significant. The predominant relationship consistently observed for this group was a significantly lower level of readjustment problems reported by black theater veterans exposed to lower levels of war zone stress by comparison to black era veterans. In fact, for the number of current serious problems, black theater veterans in general reported fewer readjustment problems than comparable era veterans. These figures appear to result from a high level of readjustment problems among black era veterans. On all three indices the means for black era veterans were higher than those for the total high war zone stress exposure group.

Women veterans, not only those exposed to high war zone stress, but also those serving in the Vietnam theater in general, reported significantly higher levels of readjustment problems than their era veteran counterparts on all three measures. Moreover, consistent with the result observed among black males, those exposed to low or moderate levels of war stress scored significantly lower than comparable era veterans on

the Index of Readjustment Problems. Female theater veterans exposed to high war zone stress were almost three times more likely than comparable era veterans to score at the highest level on the Index of Readjustment Problems (28.6 vs. 9.9 percent) and even more so to report four or more serious readjustment problems since leaving the military (12.0 vs. 3.4 percent).

Almost one-third of women veterans exposed to high war stress reported experiencing at least one readjustment problem that remains a serious problem today, and almost one-third of these (10.6 percent) reported four or more such problems. By comparison, only four percent of era veterans reported currently experiencing any serious readjustment problems, and virtually none (0.3 percent) reported four or more.

3. Contrasts Among Vietnam Theater Veterans

A summary of contrasts between various subgroups of Vietnam theater veterans on these readjustment problem indices is presented in Exhibit VII-2. Regardless of which of the three indices is examined, the pattern of relationships observed is virtually identical. Among male theater veterans, white/other males reported significantly lower levels of readjustment problems than either blacks or Hispanics, while the latter two did not differ significantly from each other. For example, the proportions reporting at least one serious current readjustment problem were 22.8, 43.2 and 38.8 percent among white/other males, blacks, and Hispanics, respectively, and 5.1, 11.0, and 8.3 percent (respectively) reported experiencing four or more serious problems at the time of interview. Thus, although black theater veterans reported significantly fewer current readjustment problems than black male era veterans, the former still reported significantly more current readjustment problems than white/other male theater veterans.

Among both male and female veterans serving in the Vietnam theater, those exposed to high levels of war zone stress reported significantly higher levels of readjustment problems than those experiencing lower levels of exposure. Those suffering from post-traumatic stress disorder also reported significantly more readjustment problems than those who are

Exhibit VII-2

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for Readjustment Problems

Contrasts Among Theater Veteran Subgroups	Index of Readjustment Problems	No. of Serious Readj. Problems Postmilitary	No. of Current Serious Readjustment Problems
A. Race/Ethnicity			
1. W/O vs. Blk	W/O < Blk***	W/O < Blk***	W/O < Blk***
2. W/O vs. Hisp	W/O < Hisp***	W/O < Hisp**	W/O < Hisp***
3. Blk vs. Hisp	NS	NS	NS
B. High vs. Low War Stress			
1. Males	HWZ > LWZ***	HWZ > LWZ***	HWZ > LWZ***
2. Females	HWZ > LWZ***	HWZ > LWZ***	HWZ > LWZ***
C. PTSD vs. No PTSD			
1. Males	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***
2. Females	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***
D. Service-Connected Physical Disability			
1. Males:			
a. SCPD vs. None	SCPD > None**	SCPD > None***	SCPD > None***
b. High SCPD vs. None	High > None***	High > None***	High > None***
2. Females:			
a. SCPD vs. None	SCPD > None*	NS	SCPD > None**
b. High SCPD vs. None	High > None*	NS	High > None**
E. Substance Abuse vs. None			
1. Males	Sub Abuse > None***	Sub Abuse > None***	Sub Abuse > None***
2. Females	Sub Abuse > None***	Sub Abuse > None***	Sub Abuse > None***

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal).
2) *p<.05; **p<.01; ***p<.001; NS = Not statistically significant.

not. Among men, those experiencing high war zone stress were twice as likely to report at least one current readjustment problem as those exposed to low or moderate levels (42.1 vs. 20.7 percent), and almost four times more likely to report four or more serious readjustment problems at the time of interview (13.6 vs. 3.5 percent). Although the absolute levels are somewhat lower for women, the ratios are essentially the same--two-to-one (32.1 vs. 18.0 percent) and four-to-one (4.1 vs. 1.3 percent), respectively. The contrasts between those meeting the criteria for PTSD and those who do not are even more striking, with men having PTSD being close to four times more likely (68.7 vs. 17.9 percent) to report at least one serious problem and 10 times more likely (22.1 vs. 2.9 percent) to report four or more such problems. Comparable proportions for women were 66.7 versus 18.6 and 12.8 versus 1.3 percent for at least one and four or more current serious problems, respectively.

Also observed among both male and female theater veterans were consistent relationships between readjustment problems and both lifetime substance abuse and service connected disabilities. Those having service connected disabilities for physical problems were significantly more likely than those without such disability to report readjustment problems, and these differences were even stronger when those with higher percentages of disability were compared to those with none. The only nonsignificant contrasts in these comparisons were those for the number of serious readjustment problems ever experienced by women after leaving the military. Similarly, those who had ever met the criteria for alcohol or drug dependence or abuse reported higher levels of readjustment problems than those who had no such history. Since physical health problems and problems with alcohol and drugs are embedded in the list of readjustment problems, at least a modest relationship with each of these variables would be expected.

4. Summary: The Readjustment Problems Indices

A substantial minority of both men and women who served in the Vietnam theater of operations have experienced at least one serious readjustment problem after returning to civilian life and a majority of

these continue to experience at least one such problem. While among men, theater veterans in general do not differ significantly from era veterans not serving in Vietnam in their reported levels of readjustment problems, those who most literally fought the war--theater veterans exposed to high levels of war zone stress--were significantly more likely than era veterans to report such problems. Analyses by race and ethnicity revealed that this pattern was evident among both white/other and Hispanic males. While these significant differences were not observed among blacks, black theater veterans with high war zone stress had levels of readjustment problems comparable to Hispanics; but levels of readjustment problems reported by black era veterans were so high as to wipe out such differences among blacks. In fact, comparisons between male theater veterans by race/ethnicity indicate that both black and Hispanic men serving in Vietnam reported significantly more readjustment problems than white/other males. Among women, those serving in Vietnam--and especially those exposed to higher levels of war zone stress--report significantly higher levels of readjustment problems than Vietnam era veterans serving elsewhere. Some evidence exists that those veterans experiencing lower levels of war stress have experienced fewer such problems than era veterans. Among both men and women serving in Vietnam, the prevalence of readjustment problems was strongly and positively related to high war zone stress, PTSD, a history of substance abuse, and a service connected physical disability.

B. Education and Occupation

1. Measures

Although a thorough examination of "malfunctions in vocational and educational roles and careers" among Vietnam veterans would constitute a major study in its own right, this study examined six general indicators

to describe the experiences of Vietnam theater veterans in these areas and to compare these experiences with those of Vietnam era veterans and civilians. These indicators were:

(1) a measure indicating current (at time of interview) level of educational attainment

(2) a measure indicating changes in educational attainment from that achieved at entry into the military to the present time

(3) a measure of current employment status

(4) a measure of current occupational status controlled for current educational attainment

(5) a parallel measure of current occupational status controlled for premilitary educational attainment

(6) a composite measure of occupational or career instability.

Both the educational attainment measures and the employment status measure were derived from standard demographic items. Current educational attainment was assessed as the highest level achieved at the time of interview. The extent to which current level of educational attainment represented a change (increase) in educational level from that at entry to military service was summarized in a variable coded as follows:

(a) some high school at (military) entry--no change

(b) some high school at entry--additional education (after entry or post-military)

(c) high school graduate at entry--no change

(d) high school graduate at entry--additional education

(e) some college at entry--no change

(f) some college at entry--additional education

(g) college graduate (or higher) at entry (no change possible).

The "other" category under employment status included going to school or training, keeping house, disabled and unable to work, or not working--institutionalized.

The occupational status measures were based on an index of socioeconomic status first developed by Duncan (1961) and calibrated to the 1980 Census occupational classificatory scheme by Stevens and Cho

(1985). This socioeconomic index (SEI) is based on "predicted" prestige scores for occupations obtained in the regression of prestige (people's evaluations of the relative merits of the occupation) on levels of income and education. Scores on the SEI have a theoretical range of 0 to 100. However, because differences between groups on the SEI may merely reflect differences in education or income, some type of "adjusted" measure was desired. Therefore, two "occupational status relative to education" variables were constructed, one based on current education and the other based on premilitary educational attainment.[1] Those high on these measures are working in jobs with an SEI rating significantly above what would be predicted from their current or premilitary levels of education, while those scoring very low are working at jobs whose status is substantially below what one might expect from their current or premilitary education. The "current" measure highlights potential inconsistencies between current education and occupation, while the "premilitary" measure indicates possible differences in post-military "occupational mobility" relative to education at service entry. The occupation for which the SEI is coded is either the current main job or the kind of work done for the majority of one's working life (nonmilitary). Because of the nature of the female sample--the majority of women in all groups were nurses--we could not derive these measures in a sensible way for women.

We derived rates of occupational instability from four different summary measures of each respondent's work history:

(1) number of different employers

(2) number of different kinds of jobs

(3) longest period held a job with the same employer

(4) number of periods of unemployment

1/ To obtain these measures, the SEI scores were regressed on educational attainment and the residuals of actual from predicted values retained and standardized. The resulting variables were then categorized according to the number of standard deviations above or below the mean a particular respondent fell.

These items were intercorrelated--separately for men and women--and subjected to a principal components analysis. Since all but item (3) loaded on single general factor for both men and women, item (3) was dropped and factor scores computed to create a measure reflecting low to high levels of occupational instability based on these components.

The results of comparisons between Vietnam theater veterans, era veterans, and the civilian counterparts on these six measures, as well as comparisons among various subgroups of Vietnam theater veterans, are presented in tables VII-4 through VII-7, respectively.

2. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Exhibit VII-3 presents a summary of all comparisons among Vietnam theater veterans and the comparison samples of era veterans and civilians. The results of these comparisons are considerably less consistent than those observed for the readjustment indices in general. Overall, significant differences between Vietnam theater veterans and Vietnam era veterans (with two minor exceptions) were found only on educational attainment, and these vary considerably in direction by sex and race/ethnicity. For example, while on the whole male theater veterans and those exposed to high levels of war zone stress were less educated than era veterans, among women this relationship was reversed. Even when their distributions are standardized by age and nursing status to theater veterans, era veteran women were significantly less educated than theater veteran women overall and those exposed to high war stress. Moreover, the finding that theater veteran males and those exposed to higher war stress tended to be less educated than era veterans was apparent only among white/other males. Differences between era and theater veterans among black men showed no clear trend, and the significant contrasts among Hispanic men suggest that theater veterans were somewhat <u>better</u> educated than era veterans.

Significant differences observed between theater veteran males as a whole and white/other males exposed to high war stress on changes in educational attainment (from that at military entry) reflect primarily

Exhibit VII-3

Summary of Contrasts Among Major Study Groups for Education and Occupation

Contrasts Among Major Study Groups	Current Educational Attainment	Current Educational Attainment Relative to Premilitary Education	Current Work Status
A. Males--Total			
1. Thr vs. Era	Thr < Era*	NS	NS
2. HWZ vs. Era	HWZ < Era*	HWZ < Era (Coll Grad--No Chg)*	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	Civ < > Thr***	--	Thr > Civ (Wrk)/Thr < Civ (Ret)***
5. HWZ vs. Civ	HWZ < Civ**/Civ < > HWZ***	--	HWZ < Civ (Retired)**
B. Males--White/Other			
1. Thr vs. Era	Thr < Era*	NS	NS
2. HWZ vs. Era	HWZ < Era**	HWZ > Era (Some HS+Addl)*	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	Thr < Civ*/Civ < > Thr***	--	Thr > Civ (Unemp)/Thr < Civ (Ret)***
5. HWZ vs. Civ	HWZ < Civ***	--	HWZ < Civ (Retired)**
C. Males--Black			
1. Thr vs. Era	NS	Thr > Era (HS Grad--No Chg)*	NS
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	LWZ > Era (HS Grad)*	LWZ > Era (HS Grad--No Chg)*	NS
4. Thr vs. Civ	Thr > Civ (HS Grad/S Coll)***	--	NS
5. HWZ vs. Civ	HWZ > Civ (HS Grad/S Coll)***	--	NS
D. Males--Hispanic			
1. Thr vs. Era	Thr > Era (Grad/Prof)*	NS	NS
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	LWZ > Era (Grade/Prof)*	NS	LWZ > Era (Working)*
4. Thr vs. Civ	Thr > Civ (Some Coll)***	--	NS
5. HWZ vs. Civ	HWZ > Civ (Some Coll)***	--	NS
E. Females--Total			
1. Thr vs. Era	Thr > Era*	Thr > Era (HS Grad + Addl)*	NS
2. HWZ vs. Era	HWZ > Era**	HWZ < Era (HS Grad--NC)*/HWZ > Era (HS Grad+)**	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	Thr > Civ***	--	NS
5. HWZ vs. Civ	HWZ > Civ***	--	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

Exhibit VII-3 (Continued)

Summary of Contrasts Among Major Study Groups for Education and Occupation

	Occupational Status Relative to Current Education	Occupational Status Relative to Premilitary Education	Occupational Instability Index
A. Males--Total			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	NS	--	Thr > Civ***
5. HWZ vs. Civ	NS	--	HWZ > Civ***
B. Males--White/Other			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	NS	--	Thr > Civ***
5. HWZ vs. Civ	NS	--	HWZ > Civ**
C. Males--Black			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	NS	--	NS
5. HWZ vs. Civ	NS	--	NS
D. Males--Hispanic			
1. Thr vs. Era	NS	NS	NS
2. HWZ vs. Era	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS
4. Thr vs. Civ	NS	--	Thr > Civ*
5. HWZ vs. Civ	NS	--	HWZ > Civ**
E. Females--Total			
1. Thr vs. Era	--	--	NS
2. HWZ vs. Era	--	--	NS
3. LWZ vs. Era	--	--	LWZ < Era***
4. Thr vs. Civ	--	--	NS
5. HWZ vs. Civ	--	--	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

differences in current educational attainment per se. However, similar differences observed among black men and among women appear to reflect real differences in "educational mobility" among groups. For example, that black theater veteran men (notably those exposed to low or moderate levels of war zone stress) were significantly more likely than black era veterans to have remained high school graduates reflects the fact that 70 percent of era veterans who were high school graduates when they entered the service subsequently obtained more education, compared to only 47 percent of the theater veterans. In contrast, theater veteran women (especially those exposed to high levels of war zone stress) who were high school graduates when they entered the service were significantly more likely than female era veterans to have received additional education (72.7 versus 43.9 percent for those exposed to high war stress and era veterans, respectively). Since the vast majority of the former were nurses, much of this additional education was likely obtained while these women were in the military.

Significant contrasts between Vietnam theater veterans and civilians abound, not only on education but also on employment status and occupational instability. Once again, however, these contrasts are not entirely consistent. For example, among males overall, theater veterans were marginally less educated than civilians, and those veterans exposed to high war stress were significantly less educated. However, this overall assessment masks considerable complexity, because civilians were both less and more educated than male theater veterans. While theater veterans were more likely to be high school graduates or to have attended some college, civilians were more likely both not to have graduated from high school and to be college graduates or higher. Once again, this overall pattern for theater males was predominantly characteristic of white/other men, while among both black and Hispanic men significant differences were primarily in the direction of higher levels of education among theater veterans in general, and those exposed to high war stress, than among their civilian counterparts. Among women, this education advantage in favor of theater veterans overall and those experiencing high war stress was even more substantial.

Significant differences between Vietnam theater veterans and civilians on current employment status do not appear to reflect any consistent or important trend. No such differences were found for women, and, among men, theater veterans were slightly more likely to be currently working, while civilians were somewhat more likely than theater and high war zone stress-exposed males to be retired, a not too exciting trend once again found only among white/other males. In contrast, male theater veterans and veterans exposed to high war stress tended to have a work history characterized by occupational instability more often than civilians. For example, theater veteran men experiencing high war stress were almost twice as likely as their civilian counterparts to score at the highest level on occupational instability (25.3 vs. 14.2 percent). Although no such differences were found among black men or among women, these distinctions were evident among both white/other and Hispanic men. Again, the lack of differences observed among blacks was in part because of the elevated rates of problems among black civilians.

Finally, none of the contrasts between Vietnam theater veterans and either era veterans or civilians on occupational status (adjusted for either current or premilitary education) achieved statistical significance. These data offered no support for the hypothesis that theater veterans are either less or more likely to achieve an occupational status commensurate with their education than are other Vietnam era veterans or civilians.

3. Contrasts Among Vietnam Theater Veterans

Exhibit VII-4 presents a summary of contrasts between various subgroups of Vietnam theater veterans on these same education and occupation variables. Among male theater veterans, significant differences by race/ethnicity were found on both education and employment status. On educational attainment, although black theater veterans were significantly less educated than Hispanics, no clearcut "high-low" difference was evident in contrasts between these two groups and white/other men. Blacks were somewhat less represented at the highest education levels than white/other men (a difference also reflected in the

Exhibit VII-4

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for Education and Occupation

Contrast Among Theater Veteran Subgroups	Current Educational Attainment	Current Educational Attainment Relative to Premilitary Education
A. Race/Ethnicity		
1. W/O vs. Blk	W/O > Blk (Coll Grad/Grad-Prof)*	W/O > Blk (Some Coll+/Coll Grad--NC)**
2. W/O vs. Hisp	W/O > Hisp (HSG)/W/O < Hisp (S Coll)**	W/O > Hisp (HS Grad--NC)/W/O < Hisp (HS Grad+)***
3. Blk vs. Hisp	Blk < Hisp*	Blk > Hisp (HS Grad--No Chg)**
B. High vs. Low War Stress		
1. Males	HWZ < LWZ*	HWZ > LWZ (Some HS+)/HWZ < LWZ (Coll Grad--NC)**
2. Females	HWZ > LWZ***	HWZ < LWZ (HS Grad--No Chg)**
C. PTSD vs. No PTSD		
1. Males	PTSD < No PTSD**	PTSD > No PTSD (Some HS/HS Grad+)/PTSD < No PTSD (Some Coll)*
2. Females	NS	PTSD < No PTSD (HS Grad--No Chg)*
D. Service-Connected Physical Disability		
1. Males:		
a. SCPD vs. None	NS	SCPD > None (Some HS+)/SCPD < None (Some Coll--NC)**
b. High SCPD vs. None	NS	High < None (Some Coll--No Chg)**
2. Females:		
a. SCPD vs. None	NS	NS
b. High SCPD vs. None	NS	NS
E. Substance Abuse vs. None		
1. Males	SAB > (LTHS/S Coll)/SAB < (HSG/GPS)***	SAB > None (Some HS/HS Grad+)/SAB < None (HSG--NC/Coll Grad--NC)***
2. Females	NS	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

Exhibit VII-4 (Continued)

Summary of Contrasts Among Vietnam Theater Veteran Subgroups for Education and Occupation

Theater Veteran Subgroups	Current Work Status	Occupational Status Relative to Current Education	Occupational Status Relative to Premilitary Education	Occupational Instability Index
A. Race/Ethnicity				
1. W/O vs. Blk	W/O > Blk (Wrk)/W/O < Blk (Unemp)*	NS	NS	NS
2. W/O vs. Hisp	NS	NS	NS	NS
3. Blk vs. Hisp	Blk < Hisp (Wrk)**/Blk > Hisp (Unemp)*	NS	NS	NS
B. High vs. Low War Stress				
1. Males	NS	NS	NS	NS
2. Females	HWZ > LWZ (Wrk)/HWZ < LWZ (Ret)*	--	--	HWZ > LWZ ***
C. PTSD vs. No PTSD				
1. Males	PTSD < No (Wrk)/PTSD > No (Unemp)***	NS	NS	PTSD > No PTSD***
2. Females	PTSD < No PTSD (Ret)**	--	--	PTSD > No PTSD*
D. Service-Connected Physical Disability				
1. Males:				
a. SCPD vs. None	SCPD < None (Wrk)/SCPD > None (Othr)**	NS	NS	SCPD < None*
b. High SCPD vs. None	High < None (Wrk)/High > None (Othr)***	NS	NS	NS
2. Females:				
a. SCPD vs. None	SCPD < None (Wrk)/SCPD > None (Ret)***	--	--	SCPD < None*
b. High SCPD vs. None	High < None (Wrk)/High > None (Ret)***	--	--	High < None*
E. Substance Abuse vs. None				
1. Males	SAB < None (Wrk)/SAB > None (Othr)*	NS	NS	Sub Abuse > None***
2. Females	NS	--	--	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

educational change variable), but, if anything, Hispanic male theater veterans were somewhat better educated than white/other theater veterans. In fact, the significant differences observed between Hispanic men and both black and white/other males on changes in education from premilitary levels reflect the fact that Hispanic male theater veterans who entered the service as high school graduates were substantially more likely to have gotten additional education than men in these other two subgroups with the same levels of premilitary education (75 percent for Hispanics versus 47 and 52 percent for white/others and blacks, respectively). Similarly, white/other and Hispanic males did not differ significantly on employment status, but both groups were more likely than blacks to be working, while the latter were more likely unemployed. No significant differences by race/ethnicity were found for either occupational status (adjusted for either current or premilitary education) or instability.

Significant differences <u>were</u> found, however, by levels of exposure to war zone stress and PTSD for all measures except the occupational status indicators. Among men the only significant contrasts by war zone stress indicated that those exposed to high stress were less educated than those exposed to lower levels (a finding consistent with common assumptions regarding selection biases with respect to who saw combat in Vietnam). The reverse was true for women (higher stress was associated with <u>more</u> education). In addition, those women exposed to high levels of war stress were more likely to be currently working, but they also had higher occupational instability than those exposed to lower levels of stress. Consistent with the difference observed between theater veteran women exposed to high war zone stress and female era veterans, theater veteran women exposed to high war stress who entered the service as high school graduates were significantly more likely to have obtained additional education than those exposed to lower levels of such stress.

Among both males and females, those with PTSD were more likely to report work histories characterized by instability than those without the disorder. Among males, those with PTSD had acquired less education and were more likely to be unemployed than those not suffering from the disorder. Males with PTSD were also more than twice as likely (42.2 vs. 19.1 percent) and females more than four times as likely (21.8 vs. 5.6

percent) as those without the disorder to report high levels of occupational instability. In addition, male theater veterans with PTSD were more than five times more likely to be unemployed (13.3 vs. 2.5 percent). However, almost 70 percent of theater veterans with PTSD were currently working. Interestingly, among both male and female theater veterans entering the military with a high school education or (for males) less, those with PTSD were significantly more likely to have continued their education than those without PTSD.

Not surprisingly, those with service connected disabilities were less likely than those with none to report being currently working, with the disabled men more likely to report the status which includes "disabled--not able to work" (other), and disabled women more likely retired. Also not surprisingly, those so disabled were less likely to report unstable work histories (that is, multiple employers, periods of unemployment). Among men entering the military with some high school or some college, those with service connected physical disabilities were also more likely to have sought additional schooling than those without such disabilities. In contrast, male theater veterans with a history of substance abuse were significantly more likely than those without such a history to report less stable work histories. This trend was also reflected in their being less likely to be working at the time of interview. Among those entering the military as high school graduates, men with a history of substance abuse were also more likely to have obtained additional education than those with no such histories.

4. Summary: Education and Occupation

None of the contrasts involving occupational status adjusted for education (either current or premilitary) were statistically significant. Significant differences between Vietnam theater and era veterans were found predominantly on current educational attainment, with the differences essentially reversed between male and female veterans. Among men, theater veterans in general and the subgroup exposed to high war stress were less educated than era veterans, whereas for women the opposite trend was observed. Moreover, the observed education difference

in favor of male era veterans was observed only among white/other males, while Hispanic theater veterans in particular were somewhat better educated. Among those entering the military as high school graduates, black male theater veterans were less likely than era veterans to have subsequently obtained additional education. The reverse was true among women entering the military as high school graduates. Significant differences between theater veterans and civilians also varied by sex and race/ethnicity. Hispanic and black theater veteran males and, especially, female theater veterans, were currently better educated than their civilian counterparts. But white/other males tended toward the middle of the educational distribution, with their civilian counterparts both better and less well educated. While significant differences between theater veterans and civilians on current employment status appeared to reflect no consistent trend, a work history characterized by instability was more common among theater veteran men (notably white/others and Hispanics) than among civilians.

Among theater veterans, blacks were significantly less educated at the time of interview than Hispanics, and somewhat less educated than white/others. In contrast, Hispanics serving in Vietnam were somewhat better educated than white/other males. In fact, Hispanic male theater veterans who entered the military as high school graduates were significantly more likely than black or white/other men entering as high school graduates to have continued their education. Both white/other and Hispanic males were more likely to be working than blacks. While men exposed to high levels of war zone stress were currently less educated than those exposed to lower levels, the opposite was true for women. Among those entering the service as high school graduates, theater veteran women exposed to high levels of war zone stress were significantly more likely than those exposed to lower levels to have continued their education, and, overall, those exposed to high war stress were currently better educated. Though better educated, women having experienced high war stress were also more likely to report higher levels of instability in their work histories. This group of women was also more likely to be working.

Among both men and women, those with PTSD reported significantly higher levels of occupational instability, and men with PTSD were both less educated and more likely to be unemployed (though seven in 10 were currently working). Among those entering the military with a high school education or less, men and women with PTSD were more likely than those without to have obtained more education. Among both men and women, service connected disability status was positively related to not working and negatively related to occupational instability. For men entering the military with some high school or some college, having a service connected disability was also positively related to educational mobility. For males, those with a history of substance abuse were less likely to be employed and had more unstable work histories. However, for those veterans entering the service as high school graduates, a history of substance abuse was also positively related to continuing their education.

C. Marital/Relationship and Family Roles

1. Measures

To assess potential "malfunctions in marital and familial roles," we included a number of different measures related to marital, relationship, and family roles and potential problems of adjustment within those roles in the NSVG interview. These included conventional measures of marital status and history, marital and relationship problems, parental role dissatisfaction or problems, and family adaptability and cohesion. From these, five separate indicators were derived. The first, a measure of current marital status, was based on a standard demographic item on which people reported themselves as married, separated, divorced, widowed, or never married, augmented by an item used to reclassify those not formally married--but living with someone as though married--into a separate category. A second, more direct measure of marital problems was a history of divorce, represented by the number of divorces reported among those who had ever been married.

The third indicator was a marital or relationship problems index derived for those currently married or living as married. Measures of

malfunctions in marital and relationship roles were drawn from several different sources, including a few from Veroff, Douvan, and Kulka (1981), and Campbell, Converse, and Rodgers (1976), as well as subsets of items from the Dyadic Adjustment Scale (Spanier, 1976) and the PERI Marital Dissatisfaction Scale (Dohrenwend, 1982). These included the following items:

- separations (not leading to divorce)
- marital or relationship happiness
- problems getting along
- feelings of inadequacy as a spouse/partner
- the amount of companionship
- the number of quarrels
- the amount of satisfaction felt during the past year with the marriage/relationship

To derive an overall index or composite measure, we ran intercorrelations among these items for all veterans and for males and females separately. We also conducted a principal components analysis. All but two items loaded on a single principal factor. These two items--separations and feelings of inadequacy as a spouse--were dropped, the remaining items recoded as necessary from 1 (low) to 5 (high), and a Marital Problems Index created by taking the mean of these 16 items (range 1-5).

A similar (fourth) index of parental problems was created from a set of items also adapted from Campbell et al. (1976) and Dohrenwend (1982). These items characterized:

- the extent to which respondents felt their children presented problems for them
- the extent to which they found being a parent enjoyable
- feelings of inadequacy as a parent
- their degree of satisfaction in getting along with their children
- their satisfaction as a parent with how their children were turning out

Intercorrelations among these five items were examined for all veterans, and for males and females separately. Based on this examination, the measure of feelings of inadequacy as a parent was dropped (due to low correlations with others), and the Parental Problems Index was derived by taking the mean of the other four items, ranging from 1 (low) to 5 (high).

Finally, to derive an overall measure of "family" as opposed to marital or relationship adjustment, the Family Adaptability and Cohesion Evaluation Scales (FACES II)--developed by Olson and his colleagues (Olson, Bell, & Portner, 1978; Olson et al., 1983) based on a "Circumplex Model"--were included in the interview to allow veterans to describe how they perceived their families. The Circumplex Model is based on two primary dimensions--adaptability and cohesion--each represented by a series of items in FACES II. The family adaptability index provides ratings of the extent to which the family system is flexible and able to change (in power structure, role relationships, and relationship rules) in response to situational or developmental stresses. The four levels of adaptability derivable from this index range from rigid (very low) to structured (low to moderate) to flexible (moderate to high), to chaotic (very high). The family cohesion index measures the degree to which family members are perceived to be separated or connected, addressing component issues including emotional bonding, shared use of time and space, and decision making. The four levels of cohesion range from disengaged (very low) to separated (low to moderate) to connected (moderate to high) to enmeshed (very high).

It is hypothesized that central levels on adaptability (structured and flexible) or cohesion (separated and connected) are most viable or conducive to family functioning, while extremes on either (rigid or chaotic; disengaged or enmeshed) are generally seen as problematic. From the sixteen distinct types of marital and family systems derivable from this model, three basic groups were identified:

(1) Balanced (based on the four groups having scores at the two central levels on both dimensions)

(2) Mid-Range (based on the eight groups extreme only on one dimension)

(3) Extreme (based on the four groups that are extreme on both dimensions)

In general, balanced family types tend to function more adequately than extreme types, and the Family Adjustment Index used in this report is based on these three levels (reflecting two forms of FACES II), one for couples with children and the other for couples without children. Because of restrictions in sample sizes, analyses of this measure were conducted separately for all couples and for couples with children only.

The results of comparisons among Vietnam theater veterans, era veterans, and civilians on these three indices, as well as comparisons among various subgroups of Vietnam theater veterans, are presented in Tables VII-10 through VII-15.

2. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Exhibit VII-5 presents a summary of all comparisons among Vietnam theater veterans and the comparison samples of era veterans and civilians on marital/relationship and family adjustment. Among males, contrasts between theater veterans and these comparison groups on marital status are relatively consistent, except for Hispanic men, for whom none of these contrasts are statistically significant. Though in absolute terms these differences are slight, both Vietnam theater veteran males in general and the subset exposed to high levels of war stress were significantly more likely to be living with someone as though married (though not formally married) than era veterans and civilians (approximately 11 vs. 3 percent for those exposed to high war stress). In one form or another these relationships were observed among both white/other and black men, elaborated in each case by some other significant contrasts. Men exposed to high war zone stress as a group were also significantly less likely to be married than civilian males. Black theater veteran men (including those at both high and low levels of war stress) were also less likely than era veterans to be never married, less likely than civilians to be widowed, and more likely than civilians to be divorced. Among women, theater veterans and their high war zone stress subgroup were both less likely currently--and more likely never--married than female era veterans.

Exhibit VII-5

Summary of Contrasts Among Major Study Groups for Marital/Relationship and Family Roles

Contrasts Among Major Study Groups	Current Marital Status	Number of Times Divorced	Marital/ Relationship Problems Index	Parental Problems Index	Family Adjustment (All Couples)	Family Adjusmtment (Couples W/Children)
A. Males--Total						
1. Thr vs. Era	Thr > Era (LivasMrd)*	NS	NS	NS	NS	Thr < Era*
2. HWZ vs. Era	HWZ > Era (LivasMrd)**	HWZ > Era*	NS	HWZ > Era*	NS	HWZ < Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	Thr > Civ (LivasMrd)*	Thr > Civ*	Thr > Civ**	Thr > Civ**	NS	NS
5. HWZ vs. Civ	HWZ < (Mar)/HWZ > (LAM)*	HWZ > Civ***	HWZ > Civ***	HWZ > Civ***	NS	NS
B. Males--White/Other						
1. Thr vs. Era	NS	NS	NS	NS	NS	NS
2. HWZ vs. Era	HWZ > Era (LivasMrd)*	HWZ > Era*	NS	HWZ > Era*	NS	HWZ < > Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	Thr > Civ (LivasMrd)*	NS	Thr > Civ*	Thr > Civ*	NS	NS
5. HWZ vs. Civ	HWZ > Civ (LivasMrd)**	HWZ > Civ**	HWZ > Civ**	HWZ > Civ***	NS	NS
C. Males--Black						
1. Thr vs. Era	Thr > (LAM)**/Thr < (Nvr)*	NS	NS	NS	NS	NS
2. HWZ vs. Era	HWZ > (LAM)**/HWZ < (Nvr)*	NS	NS	NS	NS	NS
3. LWZ vs. Era	LWZ > (LAM)*/LWZ < (Nvr)*	NS	NS	NS	NS	NS
4. Thr vs. Civ	Thr > (LAM/Div)/Thr < (Wdw)**	NS	NS	NS	NS	NS
5. HWZ vs. Civ	HWZ > Civ (LivasMrd)**	HWZ > Civ*	NS	NS	NS	NS
D. Males--Hispanic						
1. Thr vs. Era	NS	NS	Thr > Era*	Thr > Era**	NS	NS
2. HWZ vs. Era	NS	NS	HWZ > Era*	HWZ > Era***	NS	NS
3. LWZ vs. Era	NS	NS	NS	LWZ > Era*	NS	NS
4. Thr vs. Civ	NS	NS	Thr > Civ*	NS	Thr > Civ**	Thr > Civ*
5. HWZ vs. Civ	NS	NS	HWZ > Civ*	NS	HWZ > Civ*	NS
E. Females--Total						
1. Thr vs. Era	Thr < (Mar)/Thr > (Nvr)***	NS	Thr > Era*	NS	NS	NS
2. HWZ vs. Era	HWZ < (Mar)/HWZ > (Nvr)***	NS	HWZ > Era*	NS	HWZ < Era*	HWZ < Era*
3. LWZ vs. Era	LWZ < Era (Divorced)*	LWZ < Era***	NS	NS	NS	NS
4. Thr vs. Civ	Thr < (Mar/Wdw)/Thr > (LAM/Nvr)***	Thr > Civ*	NS	NS	NS	NS
5. HWZ vs. Civ	HWZ < (Mar/Wdw)/Thr > (LAM/Nvr)***	HWZ > Civ**	HWZ > Civ*	NS	NS	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

In comparison to civilian women, theater veterans and their high war zone stress subgroup were less likely married and widowed and more likely never married or living with someone as though married.

With regard to the more direct indicators of marital/relationship and family adjustment, among men, theater veterans exposed to high levels of war stress were significantly more likely than era veterans to have been divorced. If these same veterans had children, they reported having more problems in parenting and poorer family adjustment (the latter contrast also being significant for theater veterans in general). Similarly, both male theater veterans as a whole and those among them exposed to high levels of war stress were more likely divorced and reported higher levels of both marital and parental problems than civilian males. In each case, these relationships were primarily characteristic of white/other males. While black theater veteran males exposed to high war stress were more likely to have been divorced than their civilian counterparts (49.1 vs. 31.0 percent), none of the other contrasts for this subgroup achieved statistical significance. Among Hispanic men, theater veterans reported significantly higher levels of marital and parental problems than era veterans, as well as greater marital and family adjustment problems than Hispanic male civilians. Among women, theater veterans exposed to high levels of war stress were significantly more likely than era veterans to report marital or relationship problems and exhibited more problematic levels of family adaptability and cohesion. In contrast, those women experiencing lower levels of war zone stress were substantially less likely than era veterans to have been divorced. Women with high war zone stress exposure were also significantly more likely than civilian women to have been divorced and reported marital/relationship problems. In summary, among those exposed to high war zone stress, virtually every subgroup reported somewhat poorer adjustment than era veterans and/or civilians on at least one indicator of marital/relationship or family adjustment.

3. Contrasts Among Vietnam Theater Veterans

Exhibit VII-6 summarizes the contrasts between various subgroups of Vietnam theater veterans on these measures of marital/relationship and family adjustment. Although significant differences among male theater veterans by race/ethnicity are few, they are relatively consistent. Black men were significantly less likely than both Hispanic and white/other males to be currently married and, if not currently married, more likely to be living as though married, or be separated. In turn, white/other and Hispanic males were quite similar on marital status, but the former were significantly less likely than both blacks and Hispanics to report marital problems. As implied by the comparisons cited above by veteran status, both the level of war zone stress exposure and a PTSD diagnosis were significantly related to adjustment in this area. Theater veteran males and females exposed to high war stress were significantly more likely than those exposed to lower levels to have been divorced, and the former were also more likely to have marital and parental problems.

Men with PTSD were less likely than those without to be currently married or divorced. They were also more likely to be currently separated or living as though married. Women with PTSD were also currently less likely to be married but more often never married. Both men and women with PTSD were also significantly more likely to have been divorced at some time and to report marital/relationship problems. For example, 69.6 percent of men with PTSD had been divorced, 22.4 percent two or more times, compared to only 34.9 percent and 8.1 percent, respectively, among those not suffering from this disorder. For women, the comparable proportions (though based on a small sample size) were 79.1 versus 26.7 percent and 10.6 versus 3.3 percent, respectively. In addition, men with PTSD also reported higher levels of parenting problems and significantly poorer family adjustment (even without children). Among theater veterans with children, over half (54.8 percent) of those with PTSD described their families as extreme (that is, more poorly functioning) on both adaptability and cohesion, compared to only 19.3 percent of those without PTSD. Comparable proportions for all couples were 49.2 and 21.9 percent, respectively.

Exhibit VII-6
Significant Contrasts Among Vietnam Theater Veteran Subgroups for Marital/Relationship and Family Roles

Contrasts Among Theater Veteran Subgroups	Current Marital Status	Number of Times Divorced	Marital/ Relationship Problems Index	Parental Problems Index	Family Adjustment (All Couples)	Family Adjustment (Couples W/Children)
A. Race/Ethnicity						
1. W/O vs. Blk	W/O > (Mar)/W/O < (LAM/Sep)**	NS	W/O < Blk***	NS	NS	NS
2. W/O vs. Hisp	NS	NS	W/O < Hisp*	NS	NS	NS
3. Blk vs. Hisp	Blk < (Mar)*/Blk > (LAM)*	NS	NS	NS	NS	NS
B. High vs. Low War Stress						
1. Males	HWZ > (LAM/Sep)*	HWZ > LWZ*	HWZ > LWZ*	HWZ > LWZ***	NS	NS
2. Females	NS	HWZ > LWZ*	NS	NS	NS	NS
C. PTSD vs. No PTSD						
1. Males	PTSD < (Mar/Div)**/PTSD > (LAM/Sep)***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD < No PTSD***	PTSD < No PTSD***
2. Females	PTSD < (Mar)*/PTSD > (Nvr Mar)*	PTSD > No PTSD***	PTSD > No PTSD*	NS	NS	NS
D. Service-Connected Physical Disability						
1. Males:						
a. SCPD vs. None	SCPD < None (Nvr Married)***	NS	NS	NS	NS	NS
b. High SCPD vs. None	High < None (Nvr Married)***	NS	NS	NS	NS	NS
2. Females:						
a. SCPD vs. None	SCPD < (Mar)***/SCPD > (Nvr)***	NS	SCPD < None*	NS	NS	SCPD < None*
b. High SCPD vs. None	High < (Mar)***/SCPD > (Nvr)***	NS	High < None*	NS	High < None***	High < None*
E. Substance Abuse vs. None						
1. Males	SAB < (Mar)*/SAB > (LAM)*	SubAbuse > None***	SubAbuse > None***	SubAbuse > None***	NS	NS
2. Females	SAB < (Mar)**/SAB > (Div)*	SubAbuse > None***	SubAbuse > None***	SubAbuse > None*	NS	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

While males with service connected disabilities were less likely than those without such disability to be "never married," female theater veterans with such disabilities were more frequently never married and less likely currently married. Among those in a relationship, the latter were also less likely than women without disability to report marital/relationship problems and poorer family functioning. Men and women serving in Vietnam with a history of alcohol or drug dependence or abuse were also less likely married than those with no such history. This group of men and women also experienced more divorces, marital problems, and parental problems as well.

4. Summary: Marital/Relationship and Family Adjustment

Vietnam theater veteran males, including those most highly exposed to war zone stress, were significantly more likely to be living as though married than era veterans and civilians, a pattern generally observed among all subgroups except Hispanic men. Theater veteran women and those exposed to high war stress were less likely currently married and more likely never married than era veterans or civilians. More generally, in virtually every subgroup male and female veterans exposed to high war zone stress reported poorer levels of adjustment than era veterans or civilians on at least one indicator of marital/relationship or family adjustment. These veterans had more divorces, more marital or relationship problems, more parental problems, and poorer family functioning.

Among Vietnam theater veterans, black men were significantly less often currently married than Hispanic and white/other men. In addition, the white/other group reported fewer marital/relationship problems than either of the two minority subgroups. For men, the level of war zone stress exposure was positively correlated with the number of divorces, the frequency of marital or relationship problems, and the number of parental problems. For women, the relationship between war stress exposure and the number of divorces was also evident. Both men and women with PTSD were less likely than those without the disorder to be married, have had more divorces, and experienced more marital/relationship problems. Men with

PTSD also reported more problems related to parenting and substantially poorer family adjustment. Men with service connected disabilities were less often never married and disabled women more often never married than theater veterans with no such disabilities. Men and women who had experienced substance abuse problems were less likely married, more often divorced, and experienced higher levels of marital and parental problems.

D. Subjective Well-Being and Adult Behaviors

1. Measures

To gain a somewhat more comprehensive view of the prevalence of "other psychological problems in readjusting to civilian life" among Vietnam veterans, we selected a specific set of other indicators from the NSVG interview that tapped various domains of adult life in which it has been widely speculated that Vietnam veterans may experience particular problems. These indicators gave us a broader understanding of veterans' psychological problems than we could gain by examining the general items that composed the readjustment problems indices or by studying the indicators of adjustment relating to education, work, marriage, and family. The first such area was explicitly addressed in the study's basic objectives, which called for an examination of "more general feelings of life satisfaction" and "feelings about quality of life."

Although no comprehensive assessment of overall quality of life--analogous to those conducted by Campbell et al. (1976) and Andrews and Withey (1976)--was attempted in the NSVG, the interview did contain questions about both the respondents' overall perceived life happiness and life satisfaction. The first item, adopted from Gurin, Veroff, and Feld (1960), asked whether "taking things all together" the respondent was very happy, pretty happy, or not too happy "these days." The second (a life satisfaction measure taken from Veroff et al. (1981)), asked "In general, how satisfying do you find the way you're spending your life these days?": Respondents answered: "completely satisfying," "pretty satisfying," or "not at all satisfying." The variables for these questions were recoded so that 1=low and 3=high. Then, we summed the variables to create an

overall Index of Subjective Well-Being, ranging from 2 (not too happy/not at all satisfying) to 6 (very happy/completely satisfying).

Keane, Scott, Chavoya, Lamparski, and Fairbank (1985) found that Vietnam veterans with PTSD symptoms retrospectively reported gradual reductions over time in their social support networks (cf. Green & Berlin, 1987), and Smith (1985) has emphasized that "lack of social support" in its most extreme form--isolation--is a major factor in evaluating the need for and course of treatment of Vietnam veterans suffering from PTSD. In an effort to capture this more extreme form of social isolation (as opposed to low levels of social support), we created an index using the measures of social support included in the NSVG, adapted from Donald and Ware (1984), Card (1983), Veroff et al. (1981), Cohen, Mermelstein, Kamarck, and Hoberman (1985) and others. In all, we used twenty-two items, and we created the Social Isolation Index as the number of these items on which the most extreme response was endorsed (for example, the respondent knew no families in the neighborhood well enough to visit; the respondent had no close friends; the respondent had never talked on the telephone with a close friend or relative during the past month; the respondent felt he or she had no one to turn to in times of need). This variable has a theoretical range of 0-22, but a cutoff of 7 or more was established for the highest level of social isolation.

With increasing national concern about the nation's homeless (for example, Bassuk, 1984) has come speculation that Vietnam veterans may compose a disproportionate share of the homeless population. To address this question, we extracted two questions from the antisocial personality disorder section of the Diagnostic Interview Schedule (DIS) to create a measure of "vagrancy" or "homelessness":

(1) traveled around for a month or more with no arrangements ahead of time and without knowing how long he or she would stay or where he or she would work

2) a period when the respondent had no regular place to live for at least one month

From these items respondents were coded as:

(1) never having been homeless or vagrant

(2) vagrant at some time

(3) homeless at some time

(4) both homeless and vagrant at some time

Researchers have also speculated, with some evidence, that Vietnam combat veterans may experience more feelings of anger and hostility (for example, Laufer, Yager, Frey-Wouters, & Donnellan, 1981; Strayer & Ellenhorn, 1975) and have a greater capacity for violence (Buchbinder, 1979; Petrik, Rosenberg, & Watson, 1983; Boulanger & Kadushin, 1986). Levels of hostility were assessed in the NSVG using the Active Expression of Hostility Scale from the Psychiatric Epidemiology Research Interview (PERI) (Dohrenwend, 1982). The hostility items asked how frequently in the last year the respondent expressed his or her anger in various ways:

- by cursing
- by getting into an argument
- by trying to hide anger
- by shouting
- by trying to explain one's feelings calmly
- by avoiding an argument and doing something else
- by making a fist and facially expressing anger
- by exhibiting violence toward inanimate objects.

Respondents chose one of five responses for each way of expressing anger, ranging from "never" to "very often." The items were scored in the standard manner for this instrument, yielding a mean score ranging from 0 (low) to 4 (high).

Violence was assessed with a set of measures adapted from the family violence research and "Conflict Tactics Scales" developed by Straus and his colleagues (e.g., Straus, Gelles, & Steinmetz, 1980). For use in the NSVG, we revised these items to include both family and non-family violence (excluding war or other occupationally required behaviors). Nine types of violent acts were included in the index:

- threatening to hit or throw something at someone
- actually throwing something at someone

- pushing, grabbing, shoving someone
- slapping another person
- kicking, biting, or hitting someone with fist
- hitting someone with an object
- beating up someone
- threatening someone with a gun or knife
- actually using a gun or knife on someone.

The original codes assigned to this scale were: (0) never, (1) once, (2) twice, (3) 3-5 times, (4) 6-10 times, (5) 11-20 times, and (6) more than 20 times. The midpoints of categories (3) through (6) were assigned (21 to the highest category) and the items summed to yield an index of the "Number of Violent Acts in the Past Year."

Another popular stereotype with some empirical support holds that Vietnam veterans have a significant chance of being arrested, convicted, and put up in jail or prison (for example, Yager, Laufer, & Gallops, 1984; Pentland & Dwyer, 1985; Shaw, Churchill, Noyes, & Loeffelholz, 1987). We assessed criminal justice involvement in the NSVG by four items:

- whether the respondent was currently in jail or prison
- the number of times ever arrested since age 18 for anything other than traffic violations
- the number of nights ever spent in jail or prison (since age 18)
- the number of lifetime convictions for a felony offense

Current incarceration was kept as a separate item, and a composite measure of "Degree of Criminal Justice Involvement" created from the other three as follows: (1) no involvement, (2) arrested or jailed once, (3) arrested or jailed more than once, and (4) convicted of a felony.

The results of comparisons among Vietnam theater veterans, era veterans, and civilians on these measures, as well as comparisons among various subgroups of Vietnam theater veterans, are presented in Tables VII-16 through VII-21.

2. Contrasts Among Vietnam Theater Veterans, Era Veterans, and Civilians

Exhibit VII-7 summarizes the comparisons among Vietnam theater veterans and the comparison samples of era veterans and civilians on subjective well-being and these adult problem behaviors. Among females, none of the comparisons on subjective well-being were statistically significant. But, for white/other and Hispanic males exposed to high levels of war stress in Vietnam, the ratings of subjective well-being were significantly lower than for civilians and (for the white/other group) era veterans. Similarly, among both white/other and black males, those with lower levels of exposure to war stress reported higher levels of happiness and satisfaction than Vietnam era veterans, a difference also significant among theater veterans in general. In combination, then, male theater veterans exposed to high war stress expressed lower levels of subjective well-being than their civilian comparisons, while their low-to-moderate war stress counterparts reported higher levels of satisfaction than era veterans.

Comparisons among the groups on social isolation and homelessness or vagrancy are somewhat more consistent. For women, and within every race/ethnicity subgroup for men, theater veterans exposed to high levels of war zone stress reported significantly higher levels of social isolation than their civilian counterparts. Among white/other men and males overall, this difference was also apparent for theater veterans as a whole in comparison to era veterans. Similarly, theater veteran men exposed to high war stress were significantly more likely than era veterans and civilians to report having been homeless or vagrant at some time in their lives. However, analyses by race/ethnicity indicate that the comparison with era veterans is significant only among white/other males, and the civilian comparison only among blacks.

Among all male subgroups, theater veterans overall, as well as the subset exposed to high war stress, reported committing significantly more violent acts during the past year than their civilian comparisons, and, except for Hispanics, this same pattern was observed for active expression of hostility. For men overall, those exposed to high war stress also reported higher levels of hostility and violent behavior than era

Exhibit VII-7

Contrasts Among Major Study Groups for Subjective Well-Being and Adult Problem Behaviors

Contrasts Among Major Study Groups	Subjective Well-Being	Social Isolation Index	Ever Homeless or Vagrant	Active Expression of Hostility	No. of Violent Acts in Last Year	Criminal Justice Involvement
A. Males--Total						
1. Thr vs. Era	NS	Thr > Era*	NS	NS	NS	NS
2. HWZ vs. Era	NS	HWZ > Era***	HWZ > Era*	HWZ > Era*	HWZ > Era*	NS
3. LWZ vs. Era	LWZ > Era*	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	Thr > Civ***	NS	Thr > Civ***	Thr > Civ***	Thr > Civ*
5. HWZ vs. Civ	HWZ < Civ***	HWZ > Civ***	HWZ > Civ*	HWZ > Civ***	HWZ > Civ***	HWZ > Civ**
B. Males--White/Other						
1. Thr vs. Era	NS	Thr > Era*	NS	NS	NS	NS
2. HWZ vs. Era	HWZ < Era*	HWZ > Era***	HWZ > Era*	NS	HWZ > Era*	NS
3. LWZ vs. Era	LWZ > Era*	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	Thr > Civ**	NS	Thr > Civ**	Thr > Civ***	Thr > Civ (Arrest > 1)*
5. HWZ vs. Civ	HWZ < Civ***	HWZ > Civ***	NS	HWZ > Civ**	HWZ > Civ***	HWZ > Civ*
C. Males--Black						
1. Thr vs. Era	Thr > Era**	NS	Thr > Era (Homeless)*	NS	NS	Thr < Era*
2. HWZ vs. Era	NS	NS	NS	HWZ > Era*	NS	HWZ < > Era*
3. LWZ vs. Era	LWZ > Era**	NS	NS	NS	NS	LWZ < Era*
4. Thr vs. Civ	NS	NS	Thr > Civ (Vagrant)***	Thr > Civ*	Thr > Civ*	Thr > Civ*
5. HWZ vs. Civ	NS	HWZ > Civ**	HWZ > Civ (Vagrant)**	HWZ > Civ**	HWZ > Civ*	HWZ > Civ**
D. Males--Hispanic						
1. Thr vs. Era	NS	NS	NS	Thr > Era*	NS	NS
2. HWZ vs. Era	NS	NS	NS	HWZ > Era**	NS	NS
3. LWZ vs. Era	NS	NS	LWZ > Era (Vagrant)*	LWZ > Era*	NS	LWZ < Era*
4. Thr vs. Civ	NS	NS	NS	NS	Thr > Civ**	Thr > Civ (Arrest > 1)*
5. HWZ vs. Civ	HWZ < Civ*	HWZ > Civ*	NS	NS	HWZ > Civ**	HWZ > Civ (Arrest > 1)*
E. Females--Total						
1. Thr vs. Era	NS	NS	NS	NS	Thr < Era*	NS
2. HWZ vs. Era	NS	NS	NS	NS	HWZ < Era**	NS
3. LWZ vs. Era	NS	LWZ < Era***	NS	NS	NS	NS
4. Thr vs. Civ	NS	NS	NS	NS	NS	NS
5. HWZ vs. Civ	NS	HWZ > Civ*	NS	NS	NS	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

veterans, a finding consistent with Boulanger and Kadushin (1986). In turn, these findings are reflected among minority males in higher levels of expressed hostility by those exposed to high war stress in comparison to era veterans, and higher levels of violent behavior among similarly exposed white/other males. In contrast, theater veteran women, including those exposed to high war zone stress, committed significantly fewer violent acts during the past year than era veteran women.

Results of comparisons for current incarceration are not summarized in Exhibit VII-7 (or in Volume II), because so few respondents were currently in prison--0.5 percent of Vietnam theater veteran men, 0.6 percent of male era veterans, and none of the women veterans. Although significant contrasts between theater veterans and civilians were observed, these contrasts were artifacts of the civilian sample being household-based. Moreover, these estimates for male veterans are quite likely at least somewhat too low, because undoubtedly some of those who could not be located for the NSVG were in jail or prison, although others were in fact interviewed in such institutions. Nevertheless, independent of current incarceration, in every race/ethnicity subgroup, theater veteran men, including those most highly exposed to combat and other war stress, reported significantly higher levels of criminal justice involvement than their civilian counterparts. Among both blacks and Hispanics, men exposed to lower levels of war stress reported lower levels of criminal justice involvement than era veterans, and among black men this comparison with era veterans was also significant for all theater veterans. For women, veteran status did not make a significant difference in degree of criminal justice involvement.

3. Contrasts Among Vietnam Theater Veterans

Exhibit VII-8 summarizes the contrasts between various subgroups of Vietnam theater veterans on these measures of subjective well-being and adult problem behaviors. While Vietnam theater veteran men did not have a significantly different degree of social isolation or expression of hostility by race/ethnicity, white/other men did report higher levels of happiness and life satisfaction and fewer violent acts than both black and

Exhibit VII-8

Contrasts Among Vietnam Theater Veteran Subgroups for Subjective Well-Being and Adult Problem Behaviors

Contrasts Among Theater Veteran Subgroups	Subjective Well-Being	Social Isolation Index	Ever Homeless or Vagrant	Active Expression of Hostility	No. of Violent Acts in Last Year	Criminal Justice Involvement
A. Race/Ethnicity						
1. W/O vs. Blk	W/O > Blk***	NS	W/O < Blk (Vagrant)*	NS	W/O < Blk***	W/O < Blk***
2. W/O vs. Hisp	W/O > Hisp***	NS	NS	NS	W/O < Hisp***	NS
3. Blk vs. Hisp	NS	NS	Blk > Hisp (Vagrant)*	NS	NS	Blk > Hisp (Felony)*
B. High vs. Low War Stress						
1. Males	HWZ < LWZ***	HWZ > LWZ***	HWZ > LWZ**	HWZ > LWZ*	HWZ > LWZ***	HWZ > LWZ**
2. Females	NS	NS	NS	NS	NS	NS
C. PTSD vs. No PTSD						
1. Males	PTSD < No PTSD***	PTSD > No PTSD***	PTSD > No PTSD**	PTSD > No PTSD***	PTSD > No PTSD*	PTSD > No PTSD***
2. Females	PTSD < No PTSD***	PTSD > No PTSD***	NS	NS	NS	NS
D. Service-Connected Physical Disability						
1. Males:						
a. SCPD vs. None	NS	NS	NS	NS	SCPD < None*	NS
b. High SCPD vs. None	High SCPD < None*	NS	NS	NS	NS	NS
2. Females:						
a. SCPD vs. None	NS	NS	NS	NS	SCPD < None***	NS
b. High SCPD vs. None	NS	NS	High SCPD < None***	NS	High SCPD < None**	NS
E. Substance Abuse vs. None						
1. Males	SubAbuse < None***	SubAbuse > None***	SubAbuse > None*	SubAbuse > None***	SubAbuse > None***	SubAbuse > None***
2. Females	SubAbuse < None**	SubAbuse > None*	NS	NS	NS	NS

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant.

Hispanic men. Black and Hispanic men in turn did not differ significantly from one another on these measures. Black theater veteran men also reported significantly higher levels of criminal justice system involvement than white/other and Hispanic males, who in turn were not significantly different from one another. Although black men who served in Vietnam were also more likely to report a period of vagrancy than white/others and Hispanics, these differences are not of particular interest, because they are mostly balanced by higher levels of combined homelessness and vagrancy in the latter two subgroups.

Differences by level of war zone stress and PTSD are both more consistent and of considerable importance. Although, perhaps surprisingly, none of the comparisons by level of war zone stress among female theater veterans were statistically significant, all of these differences were for men serving in the Vietnam theater. Men exposed to high levels of war stress reported lower levels of life satisfaction and happiness, were more socially isolated, had more often been homeless or vagrant, expressed higher levels of hostility, had committed more violent acts, and had more often been arrested or jailed and convicted of a felony than those exposed to lower levels of stress in Vietnam. In addition, these differences were substantial. Those exposed to high war stress were:

- five times more likely (24.7 vs. 4.8 percent) to report being unhappy or unsatisfied with their lives;
- six times more likely (46.5 vs. 7.6 percent) to be highly isolated;
- twice as likely to have been homeless or vagrant (16.8 vs. 8.8 percent);
- twice as likely to have committed 13 or more violent acts in the past year (14.4 vs. 7.6 percent);
- one and one-half times more likely (39.1 vs. 27.7 percent) to have been arrested or jailed; and
- three times more likely (8.8 vs. 2.8 percent) to have been convicted of a felony

than those experiencing moderate to low levels of war stress.

Comparisons between those with and without PTSD were also quite consistent and, if anything, more striking. Women with PTSD were 10 times more likely than those without (26.2 vs. 2.6 percent) to report being very unhappy or unsatisfied with their lives and eight times more likely (24.3 vs. 3.1 percent) to report being extremely isolated. Comparable ratios for men with and without PTSD were five-to-one (24.7 vs. 4.8 percent) and six-to-one (46.5 vs. 7.6 percent), respectively. Fully 35 percent of men with PTSD had also been homeless or vagrant (23.8 percent homeless) at least once in their lives, compared with 6.3 percent of male theater veterans who do not suffer from this disorder, a finding which lends some credence to current concerns about the plight of homeless Vietnam veterans. Men with PTSD were also especially prone to active forms of expressing their hostility (over 40 percent scoring in the highest category) and to violent behavior (averaging 13.31 violent acts in the past year compared to only 3.54 among those without PTSD). Almost half of these (45.7 percent) had been arrested or jailed more than once--one-fourth of these (11.5 percent) convicted of a felony--compared with only 11.6 percent of those without a stress disorder.

Differences in violent behavior for those veterans with a service connected disability were relatively predictable Men and women with service connected disabilities reported fewer violent acts than those without such disabilities, and men with disabilities were also less happy or satisfied with their lives. Disabled women were less likely to have been homeless or vagrant. The pattern observed for substance abuse was virtually identical to that observed for PTSD, although the strength of certain relationships varies somewhat. Theater veteran women with a history of substance abuse reported lower levels of subjective well-being and higher levels of social isolation than those with no history of alcohol or drug dependence or abuse. Male substance abusers reported poorer levels of adjustment not only on these but also on every other indicator of adult problem behavior.

4. Summary: Subjective Well-Being and Adult Problem Behaviors

The overall pattern observed in comparisons by veteran status and war zone stress exposure is relatively clear. Although contrasts vary somewhat from indicator to indicator and by race/ethnicity, in general theater veterans exposed to high levels of war zone stress were significantly more likely than their civilian counterparts, and to a lesser extent their era veteran counterparts, to report problems in this area. With one exception (social isolation), however, relationships observed for women do not follow this pattern. Nevertheless, this relative disadvantage of those exposed to high war stress in comparison with civilians was evident in:

(1) lower levels of life happiness and satisfaction among white/other and Hispanic men

(2) higher levels of social isolation among all theater veteran subgroups (including women)

(3) a higher prevalence of homelessness or vagrancy among white/other males

(4) higher levels of active hostility and actual violent behavior among all male theater veteran subgroups

(5) higher levels of arrests and incarceration

Moreover, a similar disadvantage relative to Vietnam era veterans was observed among white/other men for subjective well-being, social isolation, homelessness or vagrancy, and violent behavior, and among black and Hispanic men for active expression of hostility. Theater veteran women in general and those exposed to high war zone stress reported significantly less violent behavior than era veteran women.

Among theater veteran males, white/other men reported higher levels of general well-being and fewer violent acts during the past year than both black and Hispanic men, who did not differ significantly from each other. Black men also reported significantly higher levels of involvement with the criminal justice system (arrests, incarceration, felony convictions) than either white/other or Hispanic men.

Differences observed by level of war zone stress exposure, PTSD, and substance abuse were quite consistent and striking. Although women

serving in the Vietnam theater did not differ significantly on any of these measures by level of exposure to war zone stress, men exposed to high war stress reported significantly poorer adjustment on every one of these behaviors. Similarly, men suffering from PTSD and those with a history of alcohol or drug abuse reported dramatically poorer adjustment on all of these feelings/behaviors, as did women for two of these: subjective well-being and social isolation. Among men and women with PTSD, for example, one in four reported extreme unhappiness, and nearly one-fourth of these women and one-half of the men reported extreme levels of isolation. Similarly, fully 35 percent of men with PTSD had been homeless or vagrant, over 40 percent scored at the highest level on hostility, 25 percent had committed 13 or more acts of violence during the past year, and almost 50 percent had been arrested or jailed more than once since age 18. Although the relationships differed in strength, essentially the same pattern was observed for those with a history of substance abuse as those currently suffering from PTSD.

VIII. THE PREVALENCE OF PHYSICAL HEALTH PROBLEMS

This chapter presents, contrasts, and summarizes information on the prevalence of physical health problems among Vietnam theater veterans and their era veteran and civilian counterparts. Specifically, we examined self-ratings of current health status and the active number of chronic physical health problems for all NSVG study groups and subgroups. In addition, rates of VA-recognized service-connected physical disabilities were tabulated and contrasted for the subgroups of Vietnam theater veterans. Finally, we compared the NSVG findings and the perceived physical health status of Vietnam veterans with the results of another national study of Vietnam veterans' health status, the Vietnam Experience Study, conducted by the Centers for Disease Control.

A. Perceived Physical Health Status

Respondents' evaluation of their current physical health status was assessed with two questions: (1) "Now I'd like to ask you some questions about your physical health. First, would you say your health in general is excellent, very good, good, fair, or poor?," and (2) "Compared to other people your age, would you say that your health is much better than others, better, about the same, worse, or much worse than others?" We coded item responses from 1 ("poor"/"much worse") to 5 ("excellent"/"much better"), and created an index of respondents' perceptions of their general and comparative physical health by multiplying the two values and categorizing them from high (scores of 20 or 25) to low (scores of 8 or lower). The distribution of responses of study groups and subgroups on this index, as well as the results of tests of statistical significance, appear in Volume II, Table VIII-1. Exhibits VIII-1 and VIII-2 summarize the results of these contrasts.

Among male Vietnam theater veterans who were exposed to high levels of war zone stress, nearly 25 percent scored in the lowest category of the index, and slightly less than 22 percent scored in the highest. In comparison, 12 percent of male era veterans and 11% of civilian counterparts scored in the lowest category of the health index, while 24 percent of male era veterans and 29 percent of civilians scored in the

Exhibit VIII-1

Summary of Contrasts Among Major Study Groups for Physical Health Problems

Contrasts Among Major Study Groups	Index of Perceived Current Health Status[a]	No. of Chronic Health Problems	Service-Connected Physical Disabilities
A. Males--Total			
1. Thr vs. Era	NS	NS	--
2. HWZ vs. ERA	HWZ < Era**	HWZ > Era**	--
3. LWZ vs. Era	NS	NS	--
4. Thr vs. Civ	Thr < Civ*	NS	--
5. HWZ vs. Civ	HWZ < Civ***	HWZ > Civ**	--
B. Males--White/Other			
1. Thr vs. Era	NS	NS	--
2. HWZ vs. Era	HWZ < Era*	HWZ > Era*	--
3. LWZ vs. Era	NS	NS	--
4. Thr vs. Civ	NS	NS	--
5. HWZ vs. Civ	HWZ < Civ***	HWZ > Civ*	--
C. Males--Black			
1. Thr vs. Era	Thr < Era*	Thr > Era*	--
2. HWZ vs. Era	HWZ < Era*	HWZ > Era**	--
3. LWZ vs. Era	NS	LWZ > Era*	--
4. Thr vs. Civ	NS	NS	--
5. HWZ vs. Civ	NS	NS	--
D. Males--Hispanic			
1. Thr vs. Era	NS	Thr > Era**	--
2. HWZ vs. Era	NS	HWZ > Era***	--
3. LWZ vs. Era	NS	NS	--
4. Thr vs. Civ	NS	NS	--
5. HWZ vs. Civ	NS	HWZ > Civ**	--
E. Females--Total			
1. Thr vs. Era	NS	NS	--
2. HWZ vs. Era	NS	NS	--
3. LWZ vs. Era	NS	LWZ < Era*	--
4. Thr vs. Civ	NS	NS	--
5. HWZ vs. Civ	NS	HWZ > Civ*	--

[a]High scores on this index indicate a positive perception of current physical health status.

NOTES: 1) < = Lower than; > = Higher than; < > = Both lower than and higher than (relationship not ordinal); -- = Not applicable to this variable.
2) *p <.05; **p <.01; ***p <.001; NS = Not statistically significant.

Exhibit VIII-2

Summary of Contrasts Among Major Study Groups for Physical Health Problems

Contrasts Among Theater Veteran Subgroups	Index of Perceived Current Health Status[a]	No. of Chronic Health Problems	Service-Connected Physical Disability (SCPD)
A. Race/Ethnicity			
1. W/O vs. Blk	W/O > Blk***	NS	W/O < Blk**
2. W/O vs. Hisp	NS	NS	NS
3. Blk vs. Hisp	NS	NS	Blk > Hisp**
B. High vs. Low War Stress			
1. Males	HWZ < LWZ***	HWZ > LWZ*	HWZ > LWZ**
2. Females	NS	HWZ > LWZ*	NS
C. PTSD vs. No PTSD			
1. Males	PTSD < No PTSD***	PTSD > No PTSD***	NS
2. Females	PTSD < No PTSD***	PTSD > No PTSD***	NS
D. Service-Connected Physical Disability			
1. Males:			
a. SCPD vs. None	SCPD < None***	SCPD > None***	--
b. High SCPD vs. None	High < None***	High > None***	--
2. Females:			
a. SCPD vs. None	SCPD < None***	SCPD > None***	--
b. High SCPD vs.	High < None***	High > None***	--
E. Substance Abuse vs. None			
1. Males	Sub Abuse < None*	NS	NS
2. Females	NS	Sub Abuse > None**	NS

[a]High scores on this index indicate a positive perception of current physical health status.

NOTES 1) < = Lower than; > = Higher than.
2) *p<.05; **p<.01; ***p<.001; NS = Not statistically significant.

highest. Contrasts performed on the distribution of index scores among these groups revealed that the differences were statistically significant. Specifically, male Vietnam theater veterans who were exposed to high levels of war zone stress rated the current status of their physical health much more negatively than both male era veterans and civilian counterparts.

When male Vietnam theater veterans as a group (that is, independent of level of exposure to war zone stress) were contrasted with male era veteran and civilian counterparts, the findings were less consistent. We found a statistically significant difference in the distributions of health index scores between male theater veterans as a group and civilian counterparts, with proportionately more theater veterans assessing their current physical health negatively. Another finding, however, was that male theater veterans as a group did not differ from male era veterans in their overall perception of their current health status.

Examination of the contrasts for male racial/ethnic subgroups in the NVVRS revealed a number of statistically significant results. First, white/other male Vietnam theater veterans exposed to significant war zone stress provided a less favorable rating of the current status of their physical health than did either their era veteran or civilian white/other male counterparts. Second, black male theater veterans, both as a group and those exposed to high war zone stress, evaluated their physical health as poorer than black male era veterans. However, black male theater veterans did not differ from black male civilians in their perception of their current physical health status. One-fifth to one-quarter of each group scored in the lowest category of this index, while roughly equivalent proportions gave ratings that fell within the highest category. Third, the subgroup contrasts for Hispanic male theater veterans, era veterans, and civilians showed no statistically significant differences in the pattern of ratings on the index of physical health. Clearly, we need additional analyses to begin to specify the factors that account for the differential evaluations of physical health status among veterans and nonveterans within the male racial and ethnic subgroups of the NVVRS.

Among women, higher percentages of Vietnam theater veterans scored in the lowest category of the physical health index -- nearly 13 percent of female theater veterans as a group and 17 percent of the subset of female theater veterans who were exposed to high levels of war zone stress --

compared to an estimated 6 percent of female era veterans and civilians. However, despite these numerically large differences at the lower end of the index, the distributions converged at higher levels, and contrasts among the female study groups revealed that the overall distributions of scores did not differ significantly. Convergence of the female distributions was especially evident at the highest level of the index, where the largest estimated between-group difference was roughly only 6 percentage points.

As Exhibit VIII-2 shows, contrasts conducted among the subgroups of male Vietnam theater veterans revealed a significant finding for race/ethnicity. Specifically, the index scores for black male theater veterans indicated that they reported poorer current physical health than white/other male theater veterans.

When we contrasted groups according to their level of exposure to war zone stress, we found statistically significant differences for men, but not for women. Male theater veterans exposed to high levels of war zone stress reported poorer current physical health when compared to male compatriots who experienced a lower level of exposure to stressors in the war zone. This finding is clearly consistent with the outcome of numerous other NVVRS analyses that have crossed level of war zone stress with a host of post-war readjustment variables. Female theater veterans exposed to high levels of war zone stress did not differ significantly from female theater veteran counterparts exposed to lower levels. Although many more high-exposure female theater veterans obtained scores in the lowest health category of the index (17 percent vs. 10 percent), the percentages of high and low war zone stress respondents scoring at higher levels of the index were essentially equivalent.

As expected, contrasts revealed that both male and female Vietnam theater veterans with service-connected physical disabilities (SCPDs) gave a significantly lower rating to the current status of their physical health than theater veterans without SCPDs. Also predictably, male and female Vietnam veterans with current diagnoses of post-traumatic stress disorder (PTSD) rated their physical health much more negatively than theater veteran counterparts without this disorder. Crossing lifetime-substance-abuse diagnosis with the physical-health index revealed that male and female theater veterans who were positive for lifetime

substance abuse had much lower self-ratings of physical health. Thus, this set of contrasts indicates that both SCPDs and major psychological disorders such as current PTSD and lifetime substance abuse disorder are associated with negative appraisal of current physical health status among male and female theater veterans.

B. Number of Chronic Health Problems

We assessed the number of chronic health problems by reading to respondents a comprehensive list of physical health problems after instructing them to "tell me if you have ever had any of these conditions, even if you have mentioned them before." This list of health problems tended to emphasize diseases, syndromes, conditions, and injuries that are permanent or tend to occur repetitively. The lifetime presence or absence of each physical health problem on the list was assessed individually by asking "Have you ever had [name of health problem]? Respondents also were asked to identify any chronic conditions that had been active within the past 12 months. The interview questions used to assess chronic health problems in the NSVG interview appear in Volume IV, pages P-8 and P-9, items P20 through P57. In Volume II, Table VIII-2 shows the percent distribution of the number of active (that is, current) chronic health problems for study groups and sub-groups and the results of testing for the significance of differences. Exhibits VIII-1 and VIII-2 summarize the results of these contrasts.

Examination of the contrasts among the major male study groups revealed that theater veterans who were exposed to high levels of war zone stress reported a greater number of active chronic health problems than male era veterans and civilian counterparts. However, when male theater veterans as a group (that is, independent of the level of war zone stress) were compared with male era veterans and civilians, none of the contrasts were statistically significant. These findings suggest that is a strong relationship exists between the level of exposure to war zone stress and the number of current chronic physical health problems reported by Vietnam theater veterans.

For male subgroups, the contrasts for white/other males were similar to the contrasts for the overall male study groups. Specifically, white/other

Vietnam veterans who were exposed to high levels of war zone stress reported a significantly greater number of active chronic health problems than both white/other era veterans and civilian counterparts. However, white/other male theater veterans as a group did not differ significantly from the white/other comparison groups.

Examination of the contrasts for black male Vietnam theater veterans showed a pattern of chronic health complaints that was somewhat similar to that of white/other males. Black male theater veterans overall, as well as black male theater veterans exposed to both high and low levels of war zone stress, reported significantly more current chronic health problems than black male era veterans. However, none of the contrasts between black male theater veteran and black male civilian were statistically significant.

The contrasts for Hispanic male Vietnam theater veterans on current chronic health problems also produced findings similar to the results for white/other and black male theater veterans. Overall, Hispanic male theater veterans reported suffering a greater number of active chronic health problems than their era veteran counterparts. As expected, Hispanic male theater veterans with high exposure to war zone stress reported a significantly greater number of persistent health problems than Hispanic era veterans and civilians.

Female theater veterans who were exposed to high levels of war zone stress reported a significantly greater number of chronic physical health problems than their female civilian counterparts. Conversely, female theater veterans who were exposed to low levels of war zone stress reported fewer active chronic physical health problems than female era veterans.

The following variables had a strong effect on the number of active chronic health problems for both male and female theater veterans (see Exhibit VIII-2):

- level of exposure to war zone stress
- level of SCPD
- current PTSD diagnosis
- lifetime substance abuse disorder

Specifically, both male and female theater veterans exposed to high levels of war zone stress reported more active chronic physical health problems than theater veteran counterparts exposed to lower stress levels. Theater veterans with SCPDs also reported more current physical health problems

than their counterparts without SCPDs. In addition, male and female theater veterans with a current diagnosis of PTSD had more active chronic health problems than theater veterans without PTSD. Similarly, theater veterans who ever met criteria for diagnosis of substance abuse reported a higher prevalence of current chronic physical conditions than theater veterans who never abused alcohol or drugs.

C. Service Connected Physical Disabilities (SCPDs)

Rates of were examined for each of the subgroups of male and female Vietnam theater veterans. As described in more detail in Volume II, Chapter I, we identify NVVRS respondents with SCPDs by matching the NSVG sample with official VA disability records. Discussions with VA staff and examination of a tabulation of the SCPD levels among survey interview respondents led us to categorize SCPD into a three-level variable: (1) no SCPD; (2) "low" SCPD; and (3) "high" SCPD. The low SCPD group was comprised of respondents whose VA record showed a disability rating from 0% to 20%. The high SCPD group consisted of respondents whose VA disability rating ranged from 30% to 100%. In Volume II, Table VIII-3 shows the percent distribution of SCPDs among subgroups of Vietnam theater veterans and the results of statistical tests of significance. The results of these contrasts are summarized in Exhibit VIII-2.

Examining the contrasts on the level of SCPD for male and female Vietnam theater veteran subgroups revealed no statistically significant differences for women, but several for men. For men, theater veterans exposed to high levels of war zone stress had higher SCPD ratings than theater veterans who were not exposed to the same amount of stress. Among racial/ethnic subgroups of male theater veterans, more blacks had high SCPDs than white/other and Hispanic male counterparts. Additional analyses will help us determine the factors that account for differential rates of SCPDs among racial/ethnic subgroups of theater veterans.

D. Vietnam Experience Study Comparison

The Centers for Disease Control (CDC) (1988c) recently completed a national study of the physical health status of male US Army Vietnam theater and era veterans. The CDC project, known as the Vietnam Experience

Study (VES), employed a two-stage design, with the first stage consisting of a telephone health survey of 7,924 male US Army theater veterans and 7,364 of their era veteran. In the second stage, a random subsample of 2,490 theater and 1,972 era veteran respondents to the telephone survey underwent a comprehensive physical examination (The Centers for Disease Control Vietnam Experience Study, 1988).

When asked to rate the current status of their "health in general" at the beginning of the VES telephone survey, 19.1 percent of the theater veteran respondents described their general health as "fair" or "poor", whereas 11.1 percent of the VES era veterans appraised their health equivalently -- a nearly twofold difference. However, the CDC reported that subsequent comprehensive physical examinations found few significant differences in the physical health status of Vietnam theater and era veterans. Thus, the CDC VES research team concluded that "during the telephone interview, Vietnam veterans reported current and past health problems more frequently than did non-Vietnam veterans, although results of medical examinations showed few current objective differences in physical [emphasis added] health between the two groups (p.2708)."

The most plausible explanation of the apparently discrepant findings of the survey and medical examination components of the VES is that the survey item assessing "health in general" confounded respondents' appraisal of the overall status of their physical and mental health, whereas the validating medical examination focused only on specific physical health problems, not mental health problems (in spite of the availability of considerable data on the psychological status of veterans also collected as part of the total clinical protocol).

When interviewers asked NSVG respondents about their current physical health in face-to-face interviews, 13.8 percent of male theater veterans rated their current physical health as either "fair" or "poor," compared to 11.1 percent of male era veterans, a difference that was not statistically significant (see Table VIII-4 for more details). As Table VIII-5 shows, analyzing physical health ratings from our VES-equivalent subsample of 616 male Army veteran respondents (taken from the total NSVG sample) produced quite similar results: 11.9 percent of theater veterans and 9.3 percent of

era veterans reported "fair" or "poor" physical health, a difference that also was not statistically significant.

These analyses clearly show that Vietnam theater veterans as a group do not perceive their physical health status in ways that are meaningfully different from the self-appraisal of their era veteran counterparts. In point of fact, the self-report data from the NSVG survey and the objective medical data from the VES physical examinations converge upon the same finding: Vietnam theater veterans in general and Vietnam era veterans do not differ markedly with respect to their current physical health status. Thus, it appears that the "high" rates of health problems found in the VES telephone survey are not reflective of how Vietnam theater veterans perceive their physical health today, but are an artifact of the nonspecific and confounding nature of the VES health survey question.

Finally, an important finding of the NSVG is that perceptions of current physical health do vary by theater veteran subgroup. For example, Table VIII-4 clearly shows that male theater veterans exposed to high levels of war zone stress perceived their physical health much more negatively than their male era veteran and civilian counterparts. Similarly, both male and female theater veterans with a current diagnosis of PTSD and/or a lifetime diagnosis of substance abuse or dependence rated their current physical health as substantially worse than their theater veteran cohorts without these disorders. In conclusion, although theater veterans as a whole did not differ from era veterans in their perception of their health status, the subgroup of theater veterans who were most exposed to war zone stress and the subgroup that suffers from PTSD perceived themselves to be in significantly poorer health than era veterans.

E. Summary

In this Chapter we reported on the prevalence of physical health problems among Vietnam theater veterans and their era veteran and civilian counterparts. The overarching finding that emerged from contrasts these groups was that the men and women who experienced the highest levels of war zone stress in Vietnam tended to report higher prevalences of physical health problems than a variety of comparison groups. Highly exposed male Vietnam theater veterans had a more negative perception of their current

physical health, and reported a greater number of chronic health problems than male era veterans and civilian counterparts (except for black theater veterans and their civilian counterparts. Elucidation of the factors that account for differential appraisal of current health status among racial and ethnic subgroups of veterans and nonveterans will require further analysis beyond the scope of the present report. In addition, male theater veterans who were most involved in the war in Vietnam had higher rates of SCPDs than men with less exposure to war zone stress. For women, theater veterans exposed to high levels of war zone stress reported a greater number of current chronic physical disorders than both theater veterans who experienced lesser amounts of war zone stress and female civilian counterparts.

Contrasts among Vietnam theater veterans revealed a strong relationship between two major psychological disorders and negative perceptions of current physical health. Specifically, both female and male theater veterans with current diagnoses of PTSD or lifetime diagnoses of substance abuse reported a poorer view of their current physical health and more chronic physical health problems than theater veterans without either of these disorders.

IX. USE OF PHYSICAL AND MENTAL HEALTH SERVICES[1]

This chapter describes and summarizes the NSVG findings on the use of physical and mental health care services (both VA and non-VA) by Vietnam theater veterans (in accordance with Public Law 98-160) and contrasts these rates with those for era veterans and civilian counterparts. Because Public Law 98-160 stipulates that we gather information specifically on VA services, we examined use of VA services separately from the use of any health services (that is, VA and non-VA combined). Separate examinations are also provided for lifetime and current use to allow us to determine whether Vietnam theater veterans have sought more physical or mental health care overall, and whether they seek more care, or less care, currently. Because the mental health of Vietnam veterans is a particular focus of the NSVG, we examined mental health care separately from physical health care. Finally, because inpatient care often reflects more serious problems than outpatient care, but is only a small proportion of total care, this chapter provides separate information for inpatient and outpatient physical health care. Because inpatient mental health care is such a rare event, we did not separate inpatient and outpatient mental health care for analysis or presentation.

As in previous chapters, we assessed the significance of the contrasts between various study groups on rates of utilization by using chi-square tests. Sample size therefore had an important effect on whether levels of difference achieved statistical significance. The reader should remain aware that small sample sizes were characteristic of many of the contrasts reported in this chapter, and this condition made statistical significance more difficult to achieve.

This chapter presents and discusses the following contrasts for the lifetime and current physical and mental health care utilization measures:

1/ Ms. Judy Weir of San Diego State University was a co-author of this chapter.

- Theater versus era veterans
- Theater versus era veterans by race/ethnicity and by sex
- Theater versus era veterans by level of war zone stress
- Theater comparisons for subgroups: by presence of PTSD, service connected physical disability and substance abuse

A. Physical Health Care Utilization Indices

1. Any Utilization of VA Physical Health Care Facilities

Interviewers asked veterans if they had used any VA inpatient facilities for physical health care since they had left active military duty. Then, to determine whether VA outpatient facilities were used for physical health care, interviewers also asked: "Have you ever been treated or examined on an outpatient basis at a VA clinic or VA hospital outpatient department, since you were last released from active duty?" (We did not assess pre-military use of VA facilities, inpatient, or outpatient, and we assessed the use of facilities other than the VA only for current physical health care).

2. Current Utilization of Physical Health Care Facilities

We assessed current physical health inpatient utilization by asking respondents if, during the past 12 months, they had stayed "at least one night in a hospital, nursing home, or other medical care facility because of their physical health." We assessed current outpatient care for physical health problems by asking if, during the past six months, they had received any care or treatment for a physical health problem from a doctor or other medical person in an office, clinic or emergency room. For both inpatient and outpatient care, we then asked supplemental questions to determine the source of the care received. The "any service" category (for both inpatient and outpatient) included current utilization of any physical health care facility, either VA or non-VA. Because this study is particularly interested in the use of VA resources, we examined care from a VA facility separately from care received at other facilities. The VA and "any service" utilization categories were, therefore, not mutually exclusive, and VA use was a subset of the "any service" utilization.

In sum, the following measures of physical health care utilization were used in the analysis:

Any VA Physical Health Care Utilization (that is, postmilitary)

- Ever used VA inpatient facility
- Ever used VA outpatient facility

Current Inpatient Physical Health Care Utilization

- Used VA inpatient physical health care services in last 12 months
- Used any inpatient physical health care services (VA or non-VA) last 12 months

Current Outpatient Physical Health Care Utilization

- Used VA outpatient physical health care services in last six months
- Used any outpatient physical health care services (VA or non-VA) last six months

B. Physical Health Care: Patterns of Utilization

1. Differences Between Vietnam Theater Veterans and Era Veterans and Civilian Counterparts (Exhibit IX-1)

The patterns of physical health care use of Vietnam theater and era veterans and civilian counterparts discussed below are summarized in Exhibit IX-1. For complete data, see Volume II of this report. Table IX-1 of Volume II gives prevalence rates and Tables IX-1-1 to IX-1-6 provide statistical contrasts.

Post-Military VA Physical Health Care Utilization. We found no statistically significant difference between the proportion of male theater and era veterans who had ever used VA inpatient facilities. Reported usage ranged from approximately nine to twelve percent. However, reported use of VA outpatient facilities since leaving the military was significantly higher for theater veterans than for era veterans (26 percent versus 20 percent).

Exhibit IX-1
Contrasts Among Major Study Groups for Physical Health Care

Major Study Group Contrasts	Ever Used Any VA		Current+ Inpatient Care		Current++ Outpatient Care	
	Inpatient	Outpatient	VA	Any	VA	Any
A. Males--Total						
1. Thr vs. Era	NS	Thr > Era*	NS	NS	NS	NS
2. HWZ Vs. Era	HWZ < Era**	HWZ > Era***	NS	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NT	NT	NT	NS	NT	NS
5. HWZ vs. Civ	NT	NT	NT	NS	NT	NS
B. Males--White/Other						
1. Thr vs. Era	NS	Thr > Era*	NS	NS	NS	NS
2. HWZ Vs. Era	HWZ < Era**	HWZ > Era***	NS	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NT	NT	NT	NS	NT	NS
5. HWZ vs. Civ	NT	NT	NT	NS	NT	NS
C. Males--Male						
1. Thr vs. Era	NS	NS	NS	NS	NS	NS
2. HWZ Vs. Era	NS	NS	NS	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NT	NT	NT	NS	NT	NS
5. HWZ vs. Civ	NT	NT	NT	HWZ > Civ*	NT	NS
D. Males--Hispanic						
1. Thr vs. Era	NS	NS	NS	NS	NS	NS
2. HWZ Vs. Era	HWZ < Era*	HWZ > Era*	NS	NS	NS	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NT	NT	NT	NS	NT	NS
5. HWZ vs. Civ	NT	NT	NT	HWZ > Civ*	NT	NS
E. Females--Total						
1. Thr vs. Era	Thr > Era**	Thr > Era*	NS	NS	Thr > Era*	NS
2. HWZ Vs. Era	HWZ < Era**	HWZ > Era***	NT	NS	HWZ > Era*	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS	NS
4. Thr vs. Civ	NT	NT	NT	NS	NT	Thr > Civ*
5. HWZ vs. Civ	NT	NT	NT	NS	NT	HWZ > Civ***

+Current Inpatient Care is for the past 12 months; ++ Current Outpatient Care is for the past 6 months.

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p> .01; ***p> .001; NS = Not statistically significant; NT = Not tested (0 cell).

When comparing male theater and era veterans within racial/ethnic subgroups, we found few significant differences. Utilization rates were not significantly different between white/other theater veterans (10 percent) and era veterans (seven percent) for VA inpatient physical health care. Once again, however, outpatient rates were significantly higher for white/other theater veterans (24 percent) than for era veterans (17 percent). Among black and Hispanic veterans, we found no significant differences between theater and era veterans in the postmilitary use of inpatient or outpatient VA physical health care facilities. Inpatient utilization rates ranged from nine percent (era) to 12 percent (theater) for Hispanics and from 18 to 24 percent (era and theater, respectively) for blacks. Outpatient rates for era and theater veterans were 17 and 25 percent for Hispanics and 38 and 43 percent for blacks.

Overall, male theater veterans with high war zone stress had utilization rates for outpatient VA physical health care services (both inpatient and outpatient) that were almost twice that of male era veterans. This twofold increase in rates for theater veterans with high war zone stress over era veterans was also found for white/other and Hispanic male theater veterans, both inpatient and outpatient. Although black theater veterans with high war zone stress had the highest lifetime VA utilization rates with an inpatient rate of 28 percent and an outpatient rate of 51 percent, theater veterans did not differ significantly from era veterans in this group. Male theater veterans who experienced low war zone stress did not differ from era veterans for use of either inpatient or outpatient VA physical health care facilities within any subgroup comparison.

We also found threefold or greater differences between the proportion of female theater veterans overall and era veterans who had ever used VA inpatient facilities (six percent and two percent, respectively) and the proportion who had ever used VA outpatient facilities (two percent and 10 percent respectively). Female theater veterans with high war zone stress had rates four to nine times higher than female era veterans for inpatient (nine percent versus one percent) and outpatient (35 percent versus eight percent) VA health care use since leaving the military.

Current Inpatient Physical Health Care Utilization (VA and non-VA). Male theater and era veterans did not differ significantly in the proportion using VA inpatient care in the last 12 months (one percent theater and three percent era). We also found no significant difference between theater and era males for "any" inpatient care (VA and non-VA combined) in the last 12 months, with nine percent reporting such usage in both groups. Among racial/ethnic subgroups, we also did not find significant differences between theater and era veterans in current inpatient use of physical health care resources.

Male theater veterans with high war zone stress had neither significantly higher VA inpatient utilization rates nor higher rates for "any" inpatient service than veterans with low to moderate war zone stress (in the last 12 months). This finding was also true within racial/ethnic comparison subgroups. Nor did we find the contrasts significant between theater veterans with low war zone stress and era veterans on current inpatient physical health care use (overall or within racial/ethnic subgroups).

In examining the data for female veterans, we found that the rate of recent inpatient health care use did not differ significantly between female theater and era veterans. Approximately one percent of female theater veterans reported using VA inpatient care and eleven percent reported using "any" (VA or non-VA) inpatient care services within the last year. The female theater veterans with high war zone stress reported no recent VA inpatient use, although 15 percent reported current use of some type of inpatient physical health services (that is, "any service"). This rate was not different from that of women era veterans. In addition, the utilization rates between female theater veterans with low war zone stress and their era comparison group did not differ significantly.

When comparing theater veterans with their civilian counterparts, we found no significant difference in the rate of "any" recent inpatient physical health care use. Nine percent of the male theater veterans used these health care services, and eight percent of their civilian counterparts did also. In addition, male theater veterans with high war zone stress did not have higher utilization rates for "any service" than their civilian counterparts. However, both black and Hispanic current inpatient utilization rates for "any service" were significantly greater

for high war zone stress theater veterans (16 percent) than for their civilian counterparts (seven percent black and four percent Hispanic). Contrasts between female theater veterans and their civilian counterparts for any inpatient care did not yield statistically significant results.

As a group, male theater veterans did not differ significantly from their era veteran counterparts in recent outpatient services utilization. Two to three percent of male veterans reported recent use of VA outpatient physical health care facilities, while some 33 percent (era) to 40 percent (theater) of male veterans had used any (VA or non-VA) outpatient facilities within the last six months. When we examined male theater and era veterans within racial/ethnic subgroups, none of the theater/era contrasts were statistically significant.

When comparing theater veterans with high war zone stress to their era counterparts, we found no significant differences in either VA or "any" (VA or non-VA) current outpatient care use. In addition, within racial/ethnic subgroups, theater veterans with high war zone stress had no higher rates. Finally, rates for theater veterans with low war zone stress were not significantly different from their era counterparts for VA or "any" (VA or non-VA) recent outpatient physical health care utilization.

Even though female veterans' current VA outpatient care use was not high, the rates for female theater veterans (just over three percent) were significantly different from those for female era veterans (approximately one percent). Current outpatient utilization of "any service" (VA or non-VA) for both female theater and female era veterans was 53-54 percent. Female theater veterans with high war zone stress had used VA physical health care facilities significantly more often in the past six months than their era counterparts (five percent versus one percent). "Any" current outpatient use (VA or non-VA) was much higher than VA use, but theater veterans with high war zone stress reported no higher rates than era veterans. Exposure to low war zone stress also did not significantly affect utilization rates for female theater veterans.

Overall and within the racial/ethnic subgroups, male theater veterans did not have statistically different utilization rates for any recent outpatient services than their civilian counterparts. Neither did male theater veterans with war zone stress have higher rates than civilians overall or within racial/ethnic subgroups. However, for both female

theater veterans overall (54 percent) and female theater veterans with high war zone stress (60 percent) utilization rates were significantly higher than for the female civilian comparison groups (39 percent and 38 percent).

2. Differences in Physical Health Care Utilization Between Racial/Ethnic Subgroups of Male Theater Veterans (Exhibit IX-2)

Black theater veterans were significantly more likely to have ever used VA inpatient (24 percent) and VA outpatient (43 percent) facilities for physical health care than were white/others (10 percent inpatient and 24 percent outpatient) or Hispanics (12 percent inpatient and 25 percent outpatient). They were also more likely than white/others to have used VA inpatient or outpatient facilities recently (three percent versus one percent inpatient; nine percent versus three percent outpatient) and more likely than Hispanics to have used VA outpatient services recently (Hispanics, three percent). No significant racial/ethnic differences were observed in VA use between Hispanics and white/others. In addition, we found no significant differences between racial/ethnic subgroups of male theater veterans in their use of "any service" (VA or non-VA) for current outpatient physical health care facilities.

3. Differences in Physical Health Care Utilization by Exposure to War Zone Stress

The proportions of male theater veterans with high war zone stress reporting ever having used post-military VA inpatient (20 percent) or VA outpatient (39 percent) physical health care were significantly higher than the proportion reporting such use among those with low war zone stress (nine percent inpatient and 23 percent outpatient). However, we found no differences in recent physical health care use patterns (either VA or "any") between male veterans who experienced high war zone stress and veterans with low/moderate war zone stress.

Female theater veterans with high war zone stress were significantly more likely than those with low/moderate war zone stress to have used VA outpatient services since their release from active duty (35 percent versus 22 percent). However, for inpatient services the difference was not as significant--nine percent with high war zone stress sought inpatient

Exhibit IX-2
Contrasts Among Vietnam Theater Veteran Subgroups for Physical Health Care

Major Study Group Contrasts	Ever Used Any VA		Current[+] Inpatient Care		Current[++] Outpatient Care	
	Inpatient	Outpatient	VA	Any	VA	Any
A. Race/Ethnicity						
1. W/O vs. Blk	Blk > W/O***	Blk > W/O***	Blk > W/O*	NS	Blk > W/O**	NS
2. W/O vs. Hisp	NS	NS	NS	NS	NS	NS
3. Blk vs. Hisp	Blk > Hisp**	Blk > Hisp***	NS	NS	Blk > Hisp**	NS
B. High vs. Low Warzone Stress						
1. Males	HWZ > LWZ***	HWZ > LWZ***	NS	NS	NS	NS
2. Females	NS	HWZ > LWZ**	NT	HWZ > LWZ*	NS	HWZ > LWZ*
C. PTSD vs. No PTSD						
1. Males	PTSD > No PTSD***	PTSD > No PTSD**	NS	NS	PTSD > No PTSD*	PTSD > No PTSD**
2. Females	PTSD > No PTSD**	PTSD > No PTSD***	NS	NS	NS	NS
D. Service-Connected Physical Disability						
1. Males						
a. SCPD vs. None	SCPD > None***	SCPD > None***	SCPD > None**	NS	SCPD > None***	NS
b. High SCPD vs None	High > None***	High > None***	High > None**	High > None*	SCPD > None**	NS
2. Females						
a. SCPD vs. None	NS	SCPD > None***	NS	NS	SCPD > None**	SCPD > None*
b. High SCPD vs. None	NS	High > None***	NS	NS	High > None**	NS
E. Substance Abuse vs. None						
1. Males	SubAbuse > None*	SubAbuse > None*	SubAbuse > None*	NS	NS	NS
2. Females	SubAbuse > None*	NS	NS	NS	NS	SubAbuse > None*

[+]Current Inpatient Care is for the past 12 months; [++]Current Outpatient Care is for the past 6 months.

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

treatment compared to only five percent with low/moderate war zone stress. Female theater veterans with high war zone stress were also significantly more likely to report recent use of "any" (VA or non-VA) inpatient (15 percent) and outpatient physical health care facilities (60 percent) than those with low war zone stress (eight percent inpatient and 50 percent outpatient). Rates did not differ for recent inpatient or outpatient VA use between women theater veterans with high war zone stress and those with low/moderate stress.

4. Differences in Physical Health Care by PTSD Diagnosis

Male theater veterans and female theater veterans with PTSD reported significantly more use of VA inpatient services for physical health care since leaving the military (23-24 percent) than did male and female theater veterans without PTSD (10 percent and five percent, respectively). This finding was also true for postmilitary use of outpatient VA physical health services. (PTSD: males, 37 percent; females, 57 percent. No PTSD: males and females; 14 percent.) For recent outpatient VA physical health care, rates for males with PTSD (eight percent) were higher than for males without PTSD (three percent) but the differences were not statistically significant for females (10 percent versus two percent). Higher rates for male theater veterans with PTSD as compared to male theater veterans without PTSD were also found for "any" (VA/Non-VA) recent use of services for physical health problems (52 percent and 38 percent). Again, the difference was not found to be statistically significant for women (65 percent versus 52 percent). In addition no statistically significant differences were found by PTSD diagnosis for recent inpatient care.

5. Physical Health Care Use by Theater Veterans With and Without Service Connected Physical Disabilities (SCPDs)

Men with SCPD had higher rates than those without SCPDs for all VA service use: inpatient, outpatient, lifetime, and current. Since separating from the military, 70 percent of those with an SCPD have received some outpatient VA care and 27 percent have received some

inpatient VA care. Fifteen percent reported receiving outpatient care from the VA in the past six months and four percent reported having received VA inpatient care in the past 12 months. Even higher lifetime rates of VA use were reported by those with an SCPD of 30 percent or greater: 78 percent reported receiving VA outpatient care, and 42 percent reported receiving VA inpatient care since the military. We did not find any differences between those with and without an SCPD for current inpatient or outpatient use of "any" (VA or non-VA) services for physical health care.

For women theater veterans, we found differences between those with and without an SCPD for lifetime VA inpatient use (11 percent versus five percent), lifetime VA outpatient use (67 percent versus 20 percent), current outpatient VA use (13 percent versus one percent) and current use of "any" outpatient services (65 percent versus 52 percent). Current inpatient utilization rates did not differ across the female SCPD groups for either VA or "any" use.

6. Relationship Between Physical Health Care Use and Lifetime Substance Abuse

Male theater veterans with lifetime substance abuse were more likely to have received physical health care from the VA at some time since leaving the military than those without lifetime substance abuse. This finding was consistent for both inpatient (15 percent versus nine percent) and outpatient use (31 percent versus 23 percent). Male theater veterans with lifetime substance abuse were also more likely to have received inpatient care from the VA for physical health problems in the past 12 months than other theater veterans (two percent versus less than one percent). For women theater veterans, we found two differences between those with and without substance abuse: lifetime inpatient VA use (18 percent versus five percent) and current outpatient use of "any" services (68 percent versus 52 percent).

7. Summary of Findings for Utilization of Services for Physical Health Problems

Differences in VA Utilization. Only one significant difference was found between male Vietnam theater and era veterans in their use of VA

facilities for physical health care. Since leaving the military, Vietnam theater veterans were approximately 35 percent more likely than era veterans to have used VA outpatient services. Overall, 26 percent of male Vietnam theater veterans have used VA outpatient services since leaving the military, and three percent had used these services within the past six months. Twelve percent of male theater veterans reported using VA inpatient services since leaving the military, and one percent reported having used such services in the past 12 months.

Among women, more differences were found between Vietnam theater and era veterans. Since their separation from the military, women theater veterans were approximately three times more likely than era veteran women to have used VA services (both inpatient and outpatient). Vietnam theater veteran women had used VA facilities in the following proportions: 27 percent, lifetime outpatient; three percent, current outpatient; six percent, lifetime inpatient; and one percent, current inpatient.

Within the male Vietnam theater veteran subgroups, a number of differences were found in the rates of use of VA services. Overall, black Vietnam theater veteran men were significantly more likely to have used VA services for physical health problems than white/others or Hispanics. Use of inpatient VA services (both lifetime and current) by black theater veterans was more than double the rate of white/others, while their relative postmilitary use of VA outpatient services was almost double, and current use three times the rate of white/other theater veteran men. In contrast, we found no significant differences between white/other and Hispanic theater veterans.

Overall, theater veterans with PTSD, a service connected physical disability (SCPD), or a lifetime diagnosis of substance dependence or abuse were more likely to have used VA services for physical health problems than their counterparts without these conditions. Not surprisingly, the largest difference observed was for those with a SCPD. The rate of postmilitary use of VA outpatient services for both male and female Vietnam theater veterans with a SCPD was more than triple that of theater veterans without a SCPD. For men with a SCPD, there was also an almost threefold elevation in the postmilitary use of inpatient VA services. Although current rates of use for VA services are predictably much lower than overall or lifetime rates, among men the magnitude of the difference between those with and

without a SCPD did not diminish for use of inpatient care and actually increased to a sevenfold difference for use of outpatient care. This difference for current VA outpatient service use was also found for female theater veterans with a SCPD, but no significant difference was found for current inpatient use by women Vietnam theater veterans.

Differences in rates of VA use for physical health problems between those with and without PTSD or a history of substance abuse were not quite as extreme, but still quite large. Men with one of these conditions had rates of postmilitary VA physical health service use ranging from 30 to 140 percent higher than their counterparts without the disorder, and differences for current service use were even higher. For women with PTSD or substance abuse problems, lifetime rates of VA inpatient and outpatient use for physical health problems were three to five times higher than those of their counterparts without this disorder. Current utilization rates for women theater veterans showed fewer statistically significant differences between those with and without these disorders.

Overall, male Vietnam theater veterans who were exposed to high levels of war zone stress used the VA for physical health care at approximately twice the rate of male theater veterans exposed to low or moderate levels of war zone stress, although these rate differentials were not reflected in current use. Differences in recent use between the two groups were much smaller. Female Vietnam theater veterans with high war zone stress exposure had rates of lifetime VA outpatient physical health care use more than 50 percent higher than female theater veterans with low to moderate war zone stress exposure, but this difference was not evident for use of VA inpatient care for physical health problems. No differences in current VA use were found among female Vietnam theater veterans by level of exposure to war zone stress.

a. Differences in the Use of "Any Physical Health Service." We found no statistically significant differences between Vietnam theater veterans (male or female) and era veterans in their rates of any current physical health care service use (that is, VA and non-VA combined), inpatient or outpatient. In addition, we found only one difference among subgroups of male theater veterans for current use of any type of service for physical health problems. This finding indicated that male theater

veterans with PTSD were more likely to have used outpatient physical health services in the last six months than male theater veterans without PTSD. Among female theater veterans, we found several differences in the current use of "any physical health care services." Elevated rates in the use of "any physical health care service" were found for female theater veterans exposed to high war zone stress (both inpatient and outpatient), those with a SCPD (outpatient), and those with a history of substance abuse (outpatient).

C. Mental Health Care: Measures of Lifetime and Current Use

1. Measures of Lifetime Use

In the NSVG we provided respondents several opportunities to report lifetime use of health care resources for mental health problems. First, we asked the following open-ended question:

> "Problems often come up in life. Sometimes they're personal problems--people are very unhappy, or nervous and irritable all the time. Sometimes they're problems in a marriage....Or, sometimes, its a personal problem with a child or a job. Sometimes, when people have problems like that, they go someplace for help. Sometimes they go to a special place for handling personal problems--like a psychiatrist or a marriage counselor or social agency or clinic. How about you--have you ever gone anywhere like that for advice or help with any personal problems?

Responses to the open ended question were coded by type of care provider. If the respondent had received treatment in a physical health care setting in the past six months, the individual was asked if he or she had used the occasion to discuss with the physician any problems with emotions, "nerves," mental health, or any drug or alcohol problem. If so, this visit was also treated as mental health care use. Following the open-ended question, the interviewer read the respondent a checklist of specific places and people from whom "someone might get help with his or her emotions, nerves, drugs, alcohol, or their mental health." For each place or person mentioned, the respondent was asked if he or she gone to that place or talked with that person. Finally, the interviewer asked the

respondent if he or she had ever stayed at or been admitted to a hospital or other treatment program because of family or personal problems, a mental or emotional problem, trouble with "nerves," or a problem with drugs or alcohol.

We performed separate analyses on the following variables:

- Ever used any formal mental health care facility or service provider, inpatient and outpatient combined, including VA and non-VA use;
- Ever used any VA mental health facilities, inpatient and outpatient combined, including VA Medical Centers, VA Outpatient Clinics, and Vet Centers (postmilitary use);
- Ever used Vet Centers for outpatient mental health services.[2]

Respondents use of "informal" mental health care resources (that is, friends or relatives, ministers, priests, rabbis, teachers, police, lawyers or judges, probation officers, spiritualists, herbalists, natural therapists, and faith healers) is not included in this report.

2. Measures of Current Use

We asked respondents to identify the most recent time they had used any of the resources mentioned in the open-ended question or the checklist described above; we scored them as positive on current mental health care use if they reported use within the last 12 months. If the respondent had received treatment for a mental health problem in a physical health care setting in the past six months, we also scored him or her as positive for current health care use. The variables used in our analysis of current utilization were the following.

- Use of any VA mental health care services within last 12 months;
- Use of any (formal) mental health care services within the last 12 months, including VA and non-VA facilities.

2/ The Vet Center utilization measure includes only services provided for mental health care, and does not include other services routinely provided by Vet Centers, including vocational, employment, benefits, educational, or legal counseling.

D. Patterns of Mental Health Care Use Among Vietnam Veterans

1. Theater Veteran, Era Veteran and Civilian Contrasts

Lifetime Use of Mental Health Services: VA and Any Formal Service Provider (see Exhibit IX-3). Lifetime use of "any" (VA or non-VA) mental health services was very similar for theater veterans as a group and their era veteran counterparts. Lifetime use of any mental health care service for theater veterans ranged from 27 percent (black) to 35 percent (Hispanic), and era veteran rates were about 29 percent for all racial/ethnic subgroups.

However, a significantly greater proportion of male theater veterans than era veterans have ever used VA mental health care facilities (eight versus three percent). Postmilitary use of VA mental health care services was significantly higher for white/other male theater veterans (seven percent) than era veterans (three percent). Among black and Hispanic theater veterans and their era veteran cohorts, differences in lifetime use of VA facilities were not significant.

All contrasts between theater veterans exposed to high war zone stress and era veterans for lifetime use of VA mental health care services were statistically significant, with the exception of black males (See Exhibit IX-3). Overall, 16 percent of theater veterans exposed to high war zone stress have ever used VA mental health services, compared to four percent of era veterans.

Theater veterans exposed to high war zone stress were significantly more likely to have used any (VA or non-VA) mental health care facility than era veterans (41 percent for theater veterans and 29 percent for era veterans). Among the racial/ethnic subgroups, white/other theater males exposed to high war zone stress were much more likely than their era veteran counterparts to have used any mental health facility. Black male theater veterans were also significantly more likely to have ever used any mental health facility than other black civilian cohorts.

Female theater veterans were significantly more likely to have received care from the VA than female era veterans (eight percent versus one percent). Likewise, a higher percentage of female theater veterans exposed

Exhibit IX-3
Contrasts Among Major Study Groups for Mental Health Care

Major Study Group Contrasts	Ever Used			Used Last 12 Months	
	Any VA or non-VA	Any VA	Vet Center	Any VA or non-VA	Any VA
A. Males--Total					
1. Thr vs Era	NS	Thr > Era**	NS	NS	NS
2. HWZ vs. Era	HWZ > Era**	HWZ > Era***	HWZ > Era**	NS	HWZ > Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	NT	NT	NS	NT
5. HWZ vs. Civ	NS	NT	NT	NS	NT
B. Males--White/Other					
1. Thr vs. Era	NS	Thr > Era**	NS	NS	NS
2. HWZ vs. Era	HWZ > Era*	HWZ > Era***	HWZ > Era*	NS	NS
3. LWZ vs. Era	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	NT	NT	NS	NT
5. HWZ vs. Civ	NS	NT	NT	NS	NT
C. Males--Black					
1. Thr vs. Era	NS	NS	NS	NS	NS
2. HWZ vs. Era	NS	NS	NS	NS	NS
3. LWZ vs. Era	NS	NS	NT	NS	NS
4. Thr vs. Civ	NS	NT	NT	Thr > Civ***	NT
5. HWZ vs. Civ	HWZ > Civ*	NT	NT	HWZ > Civ***	NT
D. Males--Hispanic					
1. Thr vs. Era	NS	NS	Thr > Era*	NS	Thr > Eva*
2. HWZ vs. Era	NS	HWZ > Era**	HWZ > Era*	NS	HWZ > Era*
3. LWZ vs. Era	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	NT	NT	NS	NT
5. HWZ vs. Civ	NS	NT	NT	NS	NT
E. Females--Total					
1. Thr vs. Era	NS	Thr > Era***	Thr > Era***	NS	Thr > Era***
2. HWZ vs. Era	NS	HWZ > Era***	HWZ > Era***	HWZ > Era*	HWZ > Era***
3. LWZ vs. Era	NS	NS	NS	NS	NS
4. Thr vs. Civ	NS	NT	NT	NS	NT
5. HWZ vs. Civ	NS	NT	NT	HWZ>CIV*	NT

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

to high war zone stress (16 percent) than era veterans (less than one percent) have ever used VA mental health resources.

As a group, two percent of male Vietnam theater veterans and one percent of male era veterans specifically sought mental health services from Vet Centers, a twofold difference that was not statistically significant. Within racial/ethnic subgroups, Hispanic theater veterans (five percent) were significantly more likely than Hispanic era veterans (less than one percent) to have received mental health services from a Vet Center. In addition, nearly five percent of the total group of female theater veterans reported receiving mental health services from a Vet Center, in contrast to less than 0.5 percent of their era veteran counterparts, a difference that was statistically significant.

All contrasts between theater veterans with high war zone stress and era veterans were statistically significant for mental health services received from Vet Centers, except for the contrasts involving black males. Male theater veterans overall (including white/others and Hispanics) and female theater veterans exposed to high levels of war zone stress were more likely than their era veteran counterparts to have received mental health services from a Vet Center.

Current Use of Mental Health Care Resources. Current VA use was not much higher for theater veterans as a group (three percent) than for era veterans (two percent), and the difference was not significant. Current use of any mental health care services was roughly 10 percent for both era and theater veterans.

Male Hispanic theater veterans (five percent) were significantly more likely to have used VA mental health care services within the past 12 months than were their era veteran counterparts (less than one percent). For current use of "any" (VA or non-VA) mental health services, theater and era veterans did not differ significantly overall or within racial/ethnic subgroups. However, black male theater veterans were much more likely to have sought mental health services from any provider (VA or non-VA) than their black male civilian counterparts (11 percent versus two percent)

Use of VA mental health services within the past 12 months was significantly greater for theater veterans who were exposed to high levels of war zone stress (six percent) than for era veterans (two percent).

Roughly 14 percent of male theater veterans exposed to high war zone stress and 10 percent of era veterans reported recent use of any mental health care facility, a difference that was not statistically significant.

When we contrasted male racial/ethnic subgroups of era veterans and theater veterans with high war zone stress, we found no significant differences in terms of recent use of "any" (non-VA or VA) mental health care. However, in terms of current VA use, Hispanic male theater veterans exposed to high war zone stress were significantly more likely than era veterans (13 percent versus less than one percent) to have received care within the past 12 months.

In the female study groups, current VA mental health care use was significantly higher for female theater veterans (four percent) than for female era veterans (less than one percent). Female theater veterans with high war zone stress (eight percent) were also significantly more likely to report current VA use than era veterans (less than one percent).

Although more female theater veterans (18 percent) than female era veterans (14 percent) reported recent use of any mental health care services (VA or non-VA), this difference was not significantly different. However, female theater veterans exposed to high war zone stress were significantly more likely to have used any mental health care services than female era veterans in the recent past.

2. Theater Veteran Subgroup Contrasts.

Race/Ethnicity and Mental Health Care Use. Exhibit IX-4 and Tables IX-2-1 and IX-2-2 in Volume II show that across racial/ethnic subgroups of Vietnam theater veterans, black males were significantly more likely to have ever used VA mental health services than their white/other theater veteran counterparts (11 percent versus seven percent). In contrast, the 10 percent of Hispanic theater veterans who reported lifetime use of VA mental health services was not significantly different from the proportion of black and white/other theater veterans who reported having ever sought these services from the VA.

Exhibit IX-4
Contrasts Among Vietnam Theater Veteran Subgroups for Mental Health Care

Major Study Group Contrasts	Ever Used			Used Last 12 Months	
	Any VA or non-VA	Any VA	Vet Center	Any VA or non-VA	Any VA
A. Race/Ethnicity					
1. W/O vs. Blk	NS	Blk > W/O*	NS	NS	NS
2. W/O vs. Hisp	NS	NS	NS	NS	NS
3. Blk vs. Hisp	NS	NS	NS	NS	NS
B. High vs. Low Warzone Stress					
1. Males	HWZ > LWZ***	HWZ > LWZ***	HWZ > LWZ**	NS	HWZ > LWZ**
2. Females	NS	HWZ > LWZ***	HWZ > LWZ***	HWZ > LWZ**	HWZ > LWZ***
C. PTSD vs. No PTSD					
1. Males	PTSD > No PTSD***	PTSD > No PTSD***	NS	PTSD > No PTSD***	PTSD > No PTSD***
2. Females	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***	PTSD > No PTSD***
D. Service-Connected Physical Disability					
1. Males					
a. SCPD vs. None	SCPD > None***	SCPD > None***	SCPD > None*	SCPD > None**	SCPD > None*
b. High SCPD vs None	High > None**	High > None**	NS	High > None**	High > None*
2. Females					
a. SCPD vs. None	NS	NS	NS	NS	NS
b. High SCPD vs. None	NS	NS	NS	NS	NS
E. Substance Abuse vs. None					
1. Males	SubAbuse > None***	SubAbuse > None***	SubAbuse > None*	SubAbuse > None**	SubAbuse > None*
2. Females	SubAbuse > None***	SubAbuse > None**	SubAbuse > None*	SubAbuse > None**	NS

NOTES: 1) < = Lower than; > = Higher than.
2) *p< .05; **p< .01; ***p< .001; NS = Not statistically significant; NT = Not tested (0 cell).

Exposure to War Zone Stress and Mental Health Care Use. When we contrasted the lifetime and current mental health service use patterns of theater veterans exposed to high war zone stress with those exposed to low war zone stress, striking differences emerged. Male theater veterans exposed to high levels of war zone stress were significantly more likely than their lower-exposure counterparts to have ever sought mental health services from any mental health care facility (41 versus 27 percent), the VA (6 versus five percent), and Vet Centers (six versus one percent). In addition, theater veterans exposed to high war zone stress were significantly more likely than their lower-exposure theater veteran counterparts to have received mental health treatment at a VA facility within the past 12 months.

For female theater veterans, similar patterns were evident across levels of war zone stress. Relative to female theater veterans who were exposed to low/moderate levels of war zone stress, female veterans exposed to high levels were significantly more likely to report lifetime use of any mental health facility, the VA, or the Vet Center program. We also found dramatic differences when we contrasted the two groups' current use patterns. Twenty-four percent of female veterans exposed to high war zone stress reported receiving treatment for mental health services at "any" facility within the past 12 months, while only 13 percent of their low/moderate exposure cohorts received such treatment. This difference was statistically significant. Differences in rates of recent use of VA mental health services by level of war zone stress were also statistically significant and in the expected direction (eight percent for high war zone stress versus less than one percent for low/moderate war zone stress).

PTSD and Mental Health Care Utilization. Theater veterans with PTSD were significantly more likely to have used mental health care services than those without PTSD. Exhibit IX-4 shows that both men and women with PTSD were significantly more likely than their cohorts without the disorder to have ever used any mental health care service or VA facility. For example, the percentage of male and female theater veterans with PTSD who had ever used VA mental health facilities (20 percent male and 41 percent female) was significantly higher than the percentage among those without PTSD (five percent, both male and female). Some 62 percent of male theater

veterans with current PTSD had used any (VA or non-VA) mental health care services in their lifetime as compared to only 25 percent for those without PTSD. Among female theater veterans with current PTSD, 73 percent had used any mental health care services, as compared to 39 percent of those without PTSD. In addition, 31 percent of female theater veterans with PTSD have used the Vet Centers for help with mental health problems, compared to two percent of female theater veterans without PTSD. All these differences between those with and without were statistically significant for both men and women except for Vet Center use among men.

Male theater veterans with PTSD reported significantly more current use of mental health care resources than theater veterans without PTSD. Among male theater veterans with PTSD, 22 percent reported that they had received care from a VA or non-VA mental health services within the last 12 months, compared to eight percent of veterans without PTSD. Even more striking were the contrasts for current use. Ten percent of theater veterans with PTSD reported recent use at any facility, versus one percent of theater veterans without PTSD. Regarding recent use of VA mental health facilities, female theater veterans with PTSD (28 percent) were more likely to have sought help than those without PTSD (one percent). A significantly greater proportion of female veterans with PTSD also reported recent utilization of "any" mental health care services when compared to those without PTSD (55 versus 14 percent).

SCPD and Mental Health Care Use. As shown in Exhibit IX-4, male theater veterans with SCPDs were significantly more likely to have ever used any mental health care services (46 percent) and VA facilities (17 percent) than those without SCPDs (29 percent and six percent, any and VA, respectively). Similarly, male theater veterans with SCPDs were significantly more likely to have used Vet Centers for mental health needs than were theater veterans without SCPDs (six versus two percent). Males with SCPDs were significantly more likely than those without SCPDs to have used any mental health care services within the past 12 months (21 versus nine percent), as well as VA facilities (seven percent versus two percent). Among female theater veterans, lifetime use of any mental health facility or VA service provider was not significantly different for those with and without SCPDs.

Lifetime Substance Abuse or Dependence and Mental Health Care Use. The contrasts (Exhibit IX-4) between theater veterans (both male and female) with substance-abuse disorders and those without such disorders all indicated that theater veterans with a lifetime history of substance abuse or dependence were significantly more likely than theater veterans without substance abuse disorders to have ever used any mental health facility, VA mental health services, or Vet Centers. Similarly, male and female theater veterans with substance-abuse disorders were significantly more likely than non-abusing veterans to have used any facilities and, for men, VA services, within the past 12 months.

E. Barriers to Mental Health Care Use

In an effort to understand why veterans reporting mental health problems might not seek mental health care, we asked respondents if they ever had thought that they should have gone to a doctor or other mental health professional for a mental or emotional health problem but hadn't. Respondents reporting that they had not sought care in such situations were asked to indicate which of a list of potential reasons for not using care were the reasons they had not sought care (the reasons read to the respondent are shown in Exhibit IX-6). In addition, the respondent was asked which of the reasons was the most important. This series of questions about barriers to care was also asked of individuals who reported that there had been times in the past when professional mental health treatment might have benefited them but they had not sought it.

Exhibit IX-5 summarizes the responses of male Vietnam theater veterans who felt that they should have talked to a mental health professional at some time but didn't or who felt they could have benefited from mental health treatment but hadn't sought it. (The data for women Vietnam theater veterans contained too few cases for a separate examination.) Male theater veterans who are likely PTSD cases (those with M-PTSD scores of 89 or higher) were almost four times as likely to report having mental health problems for which they did not seek care as those who are likely noncases (M-PTSD scores less than 89). However, those likely PTSD cases who had no prior experience with mental health care were less likely to report that

Exhibit IX-5

Proportion of Vietnam Theater Veteran Men Reporting Recent Mental Health Problems for Which They Did Not Seek Help, by PTSD Status and Use of Mental Health Services for Other Problems (Standard errors in parentheses)

PTSD Status and Other Use of Mental Health Services	Sample Size	Percent Reporting Problems for Which They Did Not Seek Care
Likely PTSD Cases (M-PTSD $\geq$ 89)	315	40.2 (4.1)
Never Used Mental Health Services	146	26.1 (5.2)
Used Mental Health Services Only in the Past	87	50.4 (7.4)
Used Mental Health Services in Last Year	82	58.9 (8.1)
Likely Noncases (M-PTSD $<$ 89)	868	11.9 (1.5)

Exhibit IX-6

Percent of Male Vietnam Theater Veterans Perceiving Current Barriers to Mental Health Care Who Reported a Mental Health Problem for Which They Did Not Seek Care, By PTSD Status and Use of Mental Health Services

Barriers to Care	Total* (N=245)		Likely MPTSD Cases				Likely Noncases (N=114)	
			Never Used Mental Health Services (N=46)		Past Use Only of Mental Health Services (N=40)			
	Perceived as a Barrier	Most Important Barrier	Perceived as a Barrier	Most Important Barrier	Perceived as a Barrier	Most Important Barrier	Perceived as a Barrier	Most Important Barrier
Want to solve problem on own	86	31	98	30	62	38	88	31
Would get better by itself	71	24	70	31	56	12	75	28
Think treatment probably wouldn't help	54	8	52	5	55	14	54	7
Unsure where to go	43	4	37	6	54	4	37	4
Distrust mental health professionals	34	7	45	5	45	3	25	6
Afraid what they might find	27	4	41	1	49	4	11	5
Concerned about cost	36	11	27	9	42	17	32	10
Would take too much time	28	3	31	2	32	2	22	1
Concerned others might find out about problem	32	2	47	2	30	3	29	2
Concerned what others might think	31	3	49	4	25	2	29	2
Other reasons	12	5	18	5	6	1	8	3
Distance, transportation	6	0	0	0	6	0	4	0

*Includes 45 likely PTSD cases who reported receiving mental health care during the past 12 months.

they had mental health problems that might benefit from professional attention. Only about one quarter of male theater veterans who were likely PTSD cases but who had never used mental health services acknowledged having a mental health problem for which they did not seek care. Even those with prior experience with professional mental health care services frequently did not seek care for their psychiatric problems: more than half of the likely PTSD cases who had also received mental health treatment at some time in their life reported not seeking needed care for a mental health problem. This group may include individuals who sought care for PTSD but either dropped out of treatment or had a re-occurrence of symptoms for which they did not seek care.

Exhibit IX-6 summarizes the barriers to mental health care reported by those male Vietnam theater veterans who reported not seeking mental health treatment for a problem that could have benefited from such treatment. It is important to note the small sample sizes for the subgroups of likely PTSD cases and to point out that only gross differences in proportions between these groups would be statistically significant. By far the most frequently reported reason for not seeking care was the hope or belief that the individual could solve the problem on his own. Interestingly, those individuals who had sought mental health treatment in the past were less likely to nurture this hope or belief. Individuals who had sought mental health treatment in the past were also less likely to agree with the second most frequently reported reason for not seeking care: the hope or belief that the problem would get better on its own. These two most frequently reported reasons were also those most frequently identified as the "most important reason" for not seeking care.

Other major reasons given for not seeking care were feeling as though treatment wouldn't help, not knowing where to get help, distrust of mental health professionals, the respondent's fear of what he might learn from consulting a mental health professional, and the time and cost involved in seeking treatment. Not surprisingly, those with no past use of mental health services appear to be more concerned with others' finding out and others' opinions of them if they sought professional mental health treatment than those who had sought treatment previously.

Summary of Mental Health Services Utilization

Vietnam theater veterans as a group (both men and women) were more likely to have used the VA for mental health services than their era veteran counterparts (7.5 versus 3.3 percent for men, and 8.2 versus 1.0 percent for women). Among women, theater veterans were also more likely than comparable era veterans to have ever sought assessment or treatment specifically for mental health problems at Vet Centers in particular (4.6 versus 0.5 percent), while the rates of utilization of Vet Centers for such problems by Vietnam theater and era veteran men were quite similar (2.3 versus 1.2 percent). Lifetime utilization of any mental health facility (that is, non-VA and VA combined) was essentially the same for theater and era veterans, among men and women. Comparisons of Vietnam era veterans to theater veterans most directly exposed to the adverse aspects of war were even more telling and consistent. Theater veteran men and women exposed to high levels of war zone stress were significantly more likely than comparable era veterans to have ever received mental health services from a Vet Center, any VA mental health service (including VA Medical Centers and Outpatient Clinics), and (for men) any type of mental health facility (including private, state, and federal facilities). For example, male theater veterans who were exposed to high war zone stress were more than four times (and women theater veterans more than 20 times) as likely as comparable era veterans to have ever sought treatment for mental health problems from an agency affiliated with the Veterans Administration (15.9 versus 3.8 percent for men, and 15.8 versus 0.7 percent for women). In addition, male theater veterans who were exposed to high levels of war zone stress were more than three times as likely, and women eight times as likely, as comparable era veterans to have sought mental health services from the VA within the past 12 months (6.1 versus 1.9 percent for men, and 8.1 versus 0.1 percent for women).

The NSVG data thus suggest that Vietnam theater veterans -- especially those exposed to high levels of war zone stress -- have made greater use of mental health care resources than their era veteran and civilian counterparts. In fact, there was not a single contrast on which theater veterans were significantly lower than comparable era veterans and civilians, and there were a great many on which they were more likely to

have used services for mental health problems. Although further analyses are clearly needed to identify factors that explain the greater use of these services among Vietnam theater veterans, one plausible hypothesis is that this higher rate of use reflects their greater need for such services.

We also examined variations in mental health care use within white/other, black, and Hispanic subsamples of Vietnam theater veteran men. Overall, we found that the white/other and Hispanic subgroups used all mental health resources in much the same way as the total population of theater veterans. Among blacks, however, the picture was somewhat different. For example, in contrast to the other two racial/ethnic subgroups, the proportions of black theater and black era veterans who had ever used VA mental health facilities did not differ significantly on any contrast. An examination of the lifetime VA usage rates for these groups revealed a similar propensity among both black theater and black era veterans to have used VA mental health services, thereby minimizing differences between these groups.

Another issue of considerable importance to both Congress and the Veterans Administration is the use of mental health services by Vietnam veterans with PTSD. We found that both male and female theater veterans with PTSD were significantly more likely than theater veterans without this disorder to have ever used any type of formal mental health service. For example, male theater veterans with PTSD were nearly four times more likely than theater veterans without PTSD to have ever been treated for a mental health problem at a VA facility (20.0 versus 5.2 percent), while the usage ratio for female theater veterans with and without PTSD was nearly 9 to 1 (41.4 versus 4.7 percent). Similarly, we found that 62 percent of male and 73 percent of female theater veterans with current PTSD had made at least one visit to a mental health care provider for treatment of mental health problems at some point in their lives. Vietnam veterans with PTSD were also significantly more likely than their counterparts without this disorder to have used mental health services within the past 12 months. Some 22 percent of male and 55 percent of female theater veterans with a current diagnosis of PTSD had visited a health care professional for treatment of a mental health problem within the last year, and approximately half of the facilities used for such treatment, in each case, were VA facilities.

These data on use of mental health services by Vietnam veterans with PTSD beget the age-old question "Is the glass half empty or half full?". As is usually the case, the answer depends on one's perspective. Clearly, the NSVG data on utilization suggest that many veterans with PTSD are seeking and receiving mental health services through the auspices of federal, state, and private health care providers. Yet, the findings also indicate that three-eighths of male and one-quarter of female Vietnam theater veterans with current PTSD have never seen a health professional about a mental health problem, and that roughly 78 percent of current PTSD cases among male theater veterans and 45 percent among female theater veterans have not done so within the past year. Since PTSD is a major and debilitating psychiatric disorder, a considerable unmet need for mental health services probably remains.

We also looked for significant variations in the use of mental health resources by level of SCPD and presence or absence of a lifetime diagnosis of substance abuse or dependence. Among male Vietnam theater veterans, those with SCPD's were significantly more likely than theater veterans without SCPD's to have reported seeking treatment for mental health problems at Vet Centers, any VA facility, and any mental health facility. Female veterans with SCPD's did not differ from their theater veteran counterparts on lifetime and current use of any mental health services. However, both male and female theater veterans with a lifetime diagnosis of substance abuse or dependance were more likely than their non-abusing and non-addicted theater veteran counterparts to have used mental health services of all types, both since their separation from the military and within the past year.

CHAPTER X. PTSD AMONG VIETNAM VETERANS: A FAMILY PERSPECTIVE

A. Introduction

Among other provisions, Public Law 98-160 called for the study of Vietnam veterans to include "an evaluation of the long-term effects of post-war psychological problems among Vietnam veterans on the families of such veterans (and on persons in other primary social relationships with such veterans)." To address this objective, for certain Vietnam theater veteran respondents we conducted an interview with another person in the veteran's household subsequent to the NSVG interview with the veteran. This additional interview permitted an independent assessment of both the veteran's problems and of the impact of such problems on the veteran's family. We selected as potential candidates for this follow-up interview all veteran respondents with a high probability of having PTSD, a large subset of those with a moderate probability of having PTSD, and a smaller subset of those with a low probability of PTSD. For the analyses presented in this chapter, the data were weighted to compensate for differences in the probabilities selection among the various groups.[1]

After the responses of theater veterans were screened to determine their eligibility and sampling rates, we drew a subsample for the Family Interview Subsample, and, for those chosen to participate, we then determined whether a spouse, or a person with whom the veteran was living as though married, was living in the household with the veteran respondent. This person, "the spouse/partner" (S/P), was asked to participate in the follow-up interview. The response rate for the Family Interview (FI) was 80 percent and included 466 men and women. A more detailed description of the Family Interview or "spouse/partner" sample is provided in Appendix A.

All of the data that are summarized in this chapter are found in Volume II, Tables X-1 to X-28. A summary of the contrasts presented in these tables is found in Exhibits X-1 and X-2. Based on data from the S/P

1/ The estimates and contrasts were computed using weights developed to weight the "Spouse/Partner" data up to that for the population of all theater veterans with a co-resident spouse or partner. Age, sex, and (for males) race/ethnicity were used as the strata for the development of the weights, which were also adjusted for nonresponse.

Exhibit X-1

Summary Results of the Statistical Contrasts
for the Family Interview*

Background Characteristics of the Spouse/Partner (S/P) and the Couple,
and the S/P's Assessment of the Veteran's Problems

	Male Veterans	Females Veterans
B. BACKGROUND CHARACTERISTICS OF S/P AND COUPLE		
Educational Attainment of the S/P	NPTSD>PTSD*	PTSD>NPTSD***
Current Marital Status of Couple [1]	PTSD More Often Married*	Not Tested
Number of Divorces Among S/P's Ever Married	N.S.	N.S.
Length of S/P's Relationship with Veteran	NPTSD>PTSD***	NPTSD>PTSD***
% of Years S/P Worked During Relationship[2]	N.S.	NOT TESTED
Current Work Status of S/P[1]	N.S.	NOT TESTED
Socioeconomic Status of S/P's Job	N.S.	N.S.
C. SPOUSE/PARTNER'S REPORT OF VETERAN'S PROBLEMS		
MPTSD Score for Veteran (S/P's Report)	PTSD>NPTSD***	PTSD>NPTSD*
Whether S/P Believes Veteran Has/Had PTSD	PTSD>NPTSD***	NOT TESTED
Readjustment Problem Index Score for Veteran	PTSD>NPTSD***	N.S.
Level of Life Functioning of Veteran	NPTSD>PTSD***	NPTSD>PTSD*

* All results are based on the interview with the S/P except where noted.

NPTSD=NOT PTSD; *P<.05; **P<.01; **P<.001; N.S. Not Significant

[1]From the Veteran Respondent Interview
[2]Variable Created Using Data from Both Veteran and S/P Respondent

Exhibit X-2

Summary Results of the Statistical Contrasts
for the Family Interview*

Interaction Problems in the Veteran's Family,
and Self-Reported Problems of the Spouse/Partner (S/P)

	Male Veterans	Female Veterans
D. INTERACTION PROBLEMS IN VETERAN'S FAMILY		
Marital Problems Index	PTSD>NPTSD***	N.S.
Family Problems Index Score: All Couples	N.S.	N.S.
Family Probs Index Score: Couples With Children	N.S.	N.S.
Standard Family Violence Index for Veteran	PTSD>NPTSD***	N.S.
Alternate Family Violence Index for Veteran	PTSD>NPTSD***	N.S.
Standard Family Violence Index for S/P	PTSD>NPTSD**	N.S.
Alternate Family Violence Index for S/P	PTSD>NPTSD**	N.S.
Childhood Behavior Problems Index	PTSD>NPTSD*	Not Tested
Alternate Childhood Behavior Problem Index	PTSD>NPTSD* (clinical range)	Not Tested
E. SELF-REPORTED PROBLEMS OF SPOUSE/PARTNER		
Subjective Well-Being of the S/P	NPTSD>PTSD***	NPTSD>PTSD***
PERI Demoralization Score of the S/P	PTSD>NPTSD***	N.S.
Social Isolation Index Score for the S/P	N.S.	NPTSD>PTSD***
Alcohol Problems of the S/P	N.S.	N.S.
Drug Problems of the S/P	Not Tested	Not Tested
Whether S/P Ever Felt Like Nervous Breakdown	PTSD>NPTSD***	N.S.

* All results are based on the interview with the S/P

NPTSD=NOT PTSD; *P<.05; **P<.01; **P<.001; N.S. Not Significant

report (except for some demographic information where noted), these tables permit an examination of both the differences in problems and characteristics of Vietnam theater veteran respondents with and without PTSD and differences in the problems and characteristics of the families of these veterans. The classification of respondents into "PTSD Positive" and "PTSD Negative" in these tables was based on an adjusted 89+ cutoff score on M-PTSD. The adjustments were derived from the clinical subsample and were a way of compensating for the false-positive and false-negative rates on the M-PTSD by using information from the clinical subsample. A description of this adjustment procedure may be found in Appendix D.

This chapter will look at differences between those with and without PTSD and their families for a variety of background characteristics and outcome measures. The chapter will first provide a portrait of the spouses or partners of and the couples, including the age, race, educational attainment, work status, and the prestige of the occupation of the S/P's. Next will follow a description of the S/P's perception of the adjustment and PTSD-related problems of the veteran. (Although the S/P's may not have been aware of all of the problems that the veteran had with adjustment and his or her PTSD symptomatology, it was important to obtain some confirmation of the veteran's self-report of adjustment and PTSD-related symptoms from a second source.) Third, this chapter will include a discussion of any interaction or relationship problems in the veteran's family that were reported by the S/P's, including marital and family adjustment problems, and family violence. Finally, the chapter will provide information on the S/P's self-reported emotional and behavioral problems, including subjective well-being, demoralization, and alcohol and drug problems. The chapter will conclude with a summary of the most important findings from the data described in the chapter.

Data from the Family Interview were analyzed separately for male and female theater veterans. All veteran respondents for whom a family interview was obtained were married to or living with a person of the opposite sex except, possibly, for one person whose self-reported gender differed from the gender listed in the military record. Because the FI results for women theater veterans were based on only five female theater veterans with PTSD, extreme caution must be used in the interpretation of the estimates for the S/P's of women theater veterans with PTSD and the

contrasts between women theater veterans with and without PTSD and their S/P's.

B. Background and Demographic Characteristics of the Spouse/Partner and the Couple

1. Age, Race/Ethnicity, and Education of the Spouse/Partner

Information from these measures provided a profile of the Vietnam theater veteran's spouse/partner and of the couple.

a. The Measures

Age of the Spouse/Partner was the age reported by the S/P in the FI.

Race/Ethnicity of the Spouse/Partner was also taken from the FI. Categories are 1) White and other; 2) Black (not Hispanic); 3) Hispanic (includes black and white Hispanics).

Educational Attainment of Spouse/Partner was also self-reported on the FI. Educational attainment is coded as 1) less than high school; 2) high school graduate (includes "some college"); and 3) college degree. This latter category was not defined for the respondent and so may include both associate degrees, bachelor degrees, graduate degrees, and professional degrees.

b. The Results

The majority of the S/P's of male veterans were less than 40 years old, with a mean between 37 and 39 years. Most of female veteran respondents are over 40 (mean between 44 and 46). The majority of the S/P's of theater veterans were white. The S/P's of male theater veterans with PTSD were somewhat more likely to be black or Hispanic than were S/P's of male theater veterans without PTSD ($p=.051$). Because of the elevated rates of PTSD in the male theater veteran black and Hispanic subgroups, this is not surprising. Male veterans without PTSD tended to be more highly educated than those with PTSD, and the S/P's of the male veterans

without PTSD had significantly higher levels of education than the of the male veterans with PTSD.

2. Marital Status and Number of Divorces for the Spouse/Partner and Length of Current Marriage/Relationship

a. The Measures

Current Marital Status of the Couple. This is the same marital status variable that was used in the analysis of the data from the main (veteran) interview. The data were taken from the veteran respondent interview.

Number of Divorces of Spouse/Partner Among Those S/P's Ever Married. This is the number of divorces among those spouse/partners who had ever been married as reported by the spouse/partner.

Length of the Spouse/Partner's Relationship with the Veteran (Time was Married to or Lived with Veteran). This measure is based on the S/P's self-report of how long he/she had either lived with or had been married to the veteran respondent, although this report was also compared with the report of the veteran. In cases of major discrepancies between the two reports, other data, including the name of the S/P as reported by the veteran, and the name of the S/P on the FI contact sheet, were examined. In all cases, it appeared that these were the same person.[2]

2/ In addition to problems of recall, there are a number of legitimate reasons why such discrepancies in reports might exist, e.g., in the case of a couple living together for several years before marriage, a veteran respondent may report the length of the current marriage and the S/P's may report the length of the total relationship including time living together. Another reason for such discrepancies relates to couples living together as married. If the individuals lived separately for a period of time between periods of living together, it could well result in one respondent reporting the time they first started living together and the other reporting the last time they started living together.

b. The Results

Since the FI was only conducted when the veteran was either married or living as though married, all couples in the FI had to meet one of these two criteria. Virtually all of the couples reported actually being married. For male theater veterans with PTSD, however, a larger proportion reported living as though married than did male theater veterans without PTSD. There was a marginal tendency ($p=.086$) for more male theater veterans with PTSD than without PTSD to be living with or married to a woman who was divorced. In fact, nine percent of male theater veterans with PTSD were living with or married to a woman who was divorced two or more times, as compared to two percent of male theater veterans without PTSD. The most striking relationship found among the marital/relationship variables was that between PTSD and the length of the marriage or live-in relationship. Both male and female veterans without PTSD tended to have been married to or living with their S/P's significantly longer than their counterparts with PTSD. This translated into a five- to six-year difference between those with and without the disorder. Male theater veterans with PTSD had a mean length of relationship of 10 years; for male theater veterans without PTSD, this mean was 16 years.

3. Employment Characteristics of the Spouse/Partner

a. The Measures

Percent of Years the Spouse/Partner Worked During the Relationship with the Veteran. This measure was computed by dividing the number of years spent working during the marriage/relationship by the length of the relationship in years. The number of years the S/P worked during the marriage/relationship was only available in the veteran interview and so was extracted from there. The length of the relationship was taken from the FI.

Current Work Status of the Spouse/Partner. These data were taken from the FI interview. Currently not working includes 10 cases in which the S/P was retired, a housewife, a student, or disabled.

The Socioeconomic Status (SES) of the Spouse/Partner's Occupation. Information about the S/P's occupation was taken from the veteran interview. Occupation was coded using the 1980 Census classification scheme developed by Stevens and Cho (1985). SES scores theoretically range from 0 to 100.

b. The Results

There were no significant differences between veterans with and without PTSD in the proportion of time that the S/P was employed while living with the veteran. The mean proportion of the relationship during which the spouse worked was .6 for S/P's of male theater veterans and .85 for S/P's of female theater veterans. There were no significant differences between male veterans with and without PTSD in the percent of S/P's currently working. About 75 to 80 percent of the S/P's of male theater veterans were currently working and 97 to 100 percent of the S/P's of female theater veterans were currently working. In addition, although there was also some tendency for male theater veterans without PTSD to have an S/P with an occupation with higher prestige than occupations of S/P's of veterans with PTSD, this did not reach statistical significance.

C. Spouse/Partner Report of Adjustment and PTSD Problems of the Veteran

1. PTSD Problems Exhibited by the Veteran as Reported by the Spouse/Partner

In the following section, the S/P's assessment of the veteran's adjustment and PTSD-related problems is discussed. It is important to note that many of the symptoms of PTSD, including those about which we are asking, are private events, that is, thoughts and feelings that the veteran may not disclose to the S/P. For example, three of the four Criterion B symptoms concern intrusive and distressing memories of traumatic events, of which the S/P may be unaware. Two problems associated with PTSD, avoidance and guilt, often inhibit the discussion of PTSD problems with others, including the S/P. Also, those with PTSD tend to have been in their relationship for shorter periods of time than other theater veterans. Thus, the S/P of a veteran with PTSD may not have been with the veteran

long enough to detect some of these problems the veteran chooses not to discuss. Consequently, one would expect that, in many cases, the S/P would not be able to accurately assess the extent of the veteran's PTSD symptoms or to say whether or not the veteran has PTSD. Nonetheless, we would expect to find a statistically significant relationship between the NVVRS diagnosis of PTSD and the S/P's rating of the veteran's PTSD problems. The absence of such a relationship would cast doubt on the accuracy of the veterans self-report, the validity of the PTSD diagnosis, and/or imply a total lack of awareness of the veteran's problems by the S/P.

a. The Measures

The M-PTSD Score of the Respondent as Reported by the Spouse/Partner. This measure used the same set of items that were used for the M-PTSD score for the veterans, except that the S/P answered the questions about the veteran's behaviors and problems, e.g. "She/He has nightmares of experiences in the military that really happened." Because some of these problems and experiences may not have been reported to the spouse or partner, e.g., "She/He is frightened by his/her urges", there are more "don't know" responses reported by the spouses or partners of the veterans than by the veteran respondents themselves. To avoid artificially low scores when the spouse did not know some specific items were true of the veteran, the average score on the nonmissing items was used in place of the "don't know" responses in computing the total M-PTSD score,, but only in cases in which less than half of the items on the M-PTSD scale were answered "don't know" or other missing data. In developing the composite diagnosis of PTSD used for the prevalence estimates, it was found that the best predictor of PTSD from the spouse's rating of the M-PTSD scale (for the veteran) was a cutoff of 85 on the M-PTSD. This measure correctly identified approximately 60 percent of the PTSD cases and misclassified approximately 10 percent of the negative cases. The 84 cutoff produced a kappa of approximately .50 with the composite diagnosis, with the SCID diagnosis, and with the veteran's M-PTSD score. The improved prediction of PTSD one gains by using the 84 instead of the 89 cutoff may result from the S/P's not being aware of the full extent of the veteran's problems with

PTSD. Therefore, in the FI analysis, we used an 84 cutoff for M-PTSD, although we also examined the effects of using an 89 cutoff.

Spouse/Partner's Perception of Whether the Respondent Has/Had PTSD. The S/P was asked whether he or she knew what PTSD was. If so, the S/P was asked whether he or she believed that the veteran respondent had ever had PTSD and if so, whether the S/P believed that the veteran respondent had PTSD now. Therefore, the response categories for this variable were "S/P doesn't know what PTSD is"; "S/P knows what PTSD is but doesn't believe veteran respondent ever had PTSD"; S/P knows what PTSD is and believes veteran respondent had PTSD in past but not currently; "S/P knows what PTSD is and believes veteran respondent has PTSD currently." It is important to point out, however, that this item undoubtedly had limited validity, and that among those S/P's who reported that they knew what PTSD is, few would have been able to accurately "diagnose" the presence of PTSD or any other psychiatric disorder, except in the most extreme cases.

b. The Results

The S/P's of veterans with PTSD were significantly more likely to rate those veterans as having a score of at least 84 on the M-PTSD scale than were S/P's of veterans without PTSD. This was true for S/P's of both male and female theater veterans.[3] S/P's of male theater veterans with PTSD rated 60 percent of their partners as having an M-PTSD score of 84 or higher; SP's of veterans without PTSD rated only eight percent of their partners as having an M-PTSD score of 84 or higher. For female theater veterans, 49 percent of the S/P's rated veterans with PTSD as having an M-PTSD score of 84 or higher and only one percent of the veterans without PTSD as having a score this high. Using the 89 cutoff, the proportion of those S/P's correctly identifying theater veterans with and without PTSD did not change for female theater veterans, but it did change somewhat for male theater veterans. S/P's of male theater veterans rated 50 percent of those with PTSD as having an M-PTSD score of 89 or

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3/ The correlation of the veteran's M-PTSD score with the S/P's M-PTSD score for the veteran was .61.

higher, and four percent of those without PTSD as having an M-PTSD score of 89 or higher. As discussed above, the fact that only 50 to 60 percent of the S/P's of veterans with PTSD were sufficiently aware of the full extent of the veteran's symptomatology is not surprising for a disorder like PTSD, which involves many symptoms which are private events, such as intrusive thoughts and feelings of guilt. In fact, it would be surprising to find any instrument which, when administered to someone other than the individual with the disorder, could better predict the presence of any other specific psychiatric disorder.

For male veterans, there was a statistically significant relationship between the S/P's perception of whether the veteran had or has PTSD and whether the veteran was classified as having PTSD.

2. Other Adjustment Problems of the Veteran as Reported by the Spouse/Partner

a. The Measures

Veteran Respondent's Readjustment Index Score as Assessed by the Spouse/Partner. This Readjustment Index is a modified version of the one used for the veteran respondent. (Results based on the veteran respondent's responses were presented earlier as the Index of Readjustment Problems in Chapter VII.) Responses used in the FI analysis are based on the S/P's assessment of the readjustment problems of the veteran respondent. The FI (and NSVG) questionnaire on readjusting to civilian life had 12 items that were originally used in the Harris study, Myths and Realities, and the CBS poll on the tenth anniversary of the end of the Vietnam war. These questions asked about the following problems:

- trouble finding jobs
- trouble holding jobs
- trouble with the law
- drinking problems
- drug problems
- physical health problems
- mental health problems
- trouble with finishing school

Other problems included in the list were having enough money to live on, being discriminated against because of being a Vietnam veteran, finding meaning in life, and having problems with family. For purposes of these analysis, we used the following scale to code each of these items: 1 (never had the problem); 2 (past minor problem); 3 (past serious problem); and 4 (current serious problem). We computed a mean score across items by using all items for male veterans, but omitting three items for female veterans, because female veterans reported almost no problems of this type. (These three were drug problems, problems with the law, and problems with being discriminated against because of being a veteran.) If any of the items were coded as missing (but fewer than half), we substituted the mean of the nonmissing items as the score for the missing item(s).

S/P's Perception of the Level of Life Functioning of the Veteran. We used these measures to replicate previous research in this area. In a investigation of stress, work, and unemployment among Vietnam veterans and nonveterans (Vinokur, Caplan, & Williams, in press), a "significant other" (equivalent to Spouse/Partner in this study) was asked fourteen questions measuring the life adjustment of a veteran respondent. To replicate that study, we also included these fourteen items in the NVVRS Family Interview. In these items the S/P was asked how well the veteran had done during the last week in the following areas: getting along with others; handling disagreements; avoiding arguments; staying "level-headed"; being calm; being pleasant; acting relaxed; showing affection; making decisions; accepting responsibilities; handling responsibilities; handling all things required of him or her in his or her personal life; giving people time and attention; working around the house. The veteran's success in each of these areas was assessed using a five point scale, which, ranged from 1 ("Very Poorly") to 5 ("Exceptionally Well"). A weighted correlation analysis was done to determine if all of the items were correlated. When we determined that they were (that is, that it was one general factor on which all the items loaded), an index was created as the mean of the individual items.

b. The Results

As reported by the spouse/partner, male theater veterans with PTSD both had more adjustment problems and are currently functioning less well than male theater veterans without PTSD. In fact, 80 percent of the male theater veterans were reported to be in the highest category on the Readjustment Problems Index as compared to only 20 percent of those without PTSD.[4] Similar percentage differences (69 percent as compared to 13 percent) were found for female theater veterans.

D. Interaction or Relationship Problems in the Respondent's Family as Reported by the Spouse/Partner

1. Marital and Family Problems

a. The Measures

Marital Problems Index as Assessed by the Spouse/Partner. This also is an index used for the veteran respondent, the results of which are presented in Chapter VI. Here, the index uses the S/P's responses on the series of items regarding how well the S/P and veteran respondent get along, how satisfied the S/P is with the relationship, how often the respondents argue, how often they show affection, etc. Index values are the mean scores across the items and range from 0 (no problems) to 5 (extreme degree of problems).

Family Adjustment Index for all Couples as Assessed by the Spouse/Partner. This index measures both family adaptability and family cohesion for all couples. Again, the results for its use with the veteran respondent are found in Chapter VI, and a full description of the index can be found in that chapter. Briefly, family adjustment consists of balance in both the areas of cohesiveness and adaptability. That is, well adjusted families are cohesive and reasonably close, but not pathologically tied together nor alienated from each other. And, they are adaptable rather than

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4/ The correlation between the Veteran's Readjustment Index Score and the S/P's Readjustment Index Score for the veteran was .58.

chaotic or extremely rigid. The Family Adjustment Index has three levels: Balanced (on cohesion and adaptability); Mid-Range (out of balance on either cohesion or adaptability); Extreme (out of balance on both cohesion and adaptability).

Family Adjustment Index for Couples with Children as Assessed by the Spouse/Partner. This is the same as the Index just described, except items were phrased to include both children and adults, for example, "Each family member has input in major family decisions" instead of "We each have input regarding major family decisions." Here, also, the Index has three levels: Balanced (on cohesion and adaptability); Mid-Range (out of balance on either cohesion or adaptability); and Extreme (out of balance on both cohesion and adaptability).

Family Violence: Standard Family Violence Measure for the Spouse/Partner; Standard Family Violence Measure for the Veteran; Alternate Family Violence Measure for the Spouse/Partner; Alternate Family Violence Measure for the Veteran. Four indices were created to assess family violence: two for the veteran respondent in the past year as reported by the spouse/partner, and the same two to assess the family violence of the spouse/partner in the past year, as self-reported. One of these indices, the standard family violence measure, is the family violence index developed by Straus (1979). The second index, the alternate family violence measure, uses the same items, plus one additional item, but scores the items differently. These four indices, then, are based on the S/P's reports, that is, the indices assessing the S/P's family violence were based on the S/P's self-reported behavior, and the indices assessing the veteran respondent's family violence were based on the S/P's report of the behavior of the veteran respondent. (Chapter VII contains analyses for an index of all types of violent acts reported by the veteran respondent.)

Scoring of the Family Violence Indices. There are eight types of violent acts included in the the standard family violence measure: throwing something at someone; pushing/grabbing someone; slapping someone; kicking/biting/hitting someone (unarmed); hitting someone with an object; beating up someone; threatening someone with a knife or gun; and actually

using a knife or gun on someone. Each item was scored 0 (never in the past year); 1 (once in the past year); 2 (twice in the past year); 3 (3-5 times/past year); 4 (6-10 times/past year); 5 (11-20 times/past year); 6 (more than 20 times in the past year). The mean of the nonmissing items was substituted for the missing items when less than half the items were missing. The score on the Standard Index is the total score across all items. The alternate family violence measure is the total number of violent acts committed in the past year. To compute the alternate index, for each item in the Standard Index, the values 0-6 are replaced with the mean number of occasions the value represents, that is, the values 0-2 remain unchanged, but the value 3 becomes 4 (the mean of 3-5 times that the original value of 3 represented). Similarly, the value 4 on the Standard Index becomes 8 in the Alternate Index (the mean of 6-10 times). In addition, the Alternate Index includes one additional item, "threatened to hit or throw something," since threats may also be perceived of as a form of abuse. The score on the Alternate Index is the total score across all nine recoded items.

b. The Results

For male theater veterans, those with PTSD reported more marital problems than those without PTSD. The distributions and mean differences are similar but more extreme for female theater veterans.[5] (For example, 51 percent of the S/P's of female veterans with PTSD were in the most severe category on marital problems, as compared to 10 percent of the S/P's of female theater veterans without PTSD.)

For male theater veterans (both those with children and all couples), those without PTSD tended to have better family adjustment than those with PTSD; but this difference did not reach statistical significance (p=.088 for families with children; p=.192 for all families).[6]

5/ The correlation of the veteran's Marital Problem Index with that of the S/P's was .53.

6/ The correlation of the S/P's Family Adjustment Indices with those of the veteran respondent were .08 and .05. This lack of congruence is in line with research in this field which suggests that such incongruence may reflect marital and family problems (e.g., Bernard, 1972).

For male theater veterans, family violence, both violence by the veteran and violence by the significant other, was more prevalent among those families in which the veteran had PTSD than in families in which the veteran did not have PTSD. The mean number of violent acts committed in the last year (including threats) by male theater veterans with PTSD was three; for those male theater veterans without PTSD it was one. Interestingly, the mean number of violent acts committed by the S/P's of male theater veterans with PTSD in the last year was five, while for the S/P's of those without PTSD it was one. This relatively high mean for the S/P's of male veterans with PTSD appears to result, in part, from the fact that nine percent of these S/P's committed thirteen or more acts of family violence in the last year, thereby raising the mean. However, on both indices, a higher proportion of male veterans with PTSD committed at least some acts of family violence in the past year than their (female) S/P's.

For female theater veterans, those with PTSD and their S/P's tended to exhibit more family violence than those without PTSD and their S/P's; but these differences did not reach statistical significance.

2. Behavior Problems of Children Living in the Veteran's Home

a. The Measures

Childhood Behavior Problems Score and Alternate Childhood Behavior Problems Score. To assess the problems of the children of Vietnam veterans, we used the Childhood Behavior Checklist (CBCL) (Achenbach, 1978). The reliability and validity of the profile developed from the CBCL has been demonstrated in a variety of studies (Achenbach & Edelbrock, 1983). A separate checklist was completed by the S/P's for each child between 6 and 16, living in the home of the veteran and S/P. Each item in the CBCL is scored (0) not true; (1) somewhat or sometimes true; and (3) very true or often true. These items are then summed to create a raw score, the "total behavior problems score." (The CBCL has a variety of subscales, but the total behavior problems score has been found to be that most highly related to clinical status.) This total raw score is then normed to T scores developed by Achenbach using data from a random community sample of 1,442 parents. These T scores are computed separately

by sex and by age of child (6-11 and 12-16) to account for age and sex differences.

All known previous research with the CBCL used the child as the unit of analysis. For the analysis of the FI interview, we were concerned with differences in problems across all of the children in the family of the veteran. To examine this, we created two variables, the childhood behavior problem score, which was the T score for the child aged 6-16 with the highest number of problems. The alternate childhood behavior problem score is the mean T score across all children aged 6-16. One cutpoint used for the categorical versions of both of the problem score variables is the raw score (for each age-gender category) that Achenbach uses as the normal/clinical range cutpoint. This is the 90 percentile for the standardization group. Within the normal range, the "No/Few Problems" group has a T score of less than 50, which indicates that the probability that their score came from a clinical sample is approximately 10 percent or less. The cutpoint used to divide the clinical range was computed by using the T score which created two approximately equal size groups (ignoring PTSD status and sex of veteran) among those scoring in the clinical range. The cutpoint used was between the T scores of 67/68.

b. The Results

In the family sample, only two of the female veterans with PTSD had children. Therefore, the data for females is not presented.

Overall, children of male theater veterans with PTSD had more behavioral problems than did children of male theater veterans without PTSD. When examining the data for the child with the most behavioral problems, we find that male veterans with PTSD were more likely to have at least one child with behavioral problems than male veterans without PTSD. Although the overall test across the PTSD/NonPTSD groups was significant for scores on the behavioral checklist (using four levels), when we examined the tests produced for each level of scores, we found that the most important difference was the proportion of those who have had at least one child with some behavioral problems.

When examining the data for the mean behavioral problem score across children, we found that the major difference was in the proportion of

veterans whose childrens' "average" score was in the clinical range. When comparing the PTSD/NonPTSD groups on the mean score measure, we found that the children of those with PTSD were more likely to have a problem in the clinical range than the children of those without PTSD, and that the overall test for finer distinctions (that is, the four-level variable) was not significant. The average score across children for those with PTSD was in the clinical range for 35 percent of those with PTSD, compared with only 14 percent for those without PTSD. When further examining the tests for differences between the PTSD/NonPTSD groups for all four levels of the measure, we found that the major difference was in the "clinical range, mild" level, indicating that the biggest differences between the groups were that the average scores of the children of those with PTSD were more likely to be in the low clinical range than those of veterans without PTSD.

E. Self-Reported Psychological and Behavioral Problems of the Spouse/Partner

1. Subjective Well-Being and Self-Reported Nonspecific Distress (PERI Demoralization Score) of the Spouse/Partner

a. The Measures

Subjective Well-Being of the Spouse/Partner. The S/P questionnaire contained items which asked about both the S/P's perceived happiness and life satisfaction. The first item was taken from Gwin et al. (1960) and asked whether "taking things all together" the respondent was very happy, pretty happy, or not too happy "these days." The second item was a measure of life satisfaction taken from the 1976 Americans View Their Mental Health Study (Veroff et al., 1981). This question asked "In general, how satisfying do you find the way you're spending your time these days?". Answer choices were "completely satisfying", "pretty satisfying", and "not at all satisfying". These two items were combined into one variable and scored the same for the S/P as it was for the veteran respondent: categories ranged from "very unhappy and not very satisfied" to "very happy and completely satisfied."

Peri Demoralization Score (Self-Reported Nonspecific Distress) of the Spouse/Partner. We also used the demoralization measure from the

Psychiatric Epidemiology Research Interview (PERI) (Dohrenwend, 1982; Dohrenwend, Levav, & Strout, 1986) as described in Chapter VII in the FI. We combined a subset of eight of the PERI scales into one scale, and used the short version of this scale for both the veteran respondent and the S/P respondent. We refer to this measure as "nonspecific distress" because it taps distress symptoms that are associated with a variety of psychiatric disorders. The scoring of the PERI is the same as described in Chapter VII: the score is the mean of all non-missing items if less than half the items were missing. The range is from low (0-.49) to high (1.5 or greater).

b. The Results

Among both male and female theater veterans, the S/P's of theater veterans with PTSD had a strong tendency to be less happy and satisfied than the S/P's of theater veterans without PTSD. More than half of the S/P's of veterans (male and female) without PTSD scored in the two highest categories on the Subjective Well-Being Index (Happiness and Satisfaction Index), while only 11-15 percent of the S/P's of veterans (male and female) with PTSD scored in the two highest categories.

S/P's of male theater veterans with PTSD had higher PERI Demoralization scores than those of male theater veterans without PTSD. Forty-three percent of S/P's of male theater veterans with PTSD were in the highest category on demoralization, as compared to 15 percent of the S/P's of those without PTSD. There was also some tendency for the S/P's of female theater veterans with PTSD to have higher demoralization scores than S/P's those without PTSD.

2. Self-Reported Behavioral Problems of the Spouse/Partner: Social Isolation, Alcohol Problems and Drug Problems

a. The Measures

Social Isolation Index Score of the Spouse/Partner. The S/P's questionnaire contained only four of the twenty-two questions related to social isolation that had been asked of the veteran respondent. Two of these four items asked about the number of close friends/relatives the

respondent had. The third asked whether the S/P had friends or relatives (excluding the veteran respondent) that he or she (that is, the S/P) could "tell just about anything to, someone you can count on for understanding and advice." The last item asked whether the S/P respondent had problems he or she could not discuss with friends or relatives. An index was created which gave one point for each of the following responses: zero close friends; zero relatives the S/P feels close to and can talk with; "No" to whether the S/P has friends or relatives (excluding the veteran respondent) that he or she could "tell just about anything to"; and "Yes" to whether the S/P's respondent had problems he/she could not discuss with friends or relatives. The total score, then, ranges from 0 to 4.

Alcohol Problems of the Spouse/Partner. We used the Brief Michigan Alcoholism Screening Test (Brief MAST) to assess the alcohol problems of the spouse/partner. The Brief MAST was developed by Pokorny and colleagues (Pokorny, Miller, & Kaplan, 1972) and is a short version of the twenty-five item MAST (Michigan Alcoholism Screening Test) developed by Selzer (1971). For those indicating that they drink alcohol, the Brief MAST contains ten items which ask whether the respondent feels he or she is a normal drinker; whether the respondent's friends or relatives feel the respondent is a normal drinker; whether the respondent has ever attended an Alcoholics Anonymous meeting; whether the respondent has had a wide variety of different problems associated with drinking, including getting in fights, had work problems, been in a hospital or arrested, had relationship problems, had health problems, neglected responsibilities; and whether the respondent had ever sought help from someone for a drinking problem. This Screening Test is scored by counting two points for each item above (coded in the direction of indicating an alcohol problem) except for three items which are considered to be more highly related to alcoholism. These three items (attending AA; seeking help for drinking; and being hospitalized for drinking) each receive 5 points toward the total score. Using this method of scoring, and a cutoff of 6 or more, Pokorny found that none of the known alcoholics were below the cutpoint and only seven of the sixty-two known nonalcoholics were above the cutpoint. The values on the Brief Mast variable were "Doesn't drink alcohol;" "Drinks alcohol but few or no alcohol problems;" and "Probable alcoholic."

Drug Problems of the Spouse/Partner as Self-Assessed. The ten items from the Brief Mast were also reworded to ask about drug problems instead of alcohol problems. These items asked whether the respondent feels drugs are a problem for him or her; whether the respondent's friends or relatives feel that drugs are a problem for the respondent; whether the respondent has ever had treatment or counseling for drugs; whether or not the respondent has had a wide variety of different problems associated with drugs, including getting into fights, had work problems, been in a hospital or arrested, had relationship problems, had health problems, neglected responsibilities; and whether the respondent had ever sought help from someone for a drug problem. Because so few respondents reported having drug problems, response categories were necessarily: "Doesn't use drugs;" "Uses drugs but no problems;" "Uses drugs and has some problems."

b. The Results

Among the S/P's of male theater veterans, there was no significant difference in levels of social isolation between those with and without PTSD. Among the S/P's of female theater veterans, the S/P's of veterans with PTSD tended to have lower isolation scores than S/P's of veterans without PTSD.

S/P's of those with PTSD were also no more likely than S/P's of those without PTSD to report major alcohol problems. However, among S/P's of male veterans with PTSD the mean is not only higher than that for S/P's of those without PTSD, but also the standard error for the mean was rather large, which suggests that a subset of these S/P's may have significant alcohol problems. The amount of reported drug use among S/P's was so small as to preclude statistically testing of such differences.

3. Other Self-Reported Psychological Problems of the Spouse/Partner

a. The Measure

Whether Spouse/Partner Reported Ever Having Felt as Though He or She were Having a Nervous Breakdown. The S/P's analysis includes the item "When problems come up, have you ever felt as though you were going

to have, or were close to having, a nervous breakdown?" A similar item was used in both the 1957 and 1976 Americans View Their Mental Health Studies (Gurin, Veroff, & Feld, 1960; Veroff, Douvan, & Kulka, 1981).

b. The Results

More of the S/P's of veterans with PTSD reported having felt as though they were going to have a nervous breakdown at some point in their lives than did S/P's of veterans without PTSD. This tendency was significant for male veterans. In fact, 55 percent of the S/P's of male theater veterans reported feeling this way as compared to 30 percent of the S/P's of male theater veterans without PTSD.

F. Summary

Overall, the interview with the spouse/partner of Vietnam theater veterans (that is, spouse or person living with as though married) indicated that the families of Vietnam veterans with PTSD have more problems than the families of Vietnam veterans without PTSD. We cannot accurately determine how many of these problems are caused directly by PTSD's effect on the family and how many of these problems result from selection factors, that is, persons who become involved with an individual with PTSD may differ in important ways from those who do not). However, in many ways the S/P's of those with PTSD resembled the S/P's of those without PTSD. Both the S/P's of those with and without PTSD were predominantly in their late thirties to mid-forties and white. In addition, S/P's from both groups were currently working and had worked for the majority of the time they had maintained their relationship with the veteran. S/P's of male veterans had about 13 years of education and the S/P's of female veterans had an average of 16 years of education. Overall, the prestige of the S/P's occupation did not differ significantly for the two comparison groups (those with and without PTSD). As a group, the S/P's of those with PTSD did not appear to have more alcohol or drug problems or to be more socially isolated than the S/P's of those without PTSD. And, while there was a somewhat increased tendency for the S/P's of those with PTSD to report having been divorced, this tendency did not reach statistical significance,

and most individuals in both comparison groups had never been divorced.

Despite these similarities, among male veterans the S/P's of those with PTSD appeared to be less happy and satisfied and to have more general distress including feeling that they might have a nervous breakdown) than the S/P's of those without PTSD. The S/P's of veterans with PTSD reported more marital problems and more family violence than did the families of those without PTSD. Although families of male veterans with PTSD tended to have poorer family adjustment than families of male veterans without PTSD, this relationship did not reach statistical significance. Children of male veterans with PTSD had more behavioral problems, including more behavioral problems severe enough to be of clinical significance, than did the children of male veterans without PTSD.

Because of the problem of sample size for women with PTSD, any results should be taken cautiously. Among women theater veterans, the strongest differences between PTSD positives and negatives were that the S/P's of the positives were much less happy and satisfied than the S/P's of those without PTSD. In addition, the couples in which the veteran had PTSD had been together for a shorter time than couples in which the veteran did not have PTSD.

Finally, the reports of the S/P's of those with PTSD were basically consistent with, and tended to support, the veterans's reports (detailed in other Chapters) that the veteran had major problems with readjustment, life functioning, and their symptoms of PTSD.

XI. RECOMMENDATIONS FOR FURTHER ANALYSIS

We prepared this report to address the specific issues raised in the Congressional mandate. Therefore it is primarily a descriptive report. As such, it serves the useful purpose of describing the levels of post-war psychological problems among Vietnam veterans, and it provides the kinds of information needed by Federal policy makers to formulate mental health service program plans.

However, the report leaves many questions about Vietnam service and its sequelae unanswered. Many such questions refer to the more fine-grained details that can be examined due to the depth and breadth of the Readjustment Study data base, but some are more fundamental. For example, a more complete understanding of the full spectrum of readjustment problems among Vietnam veterans will require extensive multivariate analyses that were beyond the scope of this report.

Therefore, although publication of this report represents an important milestone and endpoint in the life of the Readjustment Study, it is not a "final" report. Rather, it represents the first in what is hoped will be a series of reports that reveal the details of the study's findings. The data base that has been created through conduct of the NVVRS is an extremely rich resource for use in addressing issues of scientific interest as well as of policy import.

In recognition of these facts, the research team felt it important to recognize explicitly the descriptive nature of this report, and to record some of our thoughts about the directions in which subsequent analyses of the Readjustment Study data base might profitably be aimed. This chapter provides an outline of our thoughts about some initial directions that such further analyses should take. This outline is intended as an illustrative, rather than exhaustive, listing of the potential uses of the data base.

A. Understanding the Aftermath of Exposure to Trauma

One of the major strengths of the Readjustment Study data base is the richness of detail that it provides about exposure to trauma and the

occurrence of stress reaction symptoms. Among the many important questions that can be addressed are:

- What is the relationship between specific aspects of trauma and the subsequent development of stress reaction symptoms, controlling for differences in background characteristics?
- Why do some people exposed to a given level of trauma develop PTSD, and others not?
- What is the role of early childhood trauma in subsequent exposure to trauma and in the development of PTSD?
- What is the role of social support, and other forms of coping, both before and after exposure to trauma, in the development of PTSD?
- What characteristics distinguish people with PTSD who seek mental health treatment from those who do not?
- What characteristics predict those whose PTSD becomes chronic from those whose PTSD is more time-limited?

B. Understanding the Syndrome of PTSD

The Readjustment Study collected more data on more people with PTSD than any study in history. These data can make a tremendous contribution to the major revision of the Diagnostic and Statistical Manual of Mental Disorders that is now being organized (to result in the publication in 1992 of DSM-IV). Important information concerning the accuracy and completeness of the current criteria, natural history and course of illness, and co-occurrence with other disorders can be developed through more thorough analysis.

Some of the specific questions that can be addressed with the data include the following:

- What are the essential elements of PTSD as it occurs in a community (non-treatment seeking) population?
- What is the relationship between PTSD and dysfunctions in other (non-psychological) aspects of peoples lives?
- Are the risk-factors for PTSD the same for men and women, and what is the role of occupational factors in the development of PTSD in female Vietnam veterans (many of whom were nurses and encountered their trauma while carrying out their nursing duties)?

- What is the typical natural history and course of PTSD?
- What is the role of dissociation in the etiology and course of PTSD?
- Are there identifiable subtypes of PTSD based on the regular co-occurrence of particular subsets of symptoms?
- Are the other psychiatric disorders that regularly co-occur with PTSD true comorbid syndromes, or are they better understood as epiphenomena of PTSD, or risk factors for PTSD, etc.?
- Should the patterning and numbers of symptoms required to meet criteria for the diagnosis be revised to adjust the threshold for PTSD "caseness" (that is, are the current rules too lenient or too strict)?

C. Understanding the Racial/Ethnic Differences

One consistent finding throughout this report is that there are differences among the racial and ethnic subgroups in the prevalence of a wide variety of readjustment problems. Although the multivariate analyses described in Chapter V provide some insights, much more work is required to gain a more complete understanding of the determinants of these differences. Some of the important questions include:

- Are there fundamental and systematic differences in the symptomatic expression of PTSD in minority group members?
- What characteristics account for the apparently greater vulnerability to PTSD among Hispanic theater veterans?
- Are there other identifiable subgroups with increased vulnerability to the development of PTSD?
- Would a detailed, multidimensional examination of the Vietnam experience reveal differences that are related to the current prevalence of PTSD?
- What are the differences among racial/ethnic subgroups in the relationships among PTSD, other psychiatric disorders, and risk factors?

D. Understanding the Broader Impact of PTSD

In this report we have for the most part focused on the impact of PTSD on the mental health status of the individual who has it. In doing so, we have found that it is often a debilitating, chronic disorder. We have also

provided data suggesting that PTSD is related to a number of other problems in life functioning. These findings suggest that the role of PTSD in the broader spectrum of life adjustment should be examined. Although the findings described in this report are consistent with the hypothesis that PTSD plays a central role in the pervasive life maladjustment of trauma victims, much additional analysis remains to be done before that hypothesis is firmly established.

Whereas analyses of the relationship of PTSD to nonpsychological aspects of life functioning are one way in which the broader impact of PTSD can be assessed, another is to examine the secondary impact of PTSD: the impact on others in the lives of people who have PTSD. Chapter X of this report provided a first look at this issue. However, there are a variety of other questions that can be examined.

- What are the specific patterns of disruptions of adjustment in children of those with PTSD and how are these different from problems in adjustment of the children of parents with other psychiatric illnesses?
- What are the perceptions about communication patterns on the part of the spouse with PTSD as compared to the spouse married to someone with PTSD, and in what ways might this influence treatment decisions (for example, couples therapy)?
- What is the role of racial/ethnic factors in family structure and family functioning that produce different types of adjustment problems for those with PTSD and their loved ones?

E. Understanding the Paths to Seeking and Utilizing Services

An essential policy step, once the scope of a problem is defined and the magnitude of the service need assessed, is the development of a realistic plan for provision of services and implementation of treatment programs. Chapter IX of this report has presented some of the information required to inform treatment planning policy. There are, nonetheless, additional issues regarding utilization of both health and mental health services that could profitably be explored using the NVVRS data.

- What are the regional differences in patterns of utilization, adjusted for the level of need?
- What is the influence of racial/ethnic factors in health care utilization, both in the general health and the specialty mental health care sectors?

- What are the "unmet" needs in terms of mental health services as well as medical services, based on descriptions of physical health problems?

- What factors appear to facilitate or inhibit utilization of services, such that a new model for the provision of services might be developed?

- What is the influence of psychiatric disorders on the utilization of health and mental health services, and what impact might clear specification of co-occuring disorders have on the design of treatment provision?

F. Improving the Assessment of PTSD

One of the major features of the Readjustment Study is the use of multiple measures in formulating the PTSD diagnosis. As a result, we gained a great deal of experience with a variety of measures, using different methods, sources of information, etc. Systematic examination of those data would result in improved methods of assessment for PTSD for both clinical and community research uses. Among the important uses of the data in this regard are:

- What is the optimum instrument or set of instruments for use in identifying PTSD cases in a community setting?

- What is the optimum instrument or method for assessing the severity of specific traumatic events and their salience to PTSD?

- How can structured clinical interviewing be modified to increase the sensitivity to PTSD?

- What brief screening scales can be used in clinical situations to help improve identification of PTSD in the clinic?

G. General Scientific and Methodological Issues

Finally, the Readjustment Study data base is useful for examining a vast array of scientific and methodological issues. Many aspects of the Readjustment Study design represent methodological innovations whose full implications should be examined in detail. Some examples of such aspects include the theater and era veteran sample designs, the two-stage approach to the clinical subsample, the methods used in creating war zone stress indices, and the methods used in making the PTSD diagnosis. The

Readjustment Study data base is fertile ground for investigating many methodological issues. Among those that are of immediate interest are:

- What is the correspondence between survey- and clinically-based diagnoses for disorders other than PTSD?
- What is the correspondence between self-reported and collateral-reported psychiatric symptom information?
- What is the impact of alternative conceptualizations of war zone stress exposure?
- Does a past history of mental health treatment significantly affect people's survey interview report of psychiatric symptoms?
- Do the conclusions about psychiatric disorder prevalence and mental health service use based on information collected in a survey interview differ from those based on information collected by a mental health clinician?

H. Summary

To summarize, the breadth of the Readjustment Study's Congressional mandate required collection of a substantial amount of data. While this report presents a massive amount of information, the findings presented represent only the tip of the proverbial iceberg. We have presented descriptive findings concerning a wide variety of aspects of life adjustment, because the mandate indicated a needs assessment focus: how many veterans have what kinds of readjustment problems? It is important to realize, however, that to meet fully the study's multiple objectives, much more data had to be collected than have been presented in this report. The Readjustment Study data base contains data that have not yet been summarized, and many of the findings that have been presented should ultimately be more fully analyzed. The most obvious first step in such analysis is to examine the many readjustment outcomes in a multivariate framework that would permit enhanced understanding of the phenomena. We intend to pursue such analysis, and hope that others will join in that pursuit.

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APPENDIX A

Characteristics of the NVVRS Samples

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Characteristics of the NVVRS Samples

As described in Chapter I, there were three major components of the NVVRS: (1) the National Survey of the Vietnam Generation (NSVG), a 3-5 hour face-to-face survey interview conducted by professional lay interviewers primarily in the homes of Vietnam theater and era veterans and their civilian counterparts; (2) The Clinical Interview component, a semi-structured diagnostic interview of a subsample of theater veterans living in specific areas conducted by expert mental health professionals, predominantly in their offices, and (3) the Family Interview component, a one-hour face-to-face survey interview conducted by professional lay interviewers with the spouses or co-resident partners (in their homes) of a subsample of theater veterans living throughout the nation. In this appendix the interview results for each of these three components are presented, along with an analysis of the characteristics of respondents and nonrespondents to each component.

I. NSVG: THE SURVEY INTERVIEW SAMPLE

A. Sample Disposition and Results of Fieldwork

To achieve the estimated sample yields described in Chapter I, it was necessary to "field" a sample of cases that was substantially larger in order to compensate for anticipated levels of nonresponse due to such factors as inability to locate all sampled respondents, ineligibility (for example, veterans on active duty or deceased), and the unwillingness or inability of some persons selected to participate in the NSVG. Among both veterans and nonveterans, the anticipated "yield rate" underlying the sample design was 80 percent. Among veterans, this was to be achieved by successfully locating 94 percent of the sample and interviewing 85 percent of those located (.94 x .85 = .80). Since the civilian counterparts were to be drawn predominantly from a household sample (presumably reducing the

impact of location rate on nonresponse), an overall interview rate of 80 percent was expected. Based on these assumptions, the number of cases required for each study group (in order to achieve the desired sample sizes and an overall yield of approximately 2,980 interviews) was computed. These projected sample sizes and the expected number of interviews are presented in the first two columns of Exhibit A-1.

As shown in Exhibit A-1, the assumptions underlying the NSVG survey design indicated that it would be necessary to field 3,724 cases to achieve the desired number of interviews. The original design called for the fielding of these cases in three random replicates of the total sample. Based on the results of the first replicate, observed differences in rates of eligibility, location, and nonresponse differed significantly enough from those assumed for certain subgroups--notably black and Hispanic civilians, and to a lesser extent other civilian counterparts--that it was necessary to supplement samples for these groups with at least part of a "fourth replicate." These actual "fielded" sample sizes are presented in the third column of Exhibit A-1, which indicates that 499 cases in all were added to the total sample, 359 of which (60 percent) were civilian counterparts. All subsamples were allocated at least a few more cases in this supplementation, except for Hispanic Vietnam male theater and era veterans. In addition, for the disabled male Vietnam theater veteran sample, fewer cases were fielded than specified in the original sample design because the total sample drawn, including all supplements, yielded less than 100 cases.

The first NSVG interview from this sample was conducted on November 23, 1986, and all interviewing was terminated on February 15, 1988, just under 15 months later. The final status of fieldwork on the NSVG is shown in Exhibit A-2. As indicated, 3,016 interviews were conducted, representing 78 percent of the cases determined to be eligible for interview. Of these completed interviews, 1,632 were with Vietnam theater veterans, 716 with Vietnam era veterans, and 668 with civilians. Among the theater veterans, this represented a response rate of 83 percent, with none of the subgroups falling below 81 percent. The response rate for Vietnam era veterans was 76-77 percent, with no subgroup falling below 70 percent, and that for civilians 68-70 percent, with no subgroup falling below 62 percent. As

shown in Exhibit A-2, the location rate for Vietnam theater veterans was better than that assumed (96.2 percent), but the deceased/ineligible rate of 4.5 percent was not expected.

As a result, it was necessary to interview more than 85 percent of those located and eligible (the actual rate was 86.7 percent) in order to achieve the number of interviews desired. Among black male Vietnam era veterans, who had the lowest response rate in this group, the principal problem was our inability to locate these veterans as successfully as other veterans. Among the civilian counterparts, fieldwork was marked by an extraordinarily high ineligibility rate among Hispanic males (due to restrictions on language and permanent residence) and a high level of both refusals and nonlocatables among black civilian males. Overall, though the response rates for civilian males, and especially minority civilian males, were lower than projected and desired, these results were regarded as quite adequate to support the analyses described in this report, and we regard the results obtained for Vietnam theater veterans--the most critical focus of the NVVRS--as excellent.

As noted above, the sample was designed to be fielded in three independent replicates of approximately equal size. To examine the extent to which the results observed in Exhibit A-2 were influenced by the approximate time during the field period the cases were actually fielded, these results were further examined by replicate in Exhibit A-3. Although there is a general trend toward somewhat lower response rates in moving from replicate 1 to 3, overall it is not especially strong, and in a few cases it is dramatically reversed (cf. black civilians). Thus, although results of the first replicate (in the field 12-15 months) were on the whole better than replicates 2 and 3, they are not so different as to suggest any major biases based on this differential per se.

After completing fieldwork and assigning final statuses to all cases, we undertook a major editing process, whereby discrepancies between sampled status--upon which the field status reports (and Exhibits A-2 and A-3) were based--and self-report data on sex, race/ethnicity, and/or veteran status were identified. The complete record for all such cases--including the survey instrument as well as the military record and/or household roster data--was pulled and carefully reviewed to determine the appropriate status

of these cases. Approximately 160 such cases were reviewed and resolved, resulting in 87 changes in status, as shown in Exhibit A-4. The final row of that exhibit indicates the final number of cases available for analysis in each major subgroup. As indicated at the bottom of Exhibit A-4, net losses were highest among black civilians and era veterans and theater veteran women, while those gaining the most cases were white/other males (across all three groups) and female era veterans. In combination with the final field results, this reclassification resulted in significantly fewer numbers of Hispanic theater males, and Hispanic and black male era veterans, available for analysis than specified in the original sample design, along with substantially higher numbers of black male theater veterans and women (in all three subgroups).

B. Characteristics of Respondents and Nonrespondents

1. Veterans

In any survey where some of the persons sampled are not interviewed the potential for nonresponse bias exists. Individuals who cannot be found, refuse to be interviewed, or otherwise do not participate may differ significantly from respondents on a number of important characteristics, including potentially those of particular interest to the survey. If the latter information were readily available for both respondents and nonrespondents, the survey would likely not be necessary, so evaluation of the potential degree of nonresponse bias in a particular survey is typically based on more general characteristics of the sample for which data <u>are</u> available. Moreover, it is generally assumed that the potential for nonresponse bias increases more or less directly with the <u>level</u> of nonresponse. Although in theory substantial bias is possible even under conditions of relatively high response, the higher the response rate, the less one is typically concerned about such biases.

Although the overall response rate for veterans in the NSVG is over 80 percent, the potential for nonresponse bias still clearly exists. Moreover, such biases may be greater for Vietnam era veterans than Vietnam theater veterans, since their response rates were 76.3 and 83.3 percent,

respectively. While one never has enough data to thoroughly evaluate and understand the extent of nonresponse bias in a survey, the NSVG has some advantages in this regard due to its sample design. Since the veteran samples were drawn predominantly from military personnel records, from which a number of data items were abstracted, a substantial amount of background and military history data are available for both respondents and nonrespondents. By comparing the characteristics of respondents and nonrespondents on these items, it is possible to assess both the likely extent and nature of nonresponse biases in these data so that these may be taken into account in evaluating results presented in this report.

These analyses were conducted separately for Vietnam theater and Vietnam era veterans and for men and women within each group. Since there were only 73 eligible noninterview cases for Vietnam theater veteran women and 72 for era veteran women (see Exhibit A-2), the sample sizes for these two subgroups are marginally sufficient to support these comparisons, that is, to detect significant differences where they exist. Nevertheless, since so many comparisons in this report involve distinct comparisons of these two groups, this more detailed breakdown appeared to be justified. Within each group, the basic strategy was to compare the distributions of respondents and nonrespondents on a broad array of military records data. The distributions compared were weighted to reflect actual differences in sampling rates, but without any weight for nonresponse, since investigation of the latter was the basic goal of these analyses.

Detailed comparisons of respondents to nonrespondents are presented in Tables A-1 through A-26, at the end of this Appendix. The statistical contrasts presented are either nominal or ordinal contrasts, as appropriate, using the same test procedures employed in the main body of analyses presented in the report, as described in Chapter I and Appendix B. For each characteristic, statistical contrasts were made between respondents and nonrespondents in each of the following groups: (1) all Vietnam theater veterans; (2) Vietnam theater veteran men; (3) Vietnam theater veteran women; (4) all other Vietnam era veterans; (5) other Vietnam era veteran men; and (6) other Vietnam era veteran women. A summary of all these comparisons is presented in Exhibit A-5.

Looking first at Vietnam theater veterans, for whom response rates were uniformly higher than those for Vietnam era veterans, contrasts for the total sample (males and females combined) indicate that seven of the 26 were statistically significant. Some of these differences appear of marginal interest or importance. For example, that respondents are less likely to be male merely reflects the higher overall response rate observed for women serving in the Vietnam theater, and that respondents were more likely to report a religious preference other than Catholic or Protestant (four vs. one percent) appears to be idiosyncratic and of little interest. Similarly, that respondents were more likely than nonrespondents to be discharged to homes outside the United States is a very small difference, quite possibly due to the NSVG's relative success in interviewing veterans in Puerto Rico.

In contrast, that responding theater veterans were somewhat better educated than nonrespondents suggests that theater veterans with less than a high school diploma at entry to active duty were underrepresented somewhat in the final sample, although no other significant differences potentially related to intelligence (e.g., AFQT) or socioeconomic status were observed. The remaining significant contrasts do appear to reflect a consistent pattern, however. That responding theater veterans were more likely to enter the service in 1940-1954 than nonrespondents, were more often retired from the service rather than discharged, and were more often in grades E6-E9 at separation all suggest that multiple-term or career enlisted personnel may be somewhat overrepresented in the final sample of Vietnam theater veterans relative to soldiers serving only one term of service. For male theater veterans, the only one of these same contrasts that did not achieve statistical significant (other than gender) was type of separation, and the interpretation of these differences would obviously be the same.

Among female theater veterans, six of the 25 relevant comparisons were significant, in spite of the lower statistical power of these tests (due to the sample size for nonrespondents), and in spite of a higher overall response rate for these women (the highest of any subgroup in the study). Perhaps as a result, differences observed on these characteristics do not appear to reflect any consistent trend. Those born in the Northeast and

South appear to be somewhat underrepresented among female theater veteran respondents, as well as those who entered the service in 1950-1959 (those overrepresented among theater veteran men), and those who had more or less than 12 months of foreign service. Of greater significance perhaps, theater veteran women whose records indicated receipt of the VSM or RVCM and those with records in the VA's disability files were also somewhat less likely to be among the respondents to the NSVG.

Response rates for Vietnam era veterans were somewhat lower, and the proportions of significant differences observed correspondingly higher, 11 of 23 for era veterans overall. These comparisons suggest that responding era veterans were somewhat younger, and entered the military later than those not participating in the NSVG, as well as having more often been ordered to active duty (versus being drafted or enlisted) and released on separation to the Reserves. Most of the remaining differences suggest a profile of nonresponding era veterans that is characteristic of soldiers who did not adapt particularly well to military life: such veterans were less educated, more often served in the military less than 18 months, were more often in the lower enlisted ranks (E1-E3) at separation, and more likely received Article 15s, courts martial, and lost days, as well as less than honorable discharges. Thus, such veterans are probably somewhat underrepresented in the final sample of Vietnam era veterans. Once again, for male era veterans, due to their overall preponderance in the population, each of these differences, and one more of marginal interest (religion at entry), is significant.

Once again, in spite of an overall response rate of over 80 percent and reduced statistical power for these contrasts, seven of the 17 relevant comparisons between responding and nonrespondent Vietnam era veteran women are statistically significant. As with the men, era veteran women having a high school diploma or less upon entry, serving less than 18 months on active duty, having less than 12 months of foreign service, and discharged in the lower enlisted pay grades (E1-E3) appear to be somewhat underrepresented in the final sample, as do younger female era veterans. Additional differences observed by religion and region of home of record appear to be of limited significance.

Overall, none of these differences seem substantial enough to suggest that there are high levels of nonresponse bias in the veteran samples. Nevertheless, all analysis weights other than those used in these analyses were statistically adjusted for nonresponse.

2. Civilian Counterparts

In contrast to the veterans sample, the quantity of data available on which responding and nonresponding civilians could be compared was extremely limited. Specifically, the only data available for these comparisons were those collected on the rosters used to list all members of sampled households and determine their eligibility, from which the individual civilian cases were ultimately selected. Moreover, even these data were of limited utility for women, since the majority of the civilian counterpart females were selected from a list sample of registered nurses (a list which contained little additional useful information other than names and addresses) rather than from the area probability (household) sample. Thus, with few exceptions (for example, year of birth), less than 100 women (69 respondents and 29 nonrespondents) were available for these analyses (those drawn from the household sample), thereby severely limiting the statistical power of these comparisons. Nevertheless, for the sake of completeness, analyses are still presented for female civilian counterparts for all characteristics.

Comparisons of civilian respondents to nonrespondents are presented in Tables A-27 through A-34, at the end of this Appendix. Once again, the data presented were weighted to adjust for differences in sampling rates, but not for nonresponse. The statistical contrasts presented are either nominal or ordinal contrasts, as appropriate, using the same test procedures employed in the veteran comparisons (as well as in the main body of analyses presented in the report, as described in Chapter I and Appendix B). For each characteristic, statistical contrasts were made between respondents and nonrespondents for males and females separately. A summary of these comparisons is presented in Exhibit A-6.

Though the range of characteristics presented is quite limited, no significant differences between respondents and nonrespondents were found

for either men or women on year of birth, race, Hispanic origin, or total number of persons in the household, or on non-Vietnam era active duty military service and relationship to head of household for men. However, male civilian respondents were significantly less likely than nonrespondents to live in households with 2 or more persons over 25 years of age, and although far from reaching statistical significance, a similar trend toward nonrespondents living in households with 3 or more persons over 25 was also evident for women. For both men and women, a significant regional trend was evident, whereby male and female respondents were more likely than nonrespondents to live in the South, while those living in the West were overrepresented among the nonrespondents. Overall, however, these data, though clearly limited, provide little evidence of substantial nonresponse bias in the civilian samples, in spite of relatively low response rates. Nevertheless, all analysis weights other than those used in these analyses were statistically adjusted for nonresponse.

II. THE CLINICAL SUBSAMPLE

A. Selection and Disposition of the Sample

The NVVRS clinical subsample was designed to be a mechanism for collecting information to improve the accuracy of the study's estimates of PTSD prevalence. The basic idea was to select a subgroup of the NVVRS survey interview sample for whom a more thorough, and therefore in principle more accurate, diagnostic assessment would be conducted. This more thorough assessment included a semistructured, diagnostic interview conducted by a mental health professional experienced in the diagnosis and treatment of PTSD.

Implementation of a follow-up clinical interview in a study in which the initial sample was geographically scattered (that is, not clustered) presents certain logistical problems (see Appendix D, section II.A, for a discussion of several potential design options). The solution implemented in the NVVRS was to limit eligibility for participation in the clinical subsample to those veterans living within "reasonable commuting distance"

of 28 specific Standard Metropolitan Statistical Areas (SMSAs) located across the country. These SMSAs were selected to maximize the number of veterans who would be eligible for clinical interview while also taking into account the survey interview sample's oversample of blacks and Hispanics. As implemented, about 42 percent of theater veterans were eligible for inclusion in the clinical subsample.

Since a key purpose of the clinical subsample was distinguishing true PTSD cases from true noncases, it was important that the subsample contain adequate numbers of both likely PTSD cases and likely noncases. To accomplish this objective we developed a stratification procedure for selecting the sample, guided by findings from the preliminary validation study. Under this procedure, all eligibles who appeared on the basis of their survey interview responses to be cases of PTSD, and a sample of those who appeared to be noncases, were selected for inclusion in the clinical subsample. The sample of noncases was stratified to maximize the likelihood of capturing false negatives (that is, persons who appeared to be noncases on the basis of survey interview information but who were truly PTSD cases) by oversampling those with high scores on an index of exposure to combat trauma and those reporting high levels of nonspecific psychological distress. A total of 403 Vietnam theater veterans were selected for the clinical subsample under these rules. These included 127 "apparent" PTSD cases and 276 apparent noncases. The apparent noncases were distributed as follows: 71 high combat exposure, 91 high current distress, and 115 low/moderate combat exposure and low/moderate distress.

The original NVVRS design called for clinical interviews to be conducted only with Vietnam theater veterans. However, analyses conducted for the NVVRS preliminary report suggested that the false-positive rate (that is, the proportion indicated by the scale to be PTSD cases who are in fact noncases) of the M-PTSD scale (which plays a critical role in formulating population prevalence estimates for era veterans and civilians), might be much higher among era veterans than theater veterans. If this were the case, then any comparison of PTSD prevalence rates among theater and era veterans based on the M-PTSD scale would be confounded by the nonequivalent measurement error and might provide misleading results. Therefore, it was decided that information about the diagnostic error rates

for the M-PTSD scale and other measures among era veterans was critical to the ultimate credibility of the study's findings. Consequently, an era veteran clinical subsample was selected and fielded. Following rules analogous to those used to select theater veterans, 116 era veterans were selected for the subsample. These included 23 apparent PTSD cases (M-PTSD positives) and 93 apparent noncases (M-PTSD negatives). The noncases included 31 with high exposure to trauma, 19 with high distress, and 43 not-high trauma exposure and not-high distress.

Response rates for the clinical subsample interviews are shown in Exhibit A-7 by study group and subgroup. The overall response rate for theater veterans was 85.1 percent, with rates for demographic subgroups ranging from 80.2 percent for Hispanic males to 96.6 percent for females. For era veterans, the overall response rate was 80.2 percent, with rates for the demographic subgroups ranging from 69.6 percent for black males to 86.0 percent for females.

B. Comparison of Respondents and Nonrespondents

The potential for bias always exists when data are not collected for every individual selected in the sample (that is, when there is nonresponse). Although the response rates achieved among both theater and era veterans in the clinical subsample were quite high, the potential for nonresponse bias nonetheless still exists.

Exhibit A-7 also showed response rates for apparent PTSD cases and apparent noncases. Examination of the rightmost two columns of Exhibit A-7 shows that although the response rates for apparent PTSD cases were almost always lower than for noncases, the differential was generally small. Among theater veterans, the overall response rate for apparent noncases was 86.6 percent, and for apparent PTSD cases 81.9 percent. Among era veterans, the corresponding rates were 80.6 percent for noncases and 78.3 percent for cases. The fact that the response rates are generally high and the differential is relatively small increases confidence that selective nonresponse is not a major source of bias in the clinical subsample.

Another perspective on the potential impact of nonresponse on estimates from the clinical subsample is to examine the proportions of "apparent" PTSD cases among the respondents and nonrespondents. If the apparent PTSD cases were much more likely than the apparent noncases to be nonrespondents, then the potential for bias would be increased. Among theater veterans, 30.3 percent of respondents were M-PTSD positive, compared with 38.3 percent of nonrespondents; among era veterans 18.5 percent of respondents were M-PTSD positive, compared with 21.7 percent of nonrespondents.

Again, although the proportion of apparent PTSD cases was somewhat higher among nonrespondents than among respondents, particularly among theater veterans, the relatively high response rates in both groups, coupled with the relatively small disparity in the proportion of apparent cases between respondents and nonrespondents, suggests that nonresponse bias is not likely to be a major issue. Nevertheless, the clinical subsample analysis weights were adjusted to take account of the actual level of nonresponse.

III. FAMILY INTERVIEW: THE SPOUSE/PARTNER SAMPLE

A. Sample Disposition and Results of Fieldwork

As noted in Chapter I, the Family Interview component of the NVVRS involved one-hour follow-up interviews with the spouses or other co-resident partners of over 450 theater veterans. As with the Clinical Interview Component (see Section II), the intent was to select all the spouses/partners of Vietnam theater veterans who were PTSD positive and a subsample of the spouses/partners of the PTSD negatives, those who were negative but "at high risk" for PTSD. Operationally, this was accomplished by using the Mississippi Scale for Combat-Related PTSD (the M-PTSD, as described in Appendix D) as a screener for the disorder, selecting those with scores of 89 and above as "probable" cases of PTSD. For those scoring lower than 89, a 13-item "exposure to combat" scale was used as a second-level screener and those scoring "high" (a mean of 3.9 or higher) on

exposure were isolated as cases at high risk of PTSD. Third, for those scoring below the cutoff on both the M-PTSD and combat exposure, a third screening measure was used--the PERI Demoralization Scale (see Chapter VI)--a measure of nonspecific distress on which a cutoff score of 1.0 or higher was used as a second indicator of high risk among those scoring below threshold on the M-PTSD.

To select the sample based on this criterion, NSVG interviews were processed on a flow basis for all Vietnam theater veterans in the main sample (the special supplements were excluded), including not only those sampled as theater veterans but also those sampled as era veterans who reported service in the Vietnam theater. For these interviews, data from the screening items were keyed and automatically scored by computer under a program designed to select cases according to an algorithm assigning appropriate selection probabilities to each of these cases. For this component, all those selected were eligible for interview--providing that the veteran had a co-resident spouse or partner--rather than only those living within commuting distance of the 28 largest SMSAs (a further restriction on the Clinical Interview Component [see Section II]). Nevertheless, since all of the veterans selected for the clinical component were also included in this component if they had an eligible spouse or partner, the sampling rates for those outside the 28 SMSAs were somewhat lower. In fact, for those theater veterans living outside the 28 SMSAs, a simpler selection algorithm was used, under which all PTSD positives were selected and a subsample of negatives, randomly selected without regard to their levels of combat exposure and nonspecific psychological distress.

Excluding the 113 cases interviewed in the two supplemental samples, 1,519 Vietnam theater veterans were interviewed in the NSVG. Of these, 1,510 were processed through the selection program, and 862 selected for an interview with the spouse or partner if one was available. Nine cases could not be processed due to insufficient data on the screening questions. Of the 862 cases selected, 588 were determined from the NSVG interview to have an eligible spouse or partner (68 percent). The distribution of all cases for the primary sample groups and the final field results for these 588 cases--both for the total sample and separately by sex and race/ethnicity--are presented in Exhibit A-8.

As shown in that exhibit, three additional cases were found in the field not to have a spouse/partner, reducing the number of eligibles to 585, of whom 466 were interviewed--80 percent. Interview rates for the spouses or partners of women and white/other men were both over 80 percent (84 and 81 percent, respectively), while those with the spouses/partners of black and Hispanic men were somewhat lower (75 and 76 percent, respectively).

Two problems encountered in fielding this sample complicate somewhat the interpretation of these results, however. Of greatest significance is that after the completion of fieldwork it was determined that through a clerical error, 126 cases had not been processed through the selection program, and therefore had no chance to be selected or interviewed. When these cases were processed, 37 were selected and determined to have an eligible spouse or partner. Since these cases could not be interviewed, they were allocated to the category "other eligible noninterview" and make up about half of that category. Prior to the discovery of this error, the overall final response rate was 85 percent. Moreover, the distribution of these 37 cases was not proportional: 21 of these were black and Hispanic men. Hence, before making adjustments for this error, response rates for both of these groups were 82 percent, with white/others at 86 and women at 91 percent. Therefore, the final response rates for minority men do not reflect substantially greater difficulties in interviewing the spouses or partners of these veterans.

The other complication arises from the fact that nine cases could not be processed through the select program and from the fact that the spouses or partners of eight veterans not selected by the program were interviewed near the end of the survey due to an explicit study policy at that time that an interview with a spouse/partner be conducted for all remaining theater veterans interviewed in the NSVG (due to time and travel cost constraints). While these may be handled in the analysis through weighting, technically they should be excluded from response rate calculations. If the 9 cases had yielded the same number of eligibles as those successfully processed through the selection program (585/1,510), 3 to 4 cases would have been added to the eligible count (585 + 4 =589). Further, if the eight "automatic" interviews were deleted from both the

number of eligibles (589 - 8 = 581) and number of interviews (466 - 8 = 458), the resulting "conservative" response rate would be 79 rather than 80 percent. Overall, then, the field results of this component appear to be adequate, although they would obviously have been much better if the clerical error had not occurred or been discovered earlier.

B. Comparisons of Respondents and Nonrespondents

Since the Family Interview component of the NVVRS followed the main interview, and the sample for this component was selected from theater veterans interviewed in the NSVG, considerable data were available for comparisons between respondents and nonrespondents to the Family Interview, namely all the interview data reported by the veteran respondents. Note, however, that, with few exceptions, these data represent characteristics of the veteran rather than those of the spouse/partner selected for the family interview, and even those items that refer to the spouse/partner or family were reported by the veteran. Nevertheless, a substantial amount of data were available concerning the circumstances of both respondents and nonrespondents to the Family Interview, and comparisons of the veterans' interview data for responding and nonresponding spouse/partners should provide a good assessment of the likely extent and nature of nonresponse biases in the Family Interview data, such that these may be taken into account in evaluating results presented from this NVVRS component.

These analyses were conducted separately for the spouse/partners of men and women Vietnam theater veterans and for these two groups combined. Since only 107 spouse/partners of Vietnam theater veteran women were selected, only 17 of whom were nonrespondents, the statistical power of these comparisons is quite limited. Nevertheless, for the sake of completeness, these data are provided.

Comparisons of veterans' NSVG interview data for respondents and nonrespondents to the Family Interview are presented in Tables A-35 through A-62, at the end of this Appendix. Once again, the data presented were weighted to adjust for differences in sampling rates, but not for nonresponse. The statistical contrasts presented are either for nominal or

ordinal contrasts, as appropriate, using the same test procedures employed in the nonresponse analyses for veterans and civilians in the NSVG (as well as in the main body of analyses presented in the report, as described in Chapter I and Appendix B). For each comparison, statistical contrasts were made between respondents and nonrespondents for male and female theater veterans separately and for the two groups combined. A summary of these comparisons is presented in Exhibit A-9.

In all, 28 different variables were examined, ranging from selected characteristics of the spouse/partners, sociodemographic characteristics of the veteran, dimensions of the veteran's military and Vietnam experiences, and indicators of the veteran's current social and psychological adjustment. Looking first at the total sample (male and female veterans combined), statistically significant differences were found between the distributions of respondents and nonrespondents for five of the 28 comparisons. Moreover, if a less conservative statistical test were used ($p<.10$), four additional comparisons would be statistically significant. It is important to note, however, that among the nonsignificant contrasts are those related to age, education, and employment status of the spouse/partner, and eight to nine of the 10 comparisons relating to the post-war psychological readjustment of the veteran. Thus, although the spouses or partners of veterans with a history of substance abuse and, more generally,, those with any lifetime psychiatric disorder ($p<.10$) were significantly more likely than those without these experiences to participate in the Family Interview, no significant differences were found between respondents and nonrespondents according to the veteran's reported level of exposure to war zone stress, PTSD symptomatology, demoralization (or the sample selection variable summarizing all three), number of current serious readjustment problems, family adjustment, and marital problems, as well as on the records-based indicator of service-connected physical disability. Similarly, no significant differences were found by veteran's gender, year of birth, race, Hispanic origin, employment status, family income, number of children, or the number of months he or she served in Vietnam.

Nonrespondents and respondents to the Family Interview did differ significantly, however, on size of place of residence and certain aspects

of the veteran's military experience. Specifically, spouses and partners participating in this study component were more likely than nonrespondents to live in rural areas, and their veteran spouse or partner was more likely to have entered the military by less conventional means than enlistment or the draft (for example, direct commission), to have begun their Vietnam tour in 1967 or before 1966, and to have suffered a non-combat wound or injury in Vietnam. Families of veterans who were college graduates, lived in the Midwest or North Central states, and who were not promoted beyond the junior enlisted ranks (E1-E3) while in the military also appeared to be somewhat overrepresented among those responding to the Family Interview. Since male theater veterans are predominant in these "total sample" comparisons, each of these differences (other than gender) is repeated exactly in that subsample, for which the interpretation is obviously the same.

Due to the small samples sizes, and corresponding lack of statistical power, comparisons between the responding and nonresponding spouses or partners of women theater veterans show only one statistically significant difference (of the 25 tested), or three if a somewhat more lenient probability level ($p<.10$) is used. Specifically, as reported by the veteran, the family adjustment of those responding to the Family Interview was more often in the "mid-range" (that is, less balanced or more poorly functioning) than those of nonrespondents. They were also somewhat less likely to have high family incomes, and their veteran wives or partners were somewhat more likely to have entered the military by enlistment (as opposed, for example, to entry by direct commission).

Overall, however, for neither male nor female veterans does there appear to be any consistent pattern in these differences. Thus, these comparisons seem to provide little evidence to indicate a systematic pattern of nonresponse bias in the Family Interview data. Nevertheless, all analysis weights other than those used in these analyses were statistically adjusted for nonresponse.

Exhibit A-1

Projected Sample Sizes, Number of Cases Fielded and Number of Interviews Achieved in the NSVG

	Sample Size Projections		Actual Sample Sizes	
	Sample	Expected No. of Interviews	Fielded	Interviews
Vietnam Theater Veterans				
Hispanic Males	375	300	375	285
Black Males	375	300	389	311
White/Other Males	625	500	681	523
Disabled Supplement	125	100	93	72
Females	500	400	534	441
Total	2,000	1,600	2,052	1,632
Vietnam Era Veterans				
Hispanic Males	156	125	150	111
Black Males	156	125	181	116
White/Other Males	250	200	265	192
Females	350	280	398	297
Total	912	730	1,000	716
Civilian Counterparts				
Hispanic Males	156	125	306	120
Black Males	156	125	257	141
White/Other Males	250	200	319	190
Females	250	200	289	217
Total	812	650	1,171	668
TOTAL	3,724	2,980	4,223	3,016

Exhibit A-2

Final Status of Fieldwork on the National Survey of the Vietnam Generation

	Vietnam Theatre Veterans					Vietnam Era Veterans					Civilian Counterparts					TOTAL
	Hispanic	Black	White/ Other	Females	TOTAL	Hispanic	Black	White/ Other	Females	TOTAL	Hispanic	Black	White/ Other	Females	TOTAL	SAMPLE
Completed Interviews:	285	311	696	441	1,632	111	116	192	297	716	120	141	190	217	668	3,016
Eligible Noninterviews:	68	60	126	73	327	36	51	64	72	223	66	85	92	68	311	861
Refusal/Breakoff	42	28	93	65	228	17	18	51	50	136	31	44	61	59	195	559
Can't Locate	22	27	22	6	77	16	28	10	18	72	30	31	19	7	87	236
Not at Home/Unavailable	2	0	5	0	7	2	4	1	1	8	1	6	3	0	10	25
Incapacitated	1	3	4	1	9	0	1	2	1	4	4	3	8	2	17	30
Other Eligible Noninterview	1	2	2	1	6	1	0	0	2	3	0	1	1	0	2	11
Ineligibles:	22	18	33	20	93	9	14	9	29	61	120	31	37	4	192	346
Sex, Age, Rostering Error	0	0	0	0	0	0	0	0	1	1	2	3	1	0	6	7
Deceased	11	15	19	5	50	4	12	4	5	25	0	5	4	0	9	84
Still on Active Duty	2	2	8	4	16	2	0	2	7	11	1	1	1	0	3	30
Outside U.S./Puerto Rico	9	1	6	11	27	3	2	2	9	16	5	2	2	0	9	52
No Active Duty During Vietnam Era	0	0	0	0	0	0	0	1	7	8	--	--	--	--	--	8
Not a Citizen/Permanent Resident Prior to 1975	--	--	--	--	--	--	--	--	--	--	55	10	21	3	89	89
Language Barrier (Civilians only)	--	--	--	--	--	--	--	--	--	--	54	0	3	1	58	58
Vietnam Era Veteran (Civilians only)	--	--	--	--	--	--	--	--	--	--	3	10	5	0	18	18
Total Sample	375	389	754	534	2,052	156	181	265	398	1,000	308	257	319	289	1,171	4,223
Total Eligibles	353	371	721	514	1,959	147	167	256	369	939	186	228	282	285	979	3,877
Total Eligibles Adjusted[1]	352	370	720	514	1,956	146	164	256	368	934	173	222	280	285	960	3,850
Response Rate (%)[2]	80.7	83.8	82.5	85.8	83.3	75.5	69.5	75.0	80.5	76.3	64.5	62.4	67.4	76.1	68.2	77.8
Adjusted Response Rate (%)[2]	81.0	84.1	82.8	85.8	83.4	76.0	70.7	75.0	80.7	76.7	69.4	63.5	67.9	76.1	69.6	78.3
Refusal Rate (%)[3]	11.9	7.5	12.9	12.6	11.6	11.6	10.8	19.9	13.6	14.5	16.7	19.5	21.6	20.7	19.9	14.4

[1]Computed by applying the ineligibility rate observed among located cases to those not located and subtracting the result from Total Eligibles.

[2]Defined as Completes/Total Eligibles or Completes/Total Eligibles Adjusted, respectively.

[3]Defined as Refusals/Total Eligibles.

Exhibit A-3

Final Status of Fieldwork on the NSVG By Sample Replicate

	Vietnam Theatre Veterans					Vietnam Era Veterans					Civilian Counterparts					TOTAL
	Hispanic	Black	White/ Other	Females	TOTAL	Hispanic	Black	White/ Other	Females	TOTAL	Hispanic	Black	White/ Other	Females	TOTAL	SAMPLE
Replicate 1:																
Completed Interviews	99	103	168	135	505	41	36	67	85	229	18	24	61	67	170	904
Refusal/Breakoff	14	5	23	23	65	4	5	15	16	40	4	12	17	15	48	153
Can't Locate	7	8	4	3	22	6	4	1	7	18	2	5	2	1	10	50
Other Eligible Noninterview	0	2	2	0	4	0	3	0	0	3	1	1	3	2	7	14
Ineligible	5	7	11	5	28	1	4	1	8	14	19	5	2	0	26	68
Total Sample	125	125	208	166	624	52	52	84	116	304	44	47	85	85	261	1,189
Response Rate (%)[1]	82.5	87.3	85.3	83.9	84.7	80.4	75.0	80.7	78.7	79.0	72.0	57.1	73.5	78.8	72.3	80.6
Refusal Rate (%)[2]	11.7	4.2	11.7	14.3	10.9	7.8	10.4	18.1	14.8	13.8	16.0	28.6	20.5	17.6	20.4	13.6
Replicate 2:																
Completed Interviews	100	97	164	137	498	35	32	59	88	214	23	38	59	70	190	902
Refusal/Breakoff	12	11	27	23	73	8	8	16	18	50	6	9	22	15	52	175
Can't Locate	6	9	4	1	20	5	10	6	3	24	3	4	3	1	11	55
Other Eligible Noninterview	1	1	4	1	7	1	0	1	2	4	1	0	3	0	4	15
Ineligible	6	7	10	5	28	3	2	1	8	14	26	6	9	1	42	84
Total Sample	125	125	209	167	626	52	52	83	119	306	59	57	96	87	299	1,231
Response Rate (%)[1]	84.0	82.2	82.4	84.6	83.3	71.4	64.0	72.0	79.3	73.3	69.7	74.5	67.8	81.4	73.9	78.6
Refusal Rate (%)[2]	10.1	9.3	13.6	14.2	12.2	16.3	16.0	19.5	16.2	17.1	18.2	17.6	25.3	17.4	20.2	15.3
Replicate 3:																
Completed Interviews	88	102	159	169	518	35	33	55	89	212	19	31	44	64	158	888
Refusal/Breakoff	16	11	26	19	72	5	3	18	12	38	6	12	13	20	51	161
Can't Locate	9	7	8	2	26	5	10	2	6	23	0	4	8	2	14	63
Other Eligible Noninterview	3	1	4	1	9	2	2	1	2	7	0	3	5	0	8	24
Ineligible	11	4	11	10	36	5	4	7	11	27	22	4	19	1	46	109
Total Sample	125	125	208	201	659	52	52	83	120	307	47	54	89	87	277	1,243
Response Rate (%)[1]	75.4	84.3	80.7	88.5	82.8	74.5	68.8	72.4	81.7	75.7	76.0	62.0	62.9	74.4	68.4	78.1
Refusal Rate (%)[2]	14.0	9.1	13.2	9.9	11.6	10.6	6.3	23.7	11.0	13.6	24.0	24.0	18.6	23.3	22.1	14.2

Exhibit A-3 (Continued)

	Vietnam Theatre Veterans					Vietnam Era Veterans					Civilian Counterparts					
	Hispanic	Black	White/ Other	Females	TOTAL	Hispanic	Black	White/ Other	Females	TOTAL	Hispanic	Black	White/ Other	Females	TOTAL	TOTAL SAMPLE
General Supplement:																
Completed Interviews	--	9	32	--	41	--	15	11	35	61	60	48	28	16	150	252
Refusal/Breakoff	--	1	2	--	3	--	2	2	4	8	15	11	9	9	44	55
Can't Locate	--	3	1	--	4	--	4	1	2	7	25	18	6	3	52	63
Other Eligible Noninterview	--	1	0	--	1	--	0	1	0	1	3	6	1	0	10	12
Ineligible	--	0	1	--	1	--	4	0	2	6	53	16	7	2	78	85
Total Sample	--	14	36	--	50	--	25	15	43	83	158	99	49	30	334	467
Response Rate (%)[1]	--	64.3	91.4	--	83.7	--	71.4	73.3	85.4	79.2	58.3	57.8	61.9	57.1	58.6	66.0
Refusal Rate (%)[2]	--	7.1	5.7	--	6.1	--	9.5	13.3	9.8	10.4	14.6	13.3	21.4	32.1	17.2	14.4
Disabled Supplement:																
Completed Interviews	--	--	72	--	72	--	--	--	--	--	--	--	--	--	--	72
Refusal/Breakoff	--	--	15	--	15	--	--	--	--	--	--	--	--	--	--	15
Can't Locate	--	--	5	--	5	--	--	--	--	--	--	--	--	--	--	5
Other Eligible Noninterview	--	--	1	--	1	--	--	--	--	--	--	--	--	--	--	1
Ineligible	--	--	0	--	0	--	--	--	--	--	--	--	--	--	--	0
Total Sample	--	--	93	--	93	--	--	--	--	--	--	--	--	--	--	93
Response Rate (%)[1]	--	--	77.4	--	77.4	--	--	--	--	--	--	--	--	--	--	77.4
Refusal Rate (%)[2]	--	--	16.1	--	16.1	--	--	--	--	--	--	--	--	--	--	16.1

[1]Defined as Completed Interviews/(Total Sample - Ineligibles).

[2]Defined as Refusal/Breakoffs/(Total Sample - Ineligibles).

Exhibit A-4

Comparisons of Distributions of Completed Interviews by Sampled Status and In Final Analysis File

Sample Group	Completes By Sample Group	Vietnam Theater Veterans				Vietnam Era Veterans				Civilian Counterparts			
		Hispanic	Black	White/ Other	Females	Hispanic	Black	White/ Other	Females	Hispanic	Black	White/ Other	Females
Vietnam Theater Veterans:													
Hispanic Males	285	267	1	15	--	2	--	--	--	--	--	--	--
Black Males	311	3	307	1	--	--	--	--	--	--	--	--	--
White/Other Males	595	6	--	585	--	--	--	4	--	--	--	--	--
Females	441	--	1	1	431	--	--	--	8	--	--	--	--
Vietnam Era Veterans:													
Hispanic Males	111	4	--	--	--	100	--	7	--	--	--	--	--
Black Males	116	1	4	--	--	21	109	--	--	--	--	--	--
White/Other Males	192	--	--	4	--	1	--	187	--	--	--	--	--
Females	297	--	--	--	1	--	--	--	296	--	--	--	--
Civilian Counterparts:													
Hispanic males	120	--	--	--	--	--	--	--	--	120	--	--	--
Black Males	141	--	--	--	--	--	--	--	--	--	127	13	1
White/Other Males	190	--	--	--	--	--	--	--	--	4	1	184	1
Females	217	--	--	--	--	--	--	--	--	--	--	1	216
Changes from Sampled Status:													
Losses	-87	-18	-4	-10	-10	-11	-7	-5	-1	0	-14	-6	-1
Gains	+87	+14	+6	+21	+1	+5	0	+11	+8	+4	+1	+14	+2
Net	0	-4	+2	+11	-9	-6	-7	+6	+7	+4	-13	+8	+1
TOTAL BY FINAL STATUS	3,016	281	313	608	432	105	109	198	304	124	128	198	218

Exhibit A-5

Comparison of Veterans' Military Records Data for Respondents (R) and Nonrespondents (NR) to the NSVG

Characteristic	Vietnam Theater Veterans			Vietnam Era Veterans		
	Males	Females	Total	Males	Females	Total
Gender	--	--	R < Male	--	--	Not Significant
Year of Birth	Not Significant	Not Significant	Not Significant	NR > 1940-1944	R > 1940-44/45-49	NR > 1940-1944
Region of Birth	Not Significant	R > North Central NR > Northeast/South	Not Significant	Not Significant	Not Significant	Not Significant
Race/Ethnicity	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Year of Entry on Active Duty	R > 1940-49/50-54	R < 1950-54/55-59	R > 1940-49/50-54	R > 1970-75	Not Significant	R > 1970-75
Education at Entry to Active Duty	NR > Some High School R > College Graduate+	Not Significant	NR > Some High School R > College Graduate+	R > High School Grad	R > Some College	R > High School Grad
Marital Status at Entry to Active Duty	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Religion at Entry to Active Duty	R > Other	Not Significant	R > Other	R > No Preference	R > Protestant	Not Significant
AFQT Score by Category	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Source of Entry to Active Duty	Not Significant	Not Significant	Not Significant	R > Ordered to Act Duty	Not Significant	R > Ordered to Act Duty
Branch of Service (at Discharge)	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
No. of Months of Active Duty	Not Significant	Not Significant	Not Significant	R < 0-17 Months	R < 0-17 Months R > 24-35 Months	R < 0-17 Months
No. of Months of Foreign Service	Not Significant	R > 12 Months NR > 1-11/25-48 Mos.	Not Significant	Not Significant	R > 13-24 Months	Not Significant
No. of Article 15s	Not Significant	Not Significant	Not Significant	R < Article 15s	Not Significant	R < Article 15s
Days Lost (AWOL/ Confinement)	Not Significant	Not Significant	Not Significant	R < Days Lost	Not Significant	R < Days Lost
Received Court Martial	Not Significant	Not Significant	Not Significant	R < Rcvd Crt Martial	Not Significant	R < Rcvd Crt Marital

Exhibit A-5 (Continued)

Characteristic	Vietnam Theater Veterans			Vietnam Era Veterans		
	Males	Females	Total	Males	Females	Total
Received Vietnam Service Medal	Not Significant	R < Rcvd VSM	Not Significant	Not Applicable	Not Applicable	Not Applicable
Received Republic of Vietnam Campaign Medal	Not Significant	R < Rcvd RVCM	Not Significant	Not Applicable	Not Applicable	Not Applicable
Received Combat Medal	Not Significant	Not Significant	Not Significant	Not Significant	Not Applicable	Not Significant
Received Purple Heart	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Year of Separation from Active Duty	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Type of Separation	Not Significant	Not Significant	R > Retired NR > Discharged	R > Reserves NR > Discharged	Not Significant	R > Reserves NR > Discharged
Type of Discharge	Not Significant	Not Significant	Not Significant	R > Honorable	Not Significant	R > Honorable
Pay Grade at Separation	R > E6-E9	Not Significant	R > E6-E9	R > E4 NR > E1-E3	R > E4-E5 NR > E1-E3	R > E4-E5 NR > E1-E3
Region of Home of Record	R > External/Foreign	Not Significant	R > External/Foreign	Not Significant	R > West	Not Significant
In VA C&P Disability File	Not Significant	NR > Disability	Not Significant	--	--	--

Exhibit A-6

Comparison of Civilian Roster Data for Respondents (R) and Nonrespondents (NR) to the NSVG

Characteristic	Males	Females
Year of Birth	Not Significant	Not Significant
Race	Not Significant	Not Significant
Hispanic Origin	Not Significant	Not Significant
Ever on Active Duty	Not Significant	Not Applicable
Relationship to Head of Household	Not Significant	Not Tested
Number of Persons in Household	Not Significant	Not Significant
Number in Household Aged 25 and Over	R < 2 or More Persons	Not Significant
Region of Household	R > South NR > West	R > South NR > West

Note: Findings in parentheses are not statistically significant ($p<.05$), but $p<.10$.

Exhibit A-7

Clinical Interview Response Rates for "Apparent PTSD Cases (M-PTSD Positives) and Noncases (M-PTSD Negatives), by Study Group and Subgroup

Study Group	Subgroup	Sample Size	Number of Respondents	Response Rates Total	M-PTSD Negative	M-PTSD Positive
Theater veterans	Total	403	343	85.1	86.6 (n=278)	81.9 (n=127)
	Black male	91	75	82.4	85.4 (n=48)	79.1 (n=43)
	Hispanic male	108	85	80.2	79.4 (n=83)	81.4 (n=43)
	White/other male	119	99	83.2	83.0 (n=88)	83.9 (n=31)
	Female	87	84	96.6	97.4 (n=77)	90.0 (n=10)
Era veterans	Total	116	93	80.2	80.6 (n=93)	78.3 (n=23)
	Black male	23	18	69.6	72.2 (n=18)	60.0 (n=5)
	Hispanic male	24	18	75.0	80.0 (n=20)	50.0 (n=4)
	White/other male	26	22	84.6	82.4 (n=17)	88.9 (n=9)
	Female	43	37	86.0	84.2 (n=38)	100.0 (n=5)

Exhibit A-8

Final Status of Fieldwork on the Spouse/Significant Other Component of the NVVRS

	Hispanic	Black	White/Other	Females	Total
Sample Disposition:					
Theater Veterans Interviewed	284	305	409	431	1510
Insufficient Data For Selection	3	1	2	3	9
Selected Family Cases	182	189	277	214	862
No Spouse/Partner	41	66	60	107	274
Net Family Sample	141	123	217	107	588
Completed Interviews	107	91	178	90	466
Eligible Noninterviews:	33	31	38	17	199
Refusal/Breakoff	14	4	18	3	39
Can't Locate	3	1	1	0	5
Other Eligible Noninterview	16	26	19	14	75
Ineligibles:	1	1	1	0	3
Total Sample	141	123	217	107	588
Total Eligibles	140	122	216	107	585
Response Rate (%)[1]	76.4	74.6	82.4	84.1	79.7
Refusal Rate (%)[2]	10.0	3.3	8.3	2.8	6.7

[1]Defined as Completed Interviews/Total Eligibles.

[2]Defined as Refusals/Total Eligibles.

Exhibit A-9

Comparison of Veterans' Interview Data For Respondents (R) and Nonrespondents (NR) to the Family Interview Component

Characteristic	Gender of Veteran		
	Males	Females	Total
Spouse/Partner:			
Age	Not Significant	Not Significant	Not Significant
Education	Not Significant	Not Significant	Not Significant
Working for Pay	Not Significant	Not Significant	Not Significant
Veteran:			
Gender	Not Applicable	Not Applicable	Not Significant
Year of Birth	Not Significant	Not Significant	Not Significant
Racial Background	Not Significant	Not Tested	Not Significant
Hispanic Origin	Not Significant	Not Tested	Not Significant
Education Attainment	Not Significant (R > College Graduate)	Not Significant	Not Significant (R > College Graduate)
Current Work Status	Not Significant	Not Significant	Not Significant
Family Income	Not Significant	Not Significant (NR > $50,000+)	Not Significant
Region of Current Residence	Not Significant (R > North Central)	Not Significant	Not Significant (R > North Central)
Size of Place of Residence	R > Rural	Not Significant	R > Rural
Number of Children	Not Significant	Not Significant	Not Significant
How Entered the Military	R > Other [Than Drafted or Enlisted]	Not Significant (R > Enlisted/NR > Other)	R Other [Than Drafted or Enlisted]
Highest Pay Grade	Not Significant (R > E1-E3/NR > E8-E9)	Not Significant	Not Significant (R > E1-E3/NR > E8-E9)
Year Began 1st Vietnam Related Tour	R > 1965 or Earlier/1967 NR > 1966	Not Significant	R > 1965 or Earlier/1967 NR > 1966
Months Served in Vietnam	Not Significant	Not Significant	Not Significant
Wounded or Injured In/Around Vietnam	R > Yes/Non-Combat	Not Significant	R > Yes/Non-Combat
Sample Selection Criterion	Not Significant	Not Significant	Not Significant
War Zone Stress Exposure	Not Significant	Not Significant	Not Significant
PERI Demoralization Score	Not Significant	Not Significant	Not Significant
Mississippi Combat-Related PTSD Scale	Not Significant	Not Significant	Not Significant
Any NSVG/DIS Disorder	Not Significant (R > Disorder)	Not Significant	Not Significant (R > Disorder)
Lifetime Substance Abuse	R > Subst Abuse	Not Significant	R > Subst Abuse

Exhibit A-9 (Continued)

Characteristic	Gender of Veteran		
	Males	Females	Total
Service Connected Physical Disability	Not Significant	Not Significant	Not Significant
No. of Current Serious Readjustment Problems	Not Significant	Not Significant	Not Significant
Family Adjustment Index	Not Significant	R > Mid-Range	Not Significant
Marital Problems Index	Not Significant	Not Significant	Not Significant

Note: Findings in parentheses are not statistically significant ($p<.06$), but $p<.10$.

TABLES FOR APPENDIX A

Table A-1 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Gender: Group Estimates.

		Gender	
		Males	Females
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1632	99.5 %	0.5 %
		(0.1)	(0.1)
2. Nonrespondents	323	99.8 %	0.2 %
		(0.0)	(0.0)
B. Males			
1. Respondents	1191	100.0 %	0.0 %
		(0.0)	(0.0)
2. Nonrespondents	254	100.0 %	0.0 %
		(0.0)	(0.0)
C. Females			
1. Respondents	441	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	69	0.0 %	100.0 %
		(0.0)	(0.0)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	716	95.0 %	5.0 %
		(0.8)	(0.8)
2. Nonrespondents	223	95.5 %	4.5 %
		(1.8)	(1.8)
B. Males			
1. Respondents	419	100.0 %	0.0 %
		(0.0)	(0.0)
2. Nonrespondents	151	100.0 %	0.0 %
		(0.0)	(0.0)
C. Females			
1. Respondents	297	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	72	0.0 %	100.0 %
		(0.0)	(0.0)

Table A-1 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Gender: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	7.77	1	.005
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.07	1	.785
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-2 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Birth: Group Estimates.

	Sample Size	Year of Birth			
		LE 1939	1940-1944	1945-1949	GE 1950
I. VIETNAM THEATER VETERANS					
A. Theater Veterans (Total)					
1. Respondents	1573	12.7 %	17.6 %	54.6 %	15.1 %
		(0.7)	(0.7)	(1.1)	(0.9)
2. Nonrespondents	315	10.6 %	14.6 %	54.6 %	20.1 %
		(2.3)	(2.5)	(3.9)	(3.4)
B. Males					
1. Respondents	1184	12.7 %	17.6 %	54.6 %	15.2 %
		(0.7)	(0.7)	(1.1)	(0.9)
2. Nonrespondents	252	10.5 %	14.6 %	54.7 %	20.2 %
		(2.3)	(2.5)	(3.9)	(3.4)
C. Females					
1. Respondents	389	38.8 %	18.6 %	43.9 %	0.7 %
		(10.9)	(3.9)	(9.3)	(0.4)
2. Nonrespondents	63	38.4 %	21.6 %	40.0 %	0.0 %
		(8.0)	(5.5)	(8.5)	(0.0)
II. VIETNAM ERA VETERANS					
A. Era Veterans (Total)					
1. Respondents	707	9.4 %	16.1 %	37.2 %	37.4 %
		(1.2)	(1.4)	(1.5)	(1.9)
2. Nonrespondents	215	11.1 %	30.8 %	29.5 %	28.6 %
		(3.1)	(4.4)	(4.2)	(6.2)
B. Males					
1. Respondents	412	9.6 %	16.3 %	36.0 %	38.2 %
		(1.2)	(1.4)	(1.5)	(1.9)
2. Nonrespondents	145	11.2 %	32.0 %	29.3 %	27.5 %
		(3.3)	(4.7)	(4.3)	(6.4)
C. Females					
1. Respondents	295	6.8 %	12.4 %	58.6 %	22.3 %
		(1.4)	(1.7)	(7.8)	(9.8)
2. Nonrespondents	70	9.6 %	5.7 %	32.5 %	52.2 %
		(4.3)	(2.6)	(13.4)	(17.9)

Table A-2 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Birth: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	2.55	3	.466
B. Respondents vs. Nonrespondents (Males)	2.52	3	.472
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	8.39	3	.039
B. Respondents vs. Nonrespondents (Males)	8.18	3	.043
C. Respondents vs. Nonrespondents (Females)	9.32	3	.025

Table A-2 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Birth: Statistical Contrasts

	LE 1939	1940-1944	1945-1949	GE 1950
I. VIETNAM THEATER VETERANS				
A. Respond vs. Nonrespond (Total)	0.60	0.97	0.00	1.55
	(.438)	(.326)	(.989)	(.213)
B. Respond vs. Nonrespond (Males)	0.58	0.97	0.00	1.53
	(.447)	(.325)	(.991)	(.216)
C. Respond vs. Nonrespond (Females)	0.02	0.20	0.12	
	(.894)	(.657)	(.730)	
I. VIETNAM ERA VETERANS				
A. Respond vs. Nonrespond (Total)	0.19	6.69	1.91	1.21
	(.660)	(.010)	(.167)	(.271)
B. Respond vs. Nonrespond (Males)	0.16	6.95	1.34	1.67
	(.688)	(.008)	(.246)	(.196)
C. Respond vs. Nonrespond (Females)	0.40	3.78	2.82	2.14
	(.529)	(.052)	(.093)	(.143)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-3 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Region of Birth: Group Estimates.

	Sample Size	Region of Birth: Northeast	North Central	South	West	External / Foreign
I. VIETNAM THEATER VETERANS						
A. Theater Veterans (Total)						
1. Respondents	1522	24.2 %	26.8 %	33.5 %	13.8 %	1.7 %
		(1.7)	(1.8)	(1.7)	(1.3)	(0.4)
2. Nonrespondents	299	24.4 %	29.8 %	30.1 %	14.8 %	0.9 %
		(3.7)	(4.0)	(3.9)	(3.0)	(0.3)
B. Males						
1. Respondents	1142	24.2 %	26.6 %	33.6 %	13.8 %	1.7 %
		(1.7)	(1.8)	(1.7)	(1.3)	(0.4)
2. Nonrespondents	239	24.4 %	29.8 %	30.1 %	14.8 %	0.9 %
		(3.8)	(4.0)	(4.0)	(3.0)	(0.3)
C. Females						
1. Respondents	380	20.4 %	58.8 %	13.1 %	6.5 %	1.2 %
		(4.3)	(8.1)	(2.9)	(1.6)	(0.5)
2. Nonrespondents	60	38.2 %	25.9 %	27.3 %	7.3 %	1.3 %
		(6.5)	(5.9)	(5.8)	(3.3)	(1.3)
II. VIETNAM ERA VETERANS						
A. Era Veterans (Total)						
1. Respondents	681	18.7 %	35.3 %	34.0 %	10.7 %	1.4 %
		(2.4)	(3.7)	(3.6)	(2.2)	(0.5)
2. Nonrespondents	203	24.4 %	28.9 %	29.6 %	14.5 %	2.6 %
		(5.4)	(6.0)	(5.5)	(4.8)	(1.5)
B. Males						
1. Respondents	392	19.0 %	35.2 %	33.9 %	10.6 %	1.4 %
		(2.5)	(3.9)	(3.7)	(2.3)	(0.5)
2. Nonrespondents	133	25.0 %	28.3 %	29.0 %	15.0 %	2.7 %
		(5.6)	(6.2)	(5.7)	(5.0)	(1.6)
C. Females						
1. Respondents	289	12.0 %	36.8 %	37.0 %	12.8 %	1.4 %
		(2.6)	(7.9)	(7.0)	(3.3)	(1.0)
2. Nonrespondents	70	11.7 %	41.6 %	40.9 %	5.6 %	0.3 %
		(5.6)	(19.1)	(19.2)	(3.7)	(0.3)

Table A-3 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Region of Birth: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	3.36	4	.499
B. Respondents vs. Nonrespondents (Males)	3.40	4	.493
C. Respondents vs. Nonrespondents (Females)	12.24	4	.016
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	2.76	4	.598
B. Respondents vs. Nonrespondents (Males)	3.00	4	.557
C. Respondents vs. Nonrespondents (Females)	3.30	4	.509

Table A-3 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Region of Birth: Statistical Contrasts

	Northeast	North Central	South	West	External Foreign
I. VIETNAM THEATER VETERANS					
A. Respond vs. Nonrespond (Total)	0.00	0.47	0.63	0.09	2.54
	(.952)	(.494)	(.427)	(.761)	(.111)
B. Respond vs. Nonrespond (Males)	0.00	0.50	0.65	0.09	2.54
	(.959)	(.478)	(.419)	(.765)	(.111)
C. Respond vs. Nonrespond (Females)	5.23	10.79	4.79	0.06	0.01
	(.022)	(.001)	(.029)	(.810)	(.942)
I. VIETNAM ERA VETERANS					
A. Respond vs. Nonrespond (Total)	0.94	0.80	0.46	0.53	0.62
	(.333)	(.373)	(.499)	(.466)	(.432)
B. Respond vs. Nonrespond (Males)	0.93	0.87	0.51	0.64	0.67
	(.334)	(.352)	(.477)	(.425)	(.413)
C. Respond vs. Nonrespond (Females)	0.00	0.05	0.04	2.08	1.20
	(.949)	(.815)	(.850)	(.149)	(.273)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-4 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Race from Military File: Group Estimates.

	Sample Size	Race from Military File: White	Hispanic	American Indian	Oriental	Black
I. VIETNAM THEATER VETERANS						
A. Theater Veterans (Total)						
1. Respondents	1579	82.8 %	4.6 %	0.3 %	1.0 %	11.2 %
		(0.6)	(0.2)	(0.2)	(0.4)	(0.3)
2. Nonrespondents	317	83.8 %	5.1 %	0.0 %	1.0 %	10.1 %
		(1.9)	(0.7)	(0.0)	(1.0)	(1.3)
B. Males						
1. Respondents	1191	82.8 %	4.6 %	0.3 %	1.0 %	11.3 %
		(0.6)	(0.2)	(0.2)	(0.4)	(0.3)
2. Nonrespondents	254	83.8 %	5.1 %	0.0 %	1.0 %	10.1 %
		(1.9)	(0.7)	(0.0)	(1.0)	(1.3)
C. Females						
1. Respondents	388	96.3 %	2.1 %	0.3 %	0.1 %	1.2 %
		(1.0)	(0.7)	(0.2)	(0.1)	(0.5)
2. Nonrespondents	63	94.3 %	0.0 %	0.0 %	1.2 %	4.5 %
		(2.9)	(0.0)	(0.0)	(1.2)	(2.6)
II. VIETNAM ERA VETERANS						
A. Era Veterans (Total)						
1. Respondents	716	86.1 %	3.8 %	0.0 %	0.0 %	10.0 %
		(0.8)	(0.3)	(0.0)	(0.0)	(0.7)
2. Nonrespondents	222	81.2 %	3.4 %	0.0 %	2.5 %	12.9 %
		(3.1)	(0.7)	(0.0)	(1.8)	(2.4)
B. Males						
1. Respondents	419	86.2 %	3.9 %	0.0 %	0.0 %	9.9 %
		(0.8)	(0.3)	(0.0)	(0.0)	(0.8)
2. Nonrespondents	151	81.6 %	3.5 %	0.0 %	2.6 %	12.2 %
		(3.1)	(0.7)	(0.0)	(1.8)	(2.2)
C. Females						
1. Respondents	297	86.0 %	2.2 %	0.7 %	0.7 %	10.5 %
		(3.2)	(1.2)	(0.7)	(0.7)	(2.7)
2. Nonrespondents	71	71.1 %	1.2 %	0.0 %	0.0 %	27.7 %
		(19.5)	(0.9)	(0.0)	(0.0)	(19.7)

Table A-4 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Race from Military File: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-4 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Race from Military File: Statistical Contrasts

	White	Hispanic	American Indian	Oriental	Black
I. VIETNAM THEATER VETERANS					
A. Respond vs. Nonrespond (Total)	0.20	0.47		0.00	0.54
	(.658)	(.491)		(.979)	(.462)
B. Respond vs. Nonrespond (Males)	0.21	0.47		0.00	0.56
	(.649)	(.493)		(.977)	(.453)
C. Respond vs. Nonrespond (Females)	0.45			0.82	1.56
	(.503)			(.365)	(.211)
I. VIETNAM ERA VETERANS					
A. Respond vs. Nonrespond (Total)	1.77	0.20		1.97	0.94
	(.183)	(.658)		(.160)	(.332)
B. Respond vs. Nonrespond (Males)	1.44	0.16			0.59
	(.230)	(.686)			(.442)
C. Respond vs. Nonrespond (Females)	0.56	0.43			0.75
	(.453)	(.513)			(.387)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-5 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Entry: Group Estimates.

	Sample Size	Year of Entry						
		40-44	45-49	50-54	55-59	60-64	65-69	70-75
I. VIETNAM THEATER VETERANS								
A. Theater Veterans (Total)								
1. Respondents	1629	1.5 % (0.4)	1.4 % (0.4)	5.1 % (0.7)	5.1 % (0.8)	13.5 % (1.2)	64.1 % (1.6)	9.2 % (1.1)
2. Nonrespondents	314	0.3 % (0.2)	0.7 % (0.4)	2.0 % (1.0)	4.9 % (1.9)	12.7 % (2.6)	65.8 % (4.0)	13.6 % (3.1)
B. Males								
1. Respondents	1190	1.4 % (0.4)	1.4 % (0.4)	5.2 % (0.7)	5.1 % (0.8)	13.4 % (1.2)	64.2 % (1.6)	9.2 % (1.1)
2. Nonrespondents	251	0.3 % (0.2)	0.7 % (0.4)	2.0 % (1.0)	4.9 % (1.9)	12.6 % (2.6)	65.8 % (4.0)	13.6 % (3.2)
C. Females								
1. Respondents	439	16.6 % (10.0)	9.4 % (7.5)	2.4 % (0.7)	3.0 % (0.8)	24.0 % (13.3)	42.2 % (10.1)	2.4 % (0.8)
2. Nonrespondents	63	1.2 % (1.2)	3.7 % (2.1)	11.3 % (3.6)	13.6 % (3.9)	14.1 % (4.4)	53.8 % (6.4)	2.4 % (1.7)
II. VIETNAM ERA VETERANS								
A. Era Veterans (Total)								
1. Respondents	710	2.6 % (1.0)	0.6 % (0.4)	3.2 % (1.0)	0.7 % (0.4)	18.9 % (1.9)	40.4 % (3.0)	33.6 % (2.9)
2. Nonrespondents	214	1.4 % (1.3)	3.0 % (1.9)	4.5 % (2.3)	1.6 % (1.3)	26.5 % (4.6)	42.9 % (6.1)	20.1 % (5.3)
B. Males								
1. Respondents	415	2.7 % (1.0)	0.6 % (0.4)	3.3 % (1.0)	0.6 % (0.4)	19.0 % (2.0)	40.2 % (3.1)	33.6 % (3.1)
2. Nonrespondents	145	1.4 % (1.4)	2.9 % (1.9)	4.6 % (2.3)	1.6 % (1.4)	27.0 % (4.8)	42.3 % (6.2)	20.2 % (5.5)
C. Females								
1. Respondents	295	1.2 % (0.6)	0.4 % (0.2)	0.4 % (0.2)	2.5 % (1.0)	18.0 % (3.2)	44.3 % (6.2)	33.2 % (8.2)
2. Nonrespondents	69	0.7 % (0.5)	3.7 % (2.9)	1.7 % (1.0)	3.5 % (2.8)	10.8 % (5.7)	61.3 % (15.4)	18.3 % (10.6)

Table A-5 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Entry: Statistical Contrasts (Ordinal)

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	4.54	1	.033
B. Respondents vs. Nonrespondents (Males)	4.40	1	.036
C. Respondents vs. Nonrespondents (Females)	1.20	1	.274
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	4.75	1	.029
B. Respondents vs. Nonrespondents (Males)	4.49	1	.034
C. Respondents vs. Nonrespondents (Females)	0.82	1	.364

Table A-5 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Entry: Statistical Contrasts (Nominal)

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	15.26	5	.009
B. Respondents vs. Nonrespondents (Males)	14.52	5	.013
C. Respondents vs. Nonrespondents (Females)	17.87	5	.003
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	5.19	5	.393
B. Respondents vs. Nonrespondents (Males)	4.95	5	.422
C. Respondents vs. Nonrespondents (Females)	7.72	5	.172

Table A-5 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Entry: Statistical Contrasts

	40-49	50-54	55-59	60-64	65-69	70-75
I. VIETNAM THEATER VETERANS						
A. Respond vs. Nonrespond (Total)	7.05	6.03	0.01	0.09	0.15	1.62
	(.008)	(.014)	(.906)	(.770)	(.697)	(.203)
B. Respond vs. Nonrespond (Males)	6.28	6.11	0.02	0.08	0.14	1.60
	(.012)	(.013)	(.897)	(.784)	(.713)	(.205)
C. Respond vs. Nonrespond (Females)	3.40	5.82	7.01	0.50	0.94	0.00
	(.065)	(.016)	(.008)	(.481)	(.333)	(.994)
I. VIETNAM ERA VETERANS						
A. Respond vs. Nonrespond (Total)	0.18	0.27	0.40	1.86	0.14	4.24
	(.669)	(.606)	(.525)	(.173)	(.704)	(.039)
B. Respond vs. Nonrespond (Males)	0.14	0.23	0.40	1.97	0.09	3.92
	(.704)	(.629)	(.528)	(.161)	(.763)	(.048)
C. Respond vs. Nonrespond (Females)	0.84	1.72	0.10	1.17	1.04	1.25
	(.360)	(.190)	(.756)	(.278)	(.307)	(.263)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-6 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Education at Entry to Active Duty: Group Estimates.

	Sample Size	Education at Entry to Active Duty: Some HS Or Less	HS Graduate	Some College	Clg Grad Or Higher
I. VIETNAM THEATER VETERANS					
A. Theater Veterans (Total)					
1. Respondents	1545	23.6 %	56.4 %	13.3 %	6.6 %
		(1.6)	(1.9)	(1.3)	(1.0)
2. Nonrespondents	310	33.4 %	52.8 %	11.0 %	2.8 %
		(4.0)	(4.3)	(2.7)	(1.2)
B. Males					
1. Respondents	1165	23.7 %	56.6 %	13.2 %	6.6 %
		(1.6)	(1.9)	(1.3)	(1.0)
2. Nonrespondents	251	33.5 %	52.9 %	10.9 %	2.8 %
		(4.0)	(4.3)	(2.7)	(1.2)
C. Females					
1. Respondents	380	0.3 %	20.4 %	61.9 %	17.4 %
		(0.2)	(7.1)	(9.1)	(7.0)
2. Nonrespondents	59	2.8 %	30.7 %	45.4 %	21.2 %
		(1.9)	(6.3)	(6.6)	(5.2)
II. VIETNAM ERA VETERANS					
A. Era Veterans (Total)					
1. Respondents	700	23.6 %	60.1 %	9.8 %	6.5 %
		(3.4)	(3.7)	(1.9)	(1.4)
2. Nonrespondents	213	37.5 %	42.5 %	10.1 %	10.0 %
		(6.3)	(5.6)	(3.0)	(3.2)
B. Males					
1. Respondents	408	24.8 %	59.8 %	8.9 %	6.6 %
		(3.6)	(3.9)	(2.0)	(1.5)
2. Nonrespondents	144	39.4 %	40.7 %	10.2 %	9.7 %
		(6.5)	(5.7)	(3.1)	(3.3)
C. Females					
1. Respondents	292	1.6 %	65.5 %	26.9 %	6.0 %
		(1.0)	(7.7)	(8.1)	(1.5)
2. Nonrespondents	69	0.4 %	77.9 %	7.5 %	14.2 %
		(0.3)	(10.0)	(3.7)	(8.0)

Table A-6 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Education at Entry to Active Duty: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	10.38	3	.016
B. Respondents vs. Nonrespondents (Males)	10.23	3	.017
C. Respondents vs. Nonrespondents (Females)	3.55	3	.315
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	7.35	3	.062
B. Respondents vs. Nonrespondents (Males)	7.88	3	.049
C. Respondents vs. Nonrespondents (Females)	8.00	3	.046

Table A-8 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Education at Entry to Active Duty: Statistical Contrasts

	Some HS Or Less	HS Graduate	Some College	Clg Grad Or Higher
I. VIETNAM THEATER VETERANS				
A. Respond vs. Nonrespond (Total)	5.26	0.61	0.62	6.02
	(.022)	(.436)	(.432)	(.014)
B. Respond vs. Nonrespond (Males)	5.20	0.64	0.55	5.96
	(.023)	(.425)	(.457)	(.015)
C. Respond vs. Nonrespond (Females)	1.56	1.17	2.14	0.18
	(.212)	(.279)	(.144)	(.670)
I. VIETNAM ERA VETERANS				
A. Respond vs. Nonrespond (Total)	3.61	6.90	0.01	0.94
	(.058)	(.009)	(.939)	(.331)
B. Respond vs. Nonrespond (Males)	3.71	7.67	0.13	0.75
	(.054)	(.006)	(.723)	(.387)
C. Respond vs. Nonrespond (Females)	1.19	0.96	4.70	1.00
	(.275)	(.328)	(.030)	(.317)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-7 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Marital Status at Entry: Group Estimates.

	Sample Size	Marital Status at Entry: Married	Never Married	Divorced/ Separated	Widowed
I. VIETNAM THEATER VETERANS					
A. Theater Veterans (Total)					
1. Respondents	1632	16.0 %	83.5 %	0.6 %	0.0 %
		(1.3)	(1.4)	(0.3)	(0.0)
2. Nonrespondents	309	12.9 %	86.2 %	0.9 %	0.0 %
		(2.8)	(2.8)	(0.7)	(0.0)
B. Males					
1. Respondents	1191	15.9 %	83.5 %	0.6 %	0.0 %
		(1.4)	(1.4)	(0.3)	(0.0)
2. Nonrespondents	247	12.9 %	86.2 %	0.9 %	0.0 %
		(2.8)	(2.9)	(0.7)	(0.0)
C. Females					
1. Respondents	441	17.4 %	81.3 %	1.3 %	0.0 %
		(14.1)	(13.9)	(0.5)	(0.0)
2. Nonrespondents	62	0.0 %	95.9 %	2.6 %	1.4 %
		(0.0)	(2.3)	(1.9)	(1.4)
II. VIETNAM ERA VETERANS					
A. Era Veterans (Total)					
1. Respondents	716	14.4 %	85.2 %	0.4 %	0.0 %
		(2.7)	(2.7)	(0.2)	(0.0)
2. Nonrespondents	212	19.5 %	78.8 %	1.7 %	0.0 %
		(4.3)	(4.5)	(1.4)	(0.0)
B. Males					
1. Respondents	419	14.9 %	85.0 %	0.1 %	0.0 %
		(2.8)	(2.8)	(0.1)	(0.0)
2. Nonrespondents	142	20.4 %	78.2 %	1.4 %	0.0 %
		(4.5)	(4.7)	(1.4)	(0.0)
C. Females					
1. Respondents	297	5.2 %	88.9 %	5.2 %	0.7 %
		(1.8)	(3.3)	(2.7)	(0.7)
2. Nonrespondents	70	1.4 %	91.2 %	7.4 %	0.0 %
		(1.0)	(6.8)	(6.6)	(0.0)

Table A-7 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Marital Status at Entry: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-7 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Marital Status at Entry: Statistical Contrasts

	Married	Never Married	Divorced/ Separated	Widowed
I. VIETNAM THEATER VETERANS				
A. Respond vs. Nonrespond (Total)	0.97	0.73	0.23	
	(.326)	(.392)	(.629)	
B. Respond vs. Nonrespond (Males)	0.94	0.71	0.23	
	(.331)	(.398)	(.629)	
C. Respond vs. Nonrespond (Females)		1.09	0.47	
		(.297)	(.492)	
I. VIETNAM ERA VETERANS				
A. Respond vs. Nonrespond (Total)	0.99	1.48	0.92	
	(.319)	(.224)	(.337)	
B. Respond vs. Nonrespond (Males)	1.05	1.53	0.85	
	(.305)	(.216)	(.357)	
C. Respond vs. Nonrespond (Females)	3.50	0.09	0.09	
	(.061)	(.760)	(.760)	

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-8 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Religion at Entry to Service: Group Estimates.

	Sample Size	Religion at Entry to Service: Protestant	Catholic	Other	No Pref
I. VIETNAM THEATER VETERANS					
A. Theater Veterans (Total)					
1. Respondents	1500	61.4 %	31.6 %	3.9 %	3.2 %
		(1.9)	(1.8)	(0.8)	(0.7)
2. Nonrespondents	304	59.7 %	35.1 %	1.0 %	4.3 %
		(4.2)	(4.1)	(0.7)	(2.0)
B. Males					
1. Respondents	1147	61.4 %	31.6 %	3.9 %	3.2 %
		(1.9)	(1.8)	(0.8)	(0.7)
2. Nonrespondents	248	59.7 %	35.0 %	1.0 %	4.3 %
		(4.2)	(4.1)	(0.7)	(2.0)
C. Females					
1. Respondents	353	60.2 %	37.0 %	1.4 %	1.4 %
		(9.0)	(8.7)	(0.6)	(0.6)
2. Nonrespondents	56	54.5 %	43.9 %	1.5 %	0.0 %
		(6.8)	(6.8)	(1.5)	(0.0)
II. VIETNAM ERA VETERANS					
A. Era Veterans (Total)					
1. Respondents	658	59.7 %	26.0 %	3.6 %	10.8 %
		(3.8)	(3.1)	(1.1)	(2.9)
2. Nonrespondents	207	52.2 %	39.5 %	4.0 %	4.3 %
		(6.4)	(6.4)	(2.2)	(2.3)
B. Males					
1. Respondents	398	59.3 %	26.3 %	3.6 %	10.8 %
		(3.9)	(3.2)	(1.1)	(3.0)
2. Nonrespondents	137	53.1 %	39.7 %	4.1 %	3.2 %
		(6.7)	(6.7)	(2.3)	(2.0)
C. Females					
1. Respondents	260	66.6 %	18.9 %	3.7 %	10.7 %
		(7.2)	(3.9)	(2.2)	(7.1)
2. Nonrespondents	70	35.4 %	36.8 %	2.3 %	25.4 %
		(14.1)	(18.9)	(2.4)	(20.0)

Table A-8 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Religion at Entry to Service: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	8.93	3	.030
B. Respondents vs. Nonrespondents (Males)	8.94	3	.030
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	6.12	3	.106
B. Respondents vs. Nonrespondents (Males)	7.02	3	.071
C. Respondents vs. Nonrespondents (Females)	4.08	3	.253

Table A-8 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Religion at Entry to Service: Statistical Contrasts

	Protestant	Catholic	Other	No Pref
I. VIETNAM THEATER VETERANS				
A. Respond vs. Nonrespond (Total)	0.14	0.61	8.29	0.29
	(.711)	(.435)	(.004)	(.588)
B. Respond vs. Nonrespond (Males)	0.14	0.61	8.30	0.29
	(.712)	(.435)	(.004)	(.589)
C. Respond vs. Nonrespond (Females)	0.25	0.39	0.01	
	(.615)	(.531)	(.915)	
I. VIETNAM ERA VETERANS				
A. Respond vs. Nonrespond (Total)	1.02	3.69	0.03	3.18
	(.312)	(.055)	(.863)	(.075)
B. Respond vs. Nonrespond (Males)	0.65	3.29	0.04	4.47
	(.418)	(.070)	(.840)	(.035)
C. Respond vs. Nonrespond (Females)	3.89	0.86	0.18	0.48
	(.049)	(.354)	(.670)	(.487)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-9 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on AFQT Score: Group Estimates.

	Sample Size	AFQT Score IV-V (0 To 30)	III (31 To 64)	I-II (65 TO 100)
I. VIETNAM THEATER VETERANS				
A. Theater Veterans (Total)				
1. Respondents	1032	18.5 %	42.5 %	39.0 %
		(1.4)	(2.1)	(2.0)
2. Nonrespondents	228	19.0 %	47.5 %	33.4 %
		(3.1)	(4.5)	(4.4)
B. Males				
1. Respondents	1025	18.5 %	42.5 %	39.0 %
		(1.4)	(2.1)	(2.0)
2. Nonrespondents	228	19.0 %	47.5 %	33.4 %
		(3.1)	(4.5)	(4.4)
C. Females				
1. Respondents	7	0.0 %	77.0 %	23.0 %
		(0.0)	(14.9)	(14.9)
2. Nonrespondents	2	0.0 %	58.3 %	41.7 %
		(0.0)	(34.4)	(34.4)
II. VIETNAM ERA VETERANS				
A. Era Veterans (Total)				
1. Respondents	411	12.6 %	54.7 %	32.7 %
		(2.1)	(4.1)	(3.9)
2. Nonrespondents	129	17.7 %	50.6 %	31.6 %
		(5.2)	(7.1)	(6.4)
B. Males				
1. Respondents	360	12.9 %	55.4 %	31.6 %
		(2.1)	(4.2)	(4.0)
2. Nonrespondents	116	18.4 %	52.1 %	29.5 %
		(5.4)	(7.3)	(6.5)
C. Females				
1. Respondents	51	0.7 %	26.0 %	73.3 %
		(0.6)	(8.6)	(8.7)
2. Nonrespondents	13	0.7 %	10.0 %	89.3 %
		(0.6)	(7.7)	(8.0)

Table A-9 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on AFQT Score: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.92	1	.337
B. Respondents vs. Nonrespondents (Males)	0.92	1	.337
C. Respondents vs. Nonrespondents (Females)	0.24	1	.625
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.27	1	.605
B. Respondents vs. Nonrespondents (Males)	0.43	1	.512
C. Respondents vs. Nonrespondents (Females)	1.75	1	.186

Table A-10 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Source of Entry: Group Estimates.

	Sample Size	Source of Entry: Inducted	Enlisted	Ordered To Active Duty
I. VIETNAM THEATER VETERANS				
A. Theater Veterans (Total)				
1. Respondents	1565	23.3 %	72.9 %	3.8 %
		(1.6)	(1.6)	(0.7)
2. Nonrespondents	311	21.6 %	74.5 %	3.9 %
		(3.4)	(3.6)	(1.6)
B. Males				
1. Respondents	1177	23.4 %	72.9 %	3.7 %
		(1.6)	(1.6)	(0.7)
2. Nonrespondents	249	21.7 %	74.5 %	3.8 %
		(3.4)	(3.6)	(1.6)
C. Females				
1. Respondents	388	0.0 %	62.4 %	37.6 %
		(0.0)	(8.3)	(8.3)
2. Nonrespondents	62	0.0 %	63.6 %	36.4 %
		(0.0)	(6.4)	(6.4)
II. VIETNAM ERA VETERANS				
A. Era Veterans (Total)				
1. Respondents	703	23.5 %	73.7 %	2.8 %
		(3.1)	(3.1)	(0.9)
2. Nonrespondents	216	16.8 %	82.9 %	0.6 %
		(3.7)	(3.8)	(0.2)
B. Males				
1. Respondents	410	24.7 %	72.6 %	2.7 %
		(3.2)	(3.3)	(0.9)
2. Nonrespondents	145	17.4 %	82.4 %	0.2 %
		(3.9)	(3.9)	(0.2)
C. Females				
1. Respondents	293	0.0 %	94.8 %	5.2 %
		(0.0)	(1.4)	(1.4)
2. Nonrespondents	71	0.0 %	92.4 %	7.6 %
		(0.0)	(4.2)	(4.2)

Table A-10 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Source of Entry: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.21	2	.901
B. Respondents vs. Nonrespondents (Males)	0.22	2	.895
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	8.22	2	.016
B. Respondents vs. Nonrespondents (Males)	9.21	2	.010
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-10 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Source of Entry: Statistical Contrasts

	Inducted	Enlisted	Ordered To Active Duty
I. VIETNAM THEATER VETERANS			
A. Respond vs. Nonrespond (Total)	0.21	0.17	0.00
	(.648)	(.684)	(.961)
B. Respond vs. Nonrespond (Males)	0.22	0.16	0.01
	(.639)	(.688)	(.931)
C. Respond vs. Nonrespond (Females)		0.01	0.01
		(.913)	(.913)
I. VIETNAM ERA VETERANS			
A. Respond vs. Nonrespond (Total)	2.04	3.45	6.13
	(.154)	(.063)	(.013)
B. Respond vs. Nonrespond (Males)	2.03	3.53	7.08
	(.155)	(.060)	(.008)
C. Respond vs. Nonrespond (Females)		0.30	0.30
		(.585)	(.585)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-11 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Branch of Service: Group Estimates.

	Sample Size	Branch of Service			
		Air Force	Army	Navy / Coast Guard	Marine Corps
I. VIETNAM THEATER VETERANS					
A. Theater Veterans (Total)					
1. Respondents	1579	16.0 %	53.6 %	20.8 %	9.6 %
		(1.4)	(1.9)	(1.6)	(1.0)
2. Nonrespondents	317	13.2 %	55.5 %	17.2 %	14.1 %
		(2.9)	(4.2)	(3.2)	(3.0)
B. Males					
1. Respondents	1189	16.0 %	53.5 %	20.9 %	9.6 %
		(1.4)	(1.9)	(1.6)	(1.0)
2. Nonrespondents	254	13.2 %	55.5 %	17.2 %	14.2 %
		(2.9)	(4.2)	(3.3)	(3.0)
C. Females					
1. Respondents	390	8.2 %	81.2 %	2.8 %	7.8 %
		(1.9)	(6.9)	(0.8)	(6.9)
2. Nonrespondents	63	12.5 %	76.5 %	9.1 %	1.8 %
		(4.0)	(5.2)	(3.4)	(1.8)
II. VIETNAM ERA VETERANS					
A. Era Veterans (Total)					
1. Respondents	712	25.5 %	45.9 %	24.8 %	3.8 %
		(3.3)	(3.8)	(3.3)	(1.4)
2. Nonrespondents	223	22.1 %	48.7 %	18.5 %	10.7 %
		(4.3)	(6.0)	(4.7)	(4.9)
B. Males					
1. Respondents	418	25.6 %	45.9 %	24.8 %	3.7 %
		(3.5)	(3.8)	(3.5)	(1.4)
2. Nonrespondents	151	21.3 %	48.9 %	18.7 %	11.1 %
		(4.4)	(6.2)	(4.9)	(5.1)
C. Females					
1. Respondents	294	22.0 %	46.9 %	24.7 %	6.4 %
		(4.2)	(7.3)	(6.9)	(2.0)
2. Nonrespondents	72	39.5 %	44.6 %	13.5 %	2.4 %
		(18.8)	(18.5)	(6.6)	(2.3)

Table A-11 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Branch of Service: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	3.33	3	.344
B. Respondents vs. Nonrespondents (Males)	3.37	3	.339
C. Respondents vs. Nonrespondents (Females)	4.81	3	.186
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	3.01	3	.389
B. Respondents vs. Nonrespondents (Males)	3.17	3	.366
C. Respondents vs. Nonrespondents (Females)	3.39	3	.335

Table A-11 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Branch of Service: Statistical Contrasts

	Air Force	Army	Navy / Coast Guard	Marine Corps
I. VIETNAM THEATER VETERANS				
A. Respond vs. Nonrespond (Total)	0.72	0.17	1.02	2.06
	(.396)	(.682)	(.313)	(.151)
B. Respond vs. Nonrespond (Males)	0.73	0.18	1.04	2.07
	(.392)	(.672)	(.308)	(.150)
C. Respond vs. Nonrespond (Females)	0.94	0.29	3.28	0.70
	(.332)	(.592)	(.070)	(.403)
I. VIETNAM ERA VETERANS				
A. Respond vs. Nonrespond (Total)	0.38	0.16	1.22	1.84
	(.536)	(.686)	(.270)	(.175)
B. Respond vs. Nonrespond (Males)	0.61	0.18	1.04	1.95
	(.435)	(.673)	(.309)	(.162)
C. Respond vs. Nonrespond (Females)	0.82	0.01	1.39	1.74
	(.365)	(.911)	(.239)	(.188)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-12 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Months of Active Duty: Group Estimates.

	Sample Size	Months of Active Duty					
		0-17	18-23	24-35	36-48	49-239	240 Or More
I. VIETNAM THEATER VETERANS							
A. Theater Veterans (Total)							
1. Respondents	1570	3.1 %	20.3 %	21.1 %	30.3 %	13.1 %	12.1 %
		(0.7)	(1.5)	(1.5)	(1.8)	(1.3)	(1.0)
2. Nonrespondents	313	4.0 %	14.8 %	23.4 %	35.8 %	13.9 %	8.1 %
		(1.7)	(3.0)	(3.5)	(4.1)	(3.0)	(2.1)
B. Males							
1. Respondents	1183	3.1 %	20.4 %	21.2 %	30.3 %	13.1 %	12.0 %
		(0.7)	(1.5)	(1.5)	(1.8)	(1.3)	(1.0)
2. Nonrespondents	251	4.0 %	14.8 %	23.4 %	35.8 %	13.9 %	8.1 %
		(1.7)	(3.0)	(3.5)	(4.1)	(3.0)	(2.1)
C. Females							
1. Respondents	387	1.6 %	2.2 %	13.1 %	28.1 %	22.2 %	32.9 %
		(0.6)	(0.7)	(2.8)	(8.8)	(4.6)	(11.4)
2. Nonrespondents	62	1.2 %	2.1 %	14.9 %	19.9 %	30.9 %	30.9 %
		(1.2)	(2.1)	(4.9)	(5.5)	(6.1)	(5.6)
II. VIETNAM ERA VETERANS							
A. Era Veterans (Total)							
1. Respondents	708	4.4 %	17.3 %	24.3 %	32.0 %	17.1 %	5.0 %
		(0.9)	(2.9)	(3.0)	(3.6)	(3.0)	(1.1)
2. Nonrespondents	215	20.5 %	15.9 %	15.5 %	26.6 %	12.4 %	9.0 %
		(5.4)	(5.2)	(3.7)	(5.3)	(3.4)	(2.9)
B. Males							
1. Respondents	412	3.6 %	17.7 %	23.8 %	32.9 %	16.9 %	5.1 %
		(0.9)	(3.1)	(3.1)	(3.7)	(3.1)	(1.2)
2. Nonrespondents	144	18.5 %	16.5 %	15.8 %	27.6 %	12.5 %	9.1 %
		(5.6)	(5.4)	(3.9)	(5.5)	(3.6)	(3.1)
C. Females							
1. Respondents	296	19.1 %	9.2 %	32.6 %	16.2 %	19.8 %	3.1 %
		(3.8)	(2.5)	(7.8)	(3.6)	(6.9)	(1.1)
2. Nonrespondents	71	60.9 %	4.9 %	10.8 %	7.4 %	9.7 %	6.4 %
		(15.1)	(3.5)	(5.4)	(4.2)	(7.0)	(3.4)

Table A-12 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Months of Active Duty: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	6.00	5	.306
B. Respondents vs. Nonrespondents (Males)	5.97	5	.309
C. Respondents vs. Nonrespondents (Females)	1.87	5	.867
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	13.57	5	.019
B. Respondents vs. Nonrespondents (Males)	11.17	5	.048
C. Respondents vs. Nonrespondents (Females)	17.03	5	.004

Table A-12 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Months of Active Duty: Statistical Contrasts

	0-17	18-23	24-35	36-48	49-239	240 Or More
I. VIETNAM THEATER VETERANS						
A. Respond vs. Nonrespond (Total)	0.26 (.609)	2.66 (.103)	0.37 (.544)	1.44 (.230)	0.06 (.806)	2.40 (.121)
B. Respond vs. Nonrespond (Males)	0.26 (.610)	2.70 (.101)	0.36 (.548)	1.45 (.229)	0.06 (.805)	2.35 (.125)
C. Respond vs. Nonrespond (Females)	0.07 (.798)	0.00 (.969)	0.11 (.741)	0.63 (.427)	1.32 (.250)	0.02 (.879)
I. VIETNAM ERA VETERANS						
A. Respond vs. Nonrespond (Total)	8.64 (.003)	0.05 (.822)	3.31 (.069)	0.72 (.396)	1.07 (.302)	1.38 (.241)
B. Respond vs. Nonrespond (Males)	7.06 (.008)	0.04 (.844)	2.58 (.108)	0.63 (.427)	0.86 (.353)	1.27 (.260)
C. Respond vs. Nonrespond (Females)	7.15 (.007)	0.98 (.322)	5.29 (.021)	2.54 (.111)	1.07 (.301)	0.82 (.366)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-13 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Months of Foreign Service: Group Estimates.

	Sample Size	Months of Foreign Service					
		0	1-11	12	13-24	25-48	49 & Up
I. VIETNAM THEATER VETERANS							
A. Theater Veterans (Total)							
1. Respondents	1558	0.5 %	18.5 %	26.5 %	24.6 %	17.2 %	12.8 %
		(0.3)	(1.5)	(1.7)	(1.7)	(1.5)	(1.1)
2. Nonrespondents	311	0.0 %	25.2 %	25.4 %	22.3 %	19.2 %	7.9 %
		(0.0)	(3.7)	(3.6)	(3.5)	(3.5)	(2.2)
B. Males							
1. Respondents	1173	0.5 %	18.6 %	26.4 %	24.6 %	17.2 %	12.7 %
		(0.3)	(1.5)	(1.7)	(1.7)	(1.5)	(1.1)
2. Nonrespondents	251	0.0 %	25.2 %	25.5 %	22.3 %	19.2 %	7.8 %
		(0.0)	(3.7)	(3.6)	(3.5)	(3.5)	(2.2)
C. Females							
1. Respondents	385	1.3 %	11.2 %	38.7 %	9.1 %	7.7 %	32.0 %
		(0.8)	(2.5)	(9.1)	(2.2)	(1.8)	(11.5)
2. Nonrespondents	60	0.0 %	29.9 %	16.4 %	5.2 %	20.1 %	28.4 %
		(0.0)	(6.3)	(5.0)	(3.0)	(5.3)	(5.6)
II. VIETNAM ERA VETERANS							
A. Era Veterans (Total)							
1. Respondents	703	36.7 %	6.7 %	4.6 %	29.2 %	15.4 %	7.5 %
		(3.6)	(1.7)	(1.8)	(3.4)	(2.8)	(1.8)
2. Nonrespondents	209	35.3 %	8.9 %	6.4 %	27.7 %	12.6 %	9.0 %
		(6.0)	(5.0)	(2.5)	(5.4)	(3.5)	(3.0)
B. Males							
1. Respondents	409	34.9 %	6.9 %	4.7 %	29.6 %	16.1 %	7.8 %
		(3.8)	(1.8)	(1.9)	(3.5)	(2.9)	(1.9)
2. Nonrespondents	142	33.8 %	9.3 %	5.5 %	29.0 %	13.2 %	9.2 %
		(6.2)	(5.2)	(2.4)	(5.7)	(3.7)	(3.1)
C. Females							
1. Respondents	294	71.3 %	2.4 %	2.1 %	20.8 %	2.3 %	1.1 %
		(8.1)	(1.2)	(1.8)	(8.5)	(0.8)	(0.6)
2. Nonrespondents	67	65.6 %	0.7 %	25.2 %	2.2 %	1.0 %	5.2 %
		(19.2)	(0.5)	(20.2)	(1.3)	(0.6)	(3.2)

Table A-13 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Months of Foreign Service: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	1.07	5	.957
B. Respondents vs. Nonrespondents (Males)	0.71	5	.983
C. Respondents vs. Nonrespondents (Females)	13.75	5	.017

Table A-13 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Months of Foreign Service: Statistical Contrasts

	0	1-11	12	13-24	25-48	49 & Up
I. VIETNAM THEATER VETERANS						
A. Respond vs. Nonrespond (Total)		2.85	0.07	0.35	0.28	3.59
		(.091)	(.794)	(.556)	(.595)	(.058)
B. Respond vs. Nonrespond (Males)		2.81	0.06	0.35	0.27	3.52
		(.094)	(.806)	(.552)	(.603)	(.060)
C. Respond vs. Nonrespond (Females)		7.52	4.63	1.08	4.90	0.08
		(.006)	(.031)	(.298)	(.027)	(.778)
I. VIETNAM ERA VETERANS						
A. Respond vs. Nonrespond (Total)	0.04	0.17	0.36	0.05	0.37	0.19
	(.842)	(.678)	(.548)	(.821)	(.543)	(.665)
B. Respond vs. Nonrespond (Males)	0.02	0.18	0.07	0.01	0.36	0.14
	(.884)	(.668)	(.795)	(.927)	(.546)	(.710)
C. Respond vs. Nonrespond (Females)	0.07	1.77	1.30	4.75	1.31	1.61
	(.785)	(.184)	(.255)	(.029)	(.252)	(.205)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-14 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Number of Article 15s: Group Estimates.

	Sample Size	Number of Article 15s		
		None	One	Two Or More
I. VIETNAM THEATER VETERANS				
A. Theater Veterans (Total)				
1. Respondents	1494	75.1 %	14.2 %	10.8 %
		(1.7)	(1.4)	(1.2)
2. Nonrespondents	299	72.5 %	16.8 %	10.8 %
		(3.9)	(3.4)	(2.4)
B. Males				
1. Respondents	1111	75.0 %	14.2 %	10.8 %
		(1.7)	(1.4)	(1.2)
2. Nonrespondents	238	72.4 %	16.8 %	10.8 %
		(3.9)	(3.4)	(2.4)
C. Females				
1. Respondents	383	99.0 %	0.8 %	0.2 %
		(0.5)	(0.4)	(0.2)
2. Nonrespondents	61	98.0 %	2.0 %	0.0 %
		(2.0)	(2.0)	(0.0)
II. VIETNAM ERA VETERANS				
A. Era Veterans (Total)				
1. Respondents	679	81.4 %	10.6 %	8.0 %
		(2.9)	(2.2)	(2.1)
2. Nonrespondents	202	60.3 %	15.3 %	24.4 %
		(6.3)	(3.7)	(6.2)
B. Males				
1. Respondents	392	80.8 %	10.9 %	8.2 %
		(3.0)	(2.4)	(2.2)
2. Nonrespondents	135	60.0 %	15.7 %	24.4 %
		(6.6)	(3.9)	(6.4)
C. Females				
1. Respondents	287	92.2 %	4.4 %	3.4 %
		(2.3)	(1.7)	(1.5)
2. Nonrespondents	67	66.2 %	7.8 %	25.9 %
		(19.7)	(4.8)	(20.5)

Table A-14 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Number of Article 15s: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.32	1	.573
B. Respondents vs. Nonrespondents (Males)	0.30	1	.582
C. Respondents vs. Nonrespondents (Females)	0.24	1	.621
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	8.57	1	.003
B. Respondents vs. Nonrespondents (Males)	7.70	1	.006
C. Respondents vs. Nonrespondents (Females)	1.53	1	.216

Table A-15 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Total Days Lost(AWOL/Confinment): Percent Distribution and Standard Errors (in parentheses).

	Sample Size	Total Days Lost(AWOL/Confinment) 0	1 & UP
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1557	88.0 %	12.0 %
		(1.2)	(1.2)
2. Nonrespondents	309	86.5 %	13.5 %
		(2.9)	(2.9)
B. Males			
1. Respondents	1172	88.0 %	12.0 %
		(1.2)	(1.2)
2. Nonrespondents	248	86.4 %	13.6 %
		(2.9)	(2.9)
C. Females			
1. Respondents	385	99.2 %	0.8 %
		(0.4)	(0.4)
2. Nonrespondents	61	97.9 %	2.1 %
		(2.1)	(2.1)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	700	93.0 %	7.0 %
		(1.7)	(1.7)
2. Nonrespondents	209	77.4 %	22.6 %
		(5.5)	(5.5)
B. Males			
1. Respondents	406	92.9 %	7.1 %
		(1.7)	(1.7)
2. Nonrespondents	141	77.6 %	22.4 %
		(5.7)	(5.7)
C. Females			
1. Respondents	294	94.2 %	5.8 %
		(2.0)	(2.0)
2. Nonrespondents	68	72.7 %	27.3 %
		(19.9)	(19.9)

Table A-15 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Total Days Lost(AWOL/Confinement): Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.24	1	.622
B. Respondents vs. Nonrespondents (Males)	0.24	1	.627
C. Respondents vs. Nonrespondents (Females)	0.40	1	.525
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	7.05	1	.008
B. Respondents vs. Nonrespondents (Males)	6.33	1	.012
C. Respondents vs. Nonrespondents (Females)	1.09	1	.297

Table A-16 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Court Martial(s): Group Estimates.

	Sample Size	Court Martial(s) Yes	Court Martial(s) No
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1544	6.5 %	93.5 %
		(0.9)	(0.9)
2. Nonrespondents	308	5.0 %	95.0 %
		(1.4)	(1.4)
B. Males			
1. Respondents	1158	6.5 %	93.5 %
		(0.9)	(0.9)
2. Nonrespondents	247	5.1 %	94.9 %
		(1.4)	(1.4)
C. Females			
1. Respondents	386	0.1 %	99.9 %
		(0.1)	(0.1)
2. Nonrespondents	61	0.0 %	100.0 %
		(0.0)	(0.0)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	689	2.4 %	97.6 %
		(0.7)	(0.7)
2. Nonrespondents	211	16.7 %	83.3 %
		(5.4)	(5.4)
B. Males			
1. Respondents	394	2.5 %	97.5 %
		(0.7)	(0.7)
2. Nonrespondents	142	17.4 %	82.6 %
		(5.6)	(5.6)
C. Females			
1. Respondents	295	1.0 %	99.0 %
		(0.7)	(0.7)
2. Nonrespondents	69	4.3 %	95.7 %
		(3.3)	(3.3)

Table A-16 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Court Martials: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.70	1	.403
B. Respondents vs. Nonrespondents (Males)	0.71	1	.399
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	7.05	1	.008
B. Respondents vs. Nonrespondents (Males)	6.95	1	.008
C. Respondents vs. Nonrespondents (Females)	0.98	1	.328

Table A-17 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Vietnam Service Medal: Group Estimates.

	Sample Size	Vietnam Service Medal: Yes	Vietnam Service Medal: No
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1572	96.1 %	3.9 %
		(0.8)	(0.8)
2. Nonrespondents	314	96.6 %	3.4 %
		(1.5)	(1.5)
B. Males			
1. Respondents	1186	96.2 %	3.8 %
		(0.8)	(0.8)
2. Nonrespondents	253	96.6 %	3.4 %
		(1.5)	(1.5)
C. Females			
1. Respondents	386	59.3 %	40.7 %
		(11.4)	(11.4)
2. Nonrespondents	61	98.7 %	1.3 %
		(1.3)	(1.3)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	707	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	215	0.0 %	100.0 %
		(0.0)	(0.0)
B. Males			
1. Respondents	410	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	148	0.0 %	100.0 %
		(0.0)	(0.0)
C. Females			
1. Respondents	297	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	69	0.0 %	100.0 %
		(0.0)	(0.0)

Table A-17 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Vietnam Service Medal: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.08	1	.774
B. Respondents vs. Nonrespondents (Males)	0.04	1	.834
C. Respondents vs. Nonrespondents (Females)	11.80	1	.001
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-18 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Rep. Vn Campgn Medal: Group Estimates.

	Sample Size	Rep. Vn Campgn Medal: Yes	Rep. Vn Campgn Medal: No
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1572	81.8 %	18.2 %
		(1.5)	(1.5)
2. Nonrespondents	313	77.2 %	22.8 %
		(3.6)	(3.6)
B. Males			
1. Respondents	1186	81.9 %	18.1 %
		(1.5)	(1.5)
2. Nonrespondents	252	77.2 %	22.8 %
		(3.6)	(3.6)
C. Females			
1. Respondents	386	57.1 %	42.9 %
		(11.0)	(11.0)
2. Nonrespondents	61	92.1 %	7.9 %
		(3.5)	(3.5)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	707	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	215	0.0 %	100.0 %
		(0.0)	(0.0)
B. Males			
1. Respondents	410	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	146	0.0 %	100.0 %
		(0.0)	(0.0)
C. Females			
1. Respondents	297	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	69	0.0 %	100.0 %
		(0.0)	(0.0)

Table A-18 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Rep. Vn Campgn Medal: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	1.40	1	.236
B. Respondents vs. Nonrespondents (Males)	1.47	1	.226
C. Respondents vs. Nonrespondents (Females)	9.21	1	.002
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-19 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Any Combat Medals: Group Estimates.

	Sample Size	Any Combat Medals: Yes	Any Combat Medals: No
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1575	23.5 %	76.5 %
		(1.5)	(1.5)
2. Nonrespondents	317	16.9 %	83.1 %
		(3.0)	(3.0)
B. Males			
1. Respondents	1187	23.6 %	76.4 %
		(1.6)	(1.6)
2. Nonrespondents	254	16.9 %	83.1 %
		(3.0)	(3.0)
C. Females			
1. Respondents	388	11.3 %	88.7 %
		(2.5)	(2.5)
2. Nonrespondents	63	21.8 %	78.2 %
		(5.2)	(5.2)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	715	0.5 %	99.5 %
		(0.4)	(0.4)
2. Nonrespondents	221	0.1 %	99.9 %
		(0.1)	(0.1)
B. Males			
1. Respondents	418	0.5 %	99.5 %
		(0.4)	(0.4)
2. Nonrespondents	151	0.1 %	99.9 %
		(0.1)	(0.1)
C. Females			
1. Respondents	297	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	70	0.0 %	100.0 %
		(0.0)	(0.0)

Table A-19 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Any Combat Medals: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	3.74	1	.053
B. Respondents vs. Nonrespondents (Males)	3.78	1	.052
C. Respondents vs. Nonrespondents (Females)	3.31	1	.069
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	1.19	1	.275
B. Respondents vs. Nonrespondents (Males)	1.19	1	.275
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-20 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Rcvd Purple Heart: Group Estimates.

	Sample Size	Rcvd Purple Heart: Yes	Rcvd Purple Heart: No
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1575	7.5 %	92.5 %
		(0.9)	(0.9)
2. Nonrespondents	317	5.1 %	94.9 %
		(1.4)	(1.4)
B. Males			
1. Respondents	1187	7.5 %	92.5 %
		(0.9)	(0.9)
2. Nonrespondents	254	5.1 %	94.9 %
		(1.4)	(1.4)
C. Females			
1. Respondents	388	0.3 %	99.7 %
		(0.2)	(0.2)
2. Nonrespondents	63	0.0 %	100.0 %
		(0.0)	(0.0)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	715	0.4 %	99.6 %
		(0.4)	(0.4)
2. Nonrespondents	221	0.0 %	100.0 %
		(0.0)	(0.0)
B. Males			
1. Respondents	418	0.5 %	99.5 %
		(0.4)	(0.4)
2. Nonrespondents	151	0.0 %	100.0 %
		(0.0)	(0.0)
C. Females			
1. Respondents	297	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	70	0.0 %	100.0 %
		(0.0)	(0.0)

Table A-20 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Rcvd Purple Heart: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	2.03	1	.154
B. Respondents vs. Nonrespondents (Males)	2.08	1	.152
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-21 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Separation: Group Estimates.

	Sample Size	Year of Separation: 1964 To 1969	1970 To 1974	1975 Or Later
I. VIETNAM THEATER VETERANS				
A. Theater Veterans (Total)				
1. Respondents	1571	39.4 %	47.1 %	13.5 %
		(1.7)	(1.8)	(1.3)
2. Nonrespondents	315	37.8 %	51.2 %	10.9 %
		(4.0)	(4.2)	(3.0)
B. Males				
1. Respondents	1184	39.4 %	47.1 %	13.5 %
		(1.7)	(1.8)	(1.3)
2. Nonrespondents	252	37.9 %	51.2 %	10.9 %
		(4.0)	(4.2)	(3.0)
C. Females				
1. Respondents	387	40.1 %	45.2 %	14.7 %
		(10.6)	(9.4)	(3.1)
2. Nonrespondents	63	25.3 %	48.6 %	26.2 %
		(5.8)	(6.5)	(5.5)
II. VIETNAM ERA VETERANS				
A. Era Veterans (Total)				
1. Respondents	708	37.1 %	42.5 %	20.4 %
		(2.6)	(3.7)	(3.3)
2. Nonrespondents	216	44.2 %	43.4 %	12.4 %
		(5.5)	(6.0)	(4.3)
B. Males				
1. Respondents	412	36.9 %	43.6 %	19.5 %
		(2.7)	(3.8)	(3.4)
2. Nonrespondents	145	45.0 %	43.7 %	11.3 %
		(5.7)	(6.2)	(4.4)
C. Females				
1. Respondents	296	41.5 %	22.8 %	35.7 %
		(6.2)	(4.2)	(8.7)
2. Nonrespondents	71	28.0 %	35.9 %	36.1 %
		(11.3)	(18.9)	(19.1)

Table A-21 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Separation: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	1.00	2	.607
B. Respondents vs. Nonrespondents (Males)	1.00	2	.607
C. Respondents vs. Nonrespondents (Females)	3.68	2	.159
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	2.46	2	.293
B. Respondents vs. Nonrespondents (Males)	2.66	2	.264
C. Respondents vs. Nonrespondents (Females)	1.33	2	.514

Table A-21 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Year of Separation: Statistical Contrasts

	1964 To 1969	1970 To 1974	1975 Or Later
I. VIETNAM THEATER VETERANS			
A. Respond vs. Nonrespond (Total)	0.12	0.79	0.63
	(.725)	(.375)	(.429)
B. Respond vs. Nonrespond (Males)	0.12	0.78	0.63
	(.730)	(.376)	(.426)
C. Respond vs. Nonrespond (Females)	1.51	0.09	3.32
	(.219)	(.768)	(.069)
I. VIETNAM ERA VETERANS			
A. Respond vs. Nonrespond (Total)	1.12	0.01	2.05
	(.291)	(.909)	(.152)
B. Respond vs. Nonrespond (Males)	1.34	0.00	2.12
	(.247)	(.984)	(.145)
C. Respond vs. Nonrespond (Females)	1.11	0.46	0.00
	(.293)	(.499)	(.981)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-22 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Type of Separation: Group Estimates.

	Sample Size	Type of Separation		
		Reserves	Discharged	Retired
I. VIETNAM THEATER VETERANS				
A. Theater Veterans (Total)				
1. Respondents	1553	65.6 %	22.3 %	12.0 %
		(1.7)	(1.6)	(1.1)
2. Nonrespondents	311	62.0 %	30.5 %	7.6 %
		(4.1)	(4.1)	(1.9)
B. Males				
1. Respondents	1169	65.7 %	22.3 %	12.0 %
		(1.7)	(1.6)	(1.1)
2. Nonrespondents	248	62.0 %	30.5 %	7.5 %
		(4.1)	(4.1)	(1.9)
C. Females				
1. Respondents	384	37.8 %	27.7 %	34.4 %
		(8.3)	(7.5)	(11.3)
2. Nonrespondents	63	35.3 %	29.4 %	35.3 %
		(6.3)	(6.1)	(5.9)
II. VIETNAM ERA VETERANS				
A. Era Veterans (Total)				
1. Respondents	698	60.9 %	34.1 %	5.0 %
		(3.7)	(3.6)	(1.2)
2. Nonrespondents	214	43.1 %	49.4 %	7.5 %
		(5.9)	(6.1)	(2.8)
B. Males				
1. Respondents	403	63.9 %	31.0 %	5.1 %
		(3.9)	(3.8)	(1.2)
2. Nonrespondents	144	44.9 %	47.5 %	7.5 %
		(6.2)	(6.4)	(3.0)
C. Females				
1. Respondents	293	6.3 %	90.8 %	2.9 %
		(1.5)	(2.0)	(1.1)
2. Nonrespondents	70	7.3 %	86.4 %	6.4 %
		(3.9)	(6.1)	(3.4)

Table A-22 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Type of Separation: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	5.99	2	.050
B. Respondents vs. Nonrespondents (Males)	5.94	2	.051
C. Respondents vs. Nonrespondents (Females)	0.07	2	.964
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	6.56	2	.038
B. Respondents vs. Nonrespondents (Males)	6.73	2	.034
C. Respondents vs. Nonrespondents (Females)	0.91	2	.636

Table A-22 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Type of Separation: Statistical Contrasts

	Reserves	Discharged	Retired
I. VIETNAM THEATER VETERANS			
A. Respond vs. Nonrespond (Total)	0.64	3.44	3.66
	(.424)	(.064)	(.056)
B. Respond vs. Nonrespond (Males)	0.66	3.44	3.59
	(.417)	(.064)	(.058)
C. Respond vs. Nonrespond (Females)	0.06	0.03	0.00
	(.811)	(.865)	(.946)
I. VIETNAM ERA VETERANS			
A. Respond vs. Nonrespond (Total)	6.44	4.53	0.60
	(.011)	(.033)	(.439)
B. Respond vs. Nonrespond (Males)	6.66	4.82	0.52
	(.010)	(.028)	(.471)
C. Respond vs. Nonrespond (Females)	0.05	0.47	0.89
	(.817)	(.493)	(.344)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-23 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Type of Discharge: Group Estimates.

	Sample Size	Type of Discharge: Honorable Discharge	Type of Discharge: Other
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1549	94.3 %	5.7 %
		(0.9)	(0.9)
2. Nonrespondents	308	92.7 %	7.3 %
		(2.3)	(2.3)
B. Males			
1. Respondents	1164	94.3 %	5.7 %
		(0.9)	(0.9)
2. Nonrespondents	246	92.7 %	7.3 %
		(2.3)	(2.3)
C. Females			
1. Respondents	385	99.8 %	0.2 %
		(0.2)	(0.2)
2. Nonrespondents	62	100.0 %	0.0 %
		(0.0)	(0.0)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	691	94.1 %	5.9 %
		(1.8)	(1.8)
2. Nonrespondents	212	76.1 %	23.9 %
		(6.0)	(6.0)
B. Males			
1. Respondents	398	94.0 %	6.0 %
		(1.9)	(1.9)
2. Nonrespondents	142	75.1 %	24.9 %
		(6.3)	(6.3)
C. Females			
1. Respondents	293	94.5 %	5.5 %
		(1.9)	(1.9)
2. Nonrespondents	70	95.2 %	4.8 %
		(3.5)	(3.5)

Table A-23 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Type of Discharge: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.42	1	.518
B. Respondents vs. Nonrespondents (Males)	0.41	1	.521
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	8.08	1	.004
B. Respondents vs. Nonrespondents (Males)	8.21	1	.004
C. Respondents vs. Nonrespondents (Females)	0.03	1	.871

Table A-24 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Pay Grade: Group Estimates.

	Sample Size	Pay Grade					
		E1-E3	E4	E5	E6-E9	O1-O3	O4-O6
I. VIETNAM THEATER VETERANS							
A. Theater Veterans (Total)							
1. Respondents	1574	17.5 %	34.1 %	27.7 %	13.3 %	4.5 %	2.9 %
		(1.4)	(1.8)	(1.7)	(1.1)	(0.7)	(0.6)
2. Nonrespondents	317	19.2 %	41.3 %	26.8 %	6.9 %	3.8 %	2.1 %
		(3.3)	(4.1)	(3.8)	(1.9)	(1.5)	(1.2)
B. Males							
1. Respondents	1188	17.5 %	34.2 %	27.8 %	13.4 %	4.4 %	2.8 %
		(1.4)	(1.8)	(1.7)	(1.2)	(0.7)	(0.6)
2. Nonrespondents	254	19.2 %	41.4 %	26.7 %	6.9 %	3.8 %	2.1 %
		(3.3)	(4.2)	(3.8)	(1.9)	(1.5)	(1.2)
C. Females							
1. Respondents	386	0.6 %	8.1 %	2.6 %	3.2 %	51.8 %	33.8 %
		(0.3)	(6.9)	(0.8)	(0.9)	(10.0)	(11.3)
2. Nonrespondents	63	0.0 %	3.8 %	5.7 %	4.7 %	50.5 %	35.3 %
		(0.0)	(2.6)	(3.2)	(2.7)	(6.5)	(5.9)
II. VIETNAM ERA VETERANS							
A. Era Veterans (Total)							
1. Respondents	711	23.2 %	46.2 %	18.4 %	7.9 %	3.0 %	1.3 %
		(3.1)	(3.7)	(2.8)	(1.8)	(0.9)	(0.7)
2. Nonrespondents	222	47.2 %	22.8 %	17.7 %	7.9 %	2.9 %	1.5 %
		(5.8)	(4.3)	(3.9)	(2.7)	(1.5)	(1.3)
B. Males							
1. Respondents	416	23.1 %	46.5 %	18.4 %	8.2 %	2.6 %	1.3 %
		(3.2)	(3.8)	(2.9)	(1.9)	(1.0)	(0.7)
2. Nonrespondents	151	46.4 %	23.6 %	18.3 %	8.2 %	2.2 %	1.3 %
		(6.0)	(4.5)	(4.1)	(2.9)	(1.5)	(1.3)
C. Females							
1. Respondents	295	24.4 %	40.2 %	20.1 %	1.8 %	11.9 %	1.6 %
		(4.5)	(7.6)	(6.8)	(0.6)	(2.0)	(0.8)
2. Nonrespondents	71	64.1 %	6.9 %	5.0 %	1.2 %	17.2 %	5.6 %
		(14.1)	(4.1)	(3.5)	(0.7)	(8.6)	(3.3)

Table A-24 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Pay Grade: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	9.03	5	.108
B. Respondents vs. Nonrespondents (Males)	8.97	5	.110
C. Respondents vs. Nonrespondents (Females)	.	.	.
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	20.51	5	.001
B. Respondents vs. Nonrespondents (Males)	17.85	5	.003
C. Respondents vs. Nonrespondents (Females)	40.01	5	.000

Table A-24 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Pay Grade: Statistical Contrasts

	E1-E3	E4	E5	E6-E9	O1-O3	O4-O6
I. VIETNAM THEATER VETERANS						
A. Respond vs. Nonrespond (Total)	0.22	2.54	0.06	7.27	0.16	0.35
	(.636)	(.111)	(.805)	(.007)	(.691)	(.557)
B. Respond vs. Nonrespond (Males)	0.22	2.51	0.07	7.31	0.12	0.30
	(.643)	(.113)	(.796)	(.007)	(.731)	(.585)
C. Respond vs. Nonrespond (Females)		0.33	0.87	0.30	0.01	0.01
		(.563)	(.351)	(.586)	(.915)	(.907)
I. VIETNAM ERA VETERANS						
A. Respond vs. Nonrespond (Total)	13.36	17.41	0.02	0.00	0.01	0.02
	(.000)	(.000)	(.875)	(.987)	(.926)	(.884)
B. Respond vs. Nonrespond (Males)	11.56	15.31	0.00	0.00	0.04	0.00
	(.001)	(.000)	(.987)	(.989)	(.838)	(.980)
C. Respond vs. Nonrespond (Females)	7.18	14.90	3.89	0.37	0.36	1.40
	(.007)	(.000)	(.049)	(.543)	(.547)	(.237)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-25 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Region of Home of Record: Group Estimates.

	Sample Size	Region of Home of Record: Northeast	North Central	South	West	External / Foreign
I. VIETNAM THEATER VETERANS						
A. Theater Veterans (Total)						
1. Respondents	1560	21.8 %	24.6 %	32.6 %	19.7 %	1.2 %
		(1.6)	(1.7)	(1.8)	(1.5)	(0.4)
2. Nonrespondents	314	24.6 %	25.8 %	28.3 %	21.0 %	0.3 %
		(3.6)	(3.9)	(3.9)	(3.3)	(0.1)
B. Males						
1. Respondents	1174	21.8 %	24.6 %	32.6 %	19.7 %	1.3 %
		(1.6)	(1.7)	(1.8)	(1.5)	(0.4)
2. Nonrespondents	251	24.6 %	25.8 %	28.2 %	21.0 %	0.3 %
		(3.6)	(3.9)	(3.9)	(3.3)	(0.1)
C. Females						
1. Respondents	386	13.5 %	22.1 %	28.1 %	35.5 %	0.8 %
		(3.0)	(7.1)	(7.4)	(11.1)	(0.4)
2. Nonrespondents	63	17.9 %	21.3 %	40.1 %	18.7 %	1.9 %
		(5.0)	(5.4)	(6.3)	(4.9)	(1.9)
II. VIETNAM ERA VETERANS						
A. Era Veterans (Total)						
1. Respondents	697	18.4 %	26.3 %	34.7 %	20.1 %	0.5 %
		(2.6)	(3.4)	(3.6)	(3.0)	(0.1)
2. Nonrespondents	211	21.4 %	30.4 %	25.9 %	20.5 %	1.8 %
		(5.0)	(5.9)	(4.6)	(5.5)	(1.4)
B. Males						
1. Respondents	406	18.9 %	25.9 %	35.1 %	19.7 %	0.4 %
		(2.7)	(3.8)	(3.7)	(3.1)	(0.1)
2. Nonrespondents	141	21.9 %	30.1 %	24.9 %	21.2 %	1.8 %
		(5.2)	(6.1)	(4.7)	(5.8)	(1.4)
C. Females						
1. Respondents	291	9.8 %	33.3 %	28.5 %	26.6 %	1.7 %
		(2.4)	(8.0)	(5.0)	(6.8)	(1.0)
2. Nonrespondents	70	11.5 %	36.4 %	45.1 %	6.8 %	0.2 %
		(5.6)	(19.0)	(18.7)	(3.8)	(0.3)

Table A-25 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Region of Home of Record: Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	7.42	4	.115
B. Respondents vs. Nonrespondents (Males)	7.45	4	.114
C. Respondents vs. Nonrespondents (Females)	2.86	4	.581
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	3.20	4	.525
B. Respondents vs. Nonrespondents (Males)	3.74	4	.442
C. Respondents vs. Nonrespondents (Females)	9.64	4	.047

Table A-25 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on Region of Home of Record: Statistical Contrasts

	Northeast	North Central	South	West	External / Foreign
I. VIETNAM THEATER VETERANS					
A. Respond vs. Nonrespond (Total)	0.51	0.08	1.01	0.12	6.14
	(.474)	(.779)	(.314)	(.725)	(.013)
B. Respond vs. Nonrespond (Males)	0.51	0.08	1.03	0.13	6.16
	(.477)	(.780)	(.311)	(.713)	(.013)
C. Respond vs. Nonrespond (Females)	0.57	0.01	1.51	1.90	0.31
	(.452)	(.934)	(.219)	(.168)	(.579)
I. VIETNAM ERA VETERANS					
A. Respond vs. Nonrespond (Total)	0.29	0.37	2.29	0.00	0.88
	(.588)	(.545)	(.130)	(.948)	(.349)
B. Respond vs. Nonrespond (Males)	0.27	0.35	2.81	0.05	0.98
	(.601)	(.553)	(.093)	(.828)	(.322)
C. Respond vs. Nonrespond (Females)	0.08	0.02	0.73	6.43	2.00
	(.780)	(.884)	(.392)	(.011)	(.157)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-28 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on VA Comp. & Pens. File (Disability): Group Estimates.

	Sample Size	VA Comp. & Pens. File (Disability) Yes	No
I. VIETNAM THEATER VETERANS			
A. Theater Veterans (Total)			
1. Respondents	1632	11.5 %	88.5 %
		(1.1)	(1.1)
2. Nonrespondents	323	10.8 %	89.2 %
		(2.3)	(2.3)
B. Males			
1. Respondents	1191	11.6 %	88.4 %
		(1.1)	(1.1)
2. Nonrespondents	254	10.8 %	89.2 %
		(2.3)	(2.3)
C. Females			
1. Respondents	441	8.0 %	92.0 %
		(2.0)	(2.0)
2. Nonrespondents	69	19.4 %	80.6 %
		(4.5)	(4.5)
II. VIETNAM ERA VETERANS			
A. Era Veterans (Total)			
1. Respondents	716	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	223	0.0 %	100.0 %
		(0.0)	(0.0)
B. Males			
1. Respondents	419	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	151	0.0 %	100.0 %
		(0.0)	(0.0)
C. Females			
1. Respondents	297	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	72	0.0 %	100.0 %
		(0.0)	(0.0)

Table A-26 Comparisons of Veterans' Military Records Data for Respondents and Nonrespondents on VA Comp. & Pens. File (Disability): Statistical Contrasts

	Chi-Square	df	Probability
I. VIETNAM THEATER VETERANS			
A. Respondents vs. Nonrespondents (Total)	0.08	1	.777
B. Respondents vs. Nonrespondents (Males)	0.09	1	.768
C. Respondents vs. Nonrespondents (Females)	5.25	1	.022
I. VIETNAM ERA VETERANS			
A. Respondents vs. Nonrespondents (Total)	.	.	.
B. Respondents vs. Nonrespondents (Males)	.	.	.
C. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-27 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Year of Birth

Group Estimates	Sample Size	Year of Birth			
		LE 1939	1940-1944	1945-1949	GE 1950
A. Males					
1. Respondents	451	59.5 %	11.6 %	11.3 %	17.6 %
		(3.2)	(1.2)	(1.2)	(1.8)
2. Nonrespondents	242	71.4 %	10.2 %	7.2 %	11.2 %
		(4.7)	(2.0)	(1.6)	(3.0)
B. Females					
1. Respondents	217	61.6 %	8.3 %	15.7 %	14.3 %
		(6.2)	(2.8)	(2.8)	(5.7)
2. Nonrespondents	69	46.7 %	14.4 %	16.6 %	22.3 %
		(12.0)	(6.2)	(5.6)	(12.7)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	2.62	1	.105
B. Respondents vs. Nonrespondents (Females)	0.76	1	.384

Table A-28 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Race

Group Estimates	Sample Size	Race: Black	Race: White	Race: Other
A. Males				
1. Respondents	449	8.7 %	90.1 %	1.2 %
		(1.0)	(1.1)	(0.4)
2. Nonrespondents	242	6.8 %	85.4 %	7.8 %
		(1.3)	(5.2)	(5.2)
B. Females				
1. Respondents	69	7.8 %	91.7 %	0.5 %
		(4.4)	(4.4)	(0.5)
2. Nonrespondents	29	9.7 %	86.0 %	4.3 %
		(5.8)	(7.1)	(4.3)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	2.41	2	.300
B. Respondents vs. Nonrespondents (Females)	0.88	2	.645

Statistical Contrasts by Level	Race: Black	Race: White	Race: Other
A. Respond vs. Nonrespond (Males)	0.85	0.73	1.63
	(.356)	(.394)	(.202)
B. Respond vs. Nonrespond (Females)	0.07	0.47	0.80
	(.798)	(.493)	(.372)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

Table A-29 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Hispanic Descent

Group Estimates	Sample Size	Hispanic Descent: Yes	Hispanic Descent: No
A. Males			
1. Respondents	450	4.2 %	95.8 %
		(0.6)	(0.6)
2. Nonrespondents	241	3.4 %	96.6 %
		(0.8)	(0.8)
B. Females			
1. Respondents	69	1.7 %	98.3 %
		(0.9)	(0.9)
2. Nonrespondents	29	6.9 %	93.1 %
		(6.7)	(6.7)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	0.47	1	.493
B. Respondents vs. Nonrespondents (Females)	0.60	1	.440

Table A-30 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Ever Active Duty

Group Estimates	Sample Size	Ever Active Duty: Yes	Ever Active Duty: No
A. Males			
1. Respondents	450	31.1 %	68.9 %
		(5.4)	(5.4)
2. Nonrespondents	241	42.8 %	57.2 %
		(9.1)	(9.1)
B. Females			
1. Respondents	216	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	69	0.0 %	100.0 %
		(0.0)	(0.0)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	1.16	1	.281
B. Respondents vs. Nonrespondents (Females)	.	.	.

Table A-31 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Relationship to Head of Household

Group Estimates	Sample Size	Relationship to Head of Household: Head	Spouse	Other
A. Males				
1. Respondents	451	94.9 %	1.2 %	3.9 %
		(1.3)	(0.5)	(1.1)
2. Nonrespondents	241	90.1 %	0.5 %	9.4 %
		(5.2)	(0.4)	(5.2)
B. Females				
1. Respondents	69	29.6 %	64.0 %	6.3 %
		(6.8)	(7.5)	(4.3)
2. Nonrespondents	29	19.4 %	80.6 %	0.0 %
		(7.9)	(7.9)	(0.0)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	2.38	2	.307
B. Respondents vs. Nonrespondents (Females)	.	.	.

Statistical Contrasts by Level	Relationship to Head of Household: Head	Spouse	Other
A. Respond vs. Nonrespond (Males)	0.80	1.28	1.07
	(.372)	(.257)	(.302)
B. Respond vs. Nonrespond (Females)	0.98	2.33	
	(.327)	(.127)	

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

Table A-32 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Number in Household Unit

Group Estimates	Sample Size	Number in Household Unit: 1	2	3	4	5	6 or More
A. Males							
1. Respondents	451	13.2 %	34.6 %	22.0 %	17.5 %	8.1 %	4.6 %
		(4.3)	(5.6)	(4.8)	(3.8)	(2.4)	(0.9)
2. Nonrespondents	242	2.3 %	52.4 %	16.2 %	9.4 %	11.0 %	8.6 %
		(0.8)	(8.5)	(5.3)	(3.4)	(5.4)	(5.4)
B. Females							
1. Respondents	69	14.1 %	33.2 %	26.6 %	11.7 %	5.1 %	9.2 %
		(4.6)	(8.0)	(7.3)	(4.6)	(1.9)	(5.0)
2. Nonrespondents	29	10.7 %	22.0 %	29.4 %	1.9 %	23.5 %	12.4 %
		(6.3)	(9.3)	(11.2)	(1.4)	(11.7)	(10.3)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	0.07	1	.786
B. Respondents vs. Nonrespondents (Females)	1.24	1	.266

Table A-33 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Number in Household of Age 25+ Years

Group Estimates	Sample Size	Number in Household of Age 25+ Years: 1	2	3 or More
A. Males				
1. Respondents	451	18.0 %	76.0 %	6.0 %
		(4.9)	(5.0)	(1.8)
2. Nonrespondents	242	2.7 %	83.9 %	13.3 %
		(0.8)	(5.9)	(5.8)
B. Females				
1. Respondents	69	23.1 %	65.4 %	11.5 %
		(6.3)	(7.7)	(5.9)
2. Nonrespondents	29	19.4 %	51.2 %	29.4 %
		(7.9)	(12.7)	(13.5)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	8.63	1	.003
B. Respondents vs. Nonrespondents (Females)	1.05	1	.304

Table A-34 Comparisons of Civilians' Roster Data for Respondents and Nonrespondents on Region of Home

Group Estimates	Sample Size	Region of Home: Northeast	North Central	South	West
A. Males					
1. Respondents	451	21.9 %	30.3 %	33.7 %	14.1 %
		(4.7)	(5.4)	(5.3)	(3.7)
2. Nonrespondents	241	38.4 %	18.7 %	12.4 %	30.5 %
		(8.9)	(6.8)	(3.9)	(8.2)
B. Females					
1. Respondents	217	23.6 %	31.8 %	35.0 %	9.6 %
		(7.1)	(7.6)	(7.5)	(4.5)
2. Nonrespondents	69	37.4 %	16.8 %	8.9 %	36.9 %
		(12.4)	(7.2)	(5.1)	(12.0)

Statistical Contrasts	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Males)	16.41	3	.001
B. Respondents vs. Nonrespondents (Females)	15.20	3	.002

Statistical Contrasts by Level	Region of Home: Northeast	North Central	South	West
A. Respond vs. Nonrespond (Males)	2.67	1.76	10.44	3.36
	(.102)	(.184)	(.001)	(.067)
B. Respond vs. Nonrespond (Females)	0.92	2.04	8.43	4.52
	(.339)	(.153)	(.004)	(.033)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

Table A-35 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Age of Spouse/Partner

I. PERCENT DISTRIBUTION AND STANDARD ERROR	Sample Size	Age of Spouse/Partner: Less Than 35	35-39	40-44	45 or More
A. Male Veterans					
1. Respondents	375	27.3 %	36.9 %	18.2 %	17.5 %
		(3.1)	(3.4)	(2.3)	(2.6)
2. Nonrespondents	98	28.9 %	32.3 %	23.2 %	15.6 %
		(6.7)	(7.0)	(6.3)	(4.7)
B. Female Veterans					
1. Respondents	90	0.5 %	18.1 %	44.7 %	36.7 %
		(0.5)	(4.3)	(5.4)	(5.2)
2. Nonrespondents	17	0.0 %	8.0 %	56.3 %	35.7 %
		(0.0)	(7.7)	(12.5)	(11.8)
C. All Veterans					
1. Respondents	465	27.3 %	36.9 %	18.3 %	17.5 %
		(3.1)	(3.4)	(2.3)	(2.6)
2. Nonrespondents	115	28.8 %	32.3 %	23.2 %	15.7 %
		(6.7)	(7.0)	(6.3)	(4.7)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.00	1	.997
B. Respondents vs. Nonrespondents (Female Vets)	0.20	1	.653
C. Respondents vs. Nonrespondents (All Vets)	0.00	1	.998

Table A-36 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Education of Spouse/Partner

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Education of Spouse/Partner: Less Than High School Graduate	High School Graduate	Some College	College Graduate
A. Male Veterans					
1. Respondents	376	6.9 %	48.3 %	18.5 %	26.3 %
		(2.0)	(3.6)	(3.1)	(3.2)
2. Nonrespondents	100	10.7 %	46.1 %	22.3 %	21.0 %
		(4.1)	(7.1)	(5.9)	(6.3)
B. Female Veterans					
1. Respondents	90	2.2 %	14.7 %	11.5 %	71.6 %
		(1.5)	(3.8)	(3.4)	(4.8)
2. Nonrespondents	17	0.0 %	5.5 %	13.9 %	80.5 %
		(0.0)	(5.4)	(9.2)	(10.2)
C. All Veterans					
1. Respondents	466	6.9 %	48.3 %	18.4 %	26.3 %
		(2.0)	(3.6)	(3.1)	(3.2)
2. Nonrespondents	117	10.7 %	46.0 %	22.2 %	21.0 %
		(4.1)	(7.1)	(5.9)	(6.3)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	1.35	3	.717
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	1.35	3	.716

Table A-36 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Education of Spouse/Partner

III. STATISTICAL CONTRASTS (BY LEVEL)	Sample Size	Less Than High School Graduate	High School Graduate	Some College	College Graduate
A. Respond vs. Nonrespond-Male Vets		0.70	0.08	0.33	0.56
		(.403)	(.775)	(.568)	(.454)
B. Respond vs. Nonrespond-Female Vets			1.92	0.06	0.62
			(.166)	(.804)	(.431)
C. Respond vs. Nonrespond-All Vets		0.70	0.08	0.33	0.56
		(.403)	(.775)	(.568)	(.453)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-37 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Spouse/Partner Working for Pay

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Spouse/Partner Working for Pay: Yes	Spouse/Partner Working for Pay: No
A. Male Veterans			
1. Respondents	368	72.2 %	27.8 %
		(3.3)	(3.3)
2. Nonrespondents	99	65.5 %	34.5 %
		(6.9)	(6.9)
B. Female Veterans			
1. Respondents	90	88.5 %	11.5 %
		(3.3)	(3.3)
2. Nonrespondents	17	79.3 %	20.7 %
		(9.7)	(9.7)
C. All Veterans			
1. Respondents	458	72.3 %	27.7 %
		(3.3)	(3.3)
2. Nonrespondents	116	65.5 %	34.5 %
		(6.9)	(6.9)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.77	1	.381
B. Respondents vs. Nonrespondents (Female Vets)	0.82	1	.366
C. Respondents vs. Nonrespondents (All Vets)	0.77	1	.380

Table A-38 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Gender

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Gender: Male	Gender: Female
A. Male Veterans			
1. Respondents	378	100.0 %	0.0 %
		(0.0)	(0.0)
2. Nonrespondents	102	100.0 %	0.0 %
		(0.0)	(0.0)
B. Female Veterans			
1. Respondents	90	0.0 %	100.0 %
		(0.0)	(0.0)
2. Nonrespondents	17	0.0 %	100.0 %
		(0.0)	(0.0)
C. All Veterans			
1. Respondents	468	99.8 %	0.2 %
		(0.0)	(0.0)
2. Nonrespondents	119	99.9 %	0.1 %
		(0.0)	(0.0)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	.	.	.
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	1.14	1	.286

Table A-39 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Year of Birth

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Year of Birth: 1929 or Earlier	1930-1939	1940-1944	1945-1949	1950 or Later
A. Male Veterans						
1. Respondents	376	1.2 %	14.8 %	14.9 %	51.0 %	18.1 %
		(0.6)	(2.2)	(1.3)	(2.1)	(1.8)
2. Nonrespondents	102	4.9 %	13.0 %	15.8 %	55.8 %	10.5 %
		(3.2)	(4.1)	(4.4)	(6.6)	(4.7)
B. Female Veterans						
1. Respondents	90	3.4 %	9.5 %	29.3 %	57.8 %	0.0 %
		(1.7)	(2.9)	(4.9)	(5.3)	(0.0)
2. Nonrespondents	17	5.8 %	5.5 %	26.0 %	62.7 %	0.0 %
		(5.6)	(5.4)	(10.7)	(12.0)	(0.0)
C. All Veterans						
1. Respondents	466	1.2 %	14.8 %	14.9 %	51.0 %	18.0 %
		(0.6)	(2.2)	(1.3)	(2.1)	(1.8)
2. Nonrespondents	119	4.9 %	13.0 %	15.8 %	55.8 %	10.5 %
		(3.2)	(4.1)	(4.4)	(6.6)	(4.7)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.93	1	.335
B. Respondents vs. Nonrespondents (Female Vets)	0.11	1	.735
C. Respondents vs. Nonrespondents (All Vets)	0.93	1	.335

Table A-39 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Year of Birth

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	1929 or Earlier	1930-1939	1940-1944	1945-1949	1950 or Later
A. Respond vs. Nonrespond-Male Vets		1.25	0.12	0.03	0.36	1.80
		(.264)	(.733)	(.861)	(.550)	(.180)
B. Respond vs. Nonrespond-Female Vets		0.16	0.42	0.08	0.14	
		(.687)	(.515)	(.780)	(.708)	
C. Respond vs. Nonrespond-All Vets		1.25	0.12	0.03	0.36	1.79
		(.264)	(.733)	(.862)	(.550)	(.181)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-40 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Racial Background

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Racial Background: Black	White	Other
A. Male Veterans				
1. Respondents	375	9.3 %	86.7 %	4.0 %
		(0.7)	(1.5)	(1.4)
2. Nonrespondents	102	14.2 %	84.3 %	1.5 %
		(2.9)	(3.2)	(1.2)
B. Female Veterans				
1. Respondents	90	1.9 %	97.0 %	1.1 %
		(1.4)	(1.7)	(1.1)
2. Nonrespondents	17	0.0 %	100.0 %	0.0 %
		(0.0)	(0.0)	(0.0)
C. All Veterans				
1. Respondents	465	9.3 %	86.7 %	4.0 %
		(0.7)	(1.5)	(1.4)
2. Nonrespondents	119	14.2 %	84.3 %	1.5 %
		(2.9)	(3.2)	(1.2)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	4.03	2	.133
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	4.04	2	.133

Table A-40 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Racial Background

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	Black	White	Other
A. Respond vs. Nonrespond-Male Vets		2.05	0.37	1.94
		(.152)	(.543)	(.163)
B. Respond vs. Nonrespond-Female Vets				
C. Respond vs. Nonrespond-All Vets		2.06	0.37	1.94
		(.151)	(.543)	(.163)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-41 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Hispanic Origin

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Hispanic Origin: Yes	Hispanic Origin: No
A. Male Veterans			
1. Respondents	378	4.8 %	95.2 %
		(0.7)	(0.7)
2. Nonrespondents	102	5.8 %	94.2 %
		(1.4)	(1.4)
B. Female Veterans			
1. Respondents	90	4.3 %	95.7 %
		(2.1)	(2.1)
2. Nonrespondents	17	0.0 %	100.0 %
		(0.0)	(0.0)
C. All Veterans			
1. Respondents	466	4.8 %	95.2 %
		(0.7)	(0.7)
2. Nonrespondents	119	5.8 %	94.2 %
		(1.4)	(1.4)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.32	1	.572
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	0.32	1	.574

Table A-42 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Educational Attainment

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Educational Attainment: Less Than High School Graduate	High School Graduate	Some College	College Graduate	Grad/Prof Work
A. Male Veterans						
1. Respondents	376	7.1 %	30.5 %	43.9 %	11.3 %	7.2 %
		(2.5)	(3.3)	(3.8)	(2.4)	(1.6)
2. Nonrespondents	102	5.9 %	35.6 %	43.4 %	4.8 %	10.5 %
		(3.2)	(7.0)	(7.1)	(3.1)	(4.4)
B. Female Veterans						
1. Respondents	90	0.0 %	18.8 %	25.2 %	34.8 %	21.2 %
		(0.0)	(4.3)	(4.7)	(5.2)	(4.3)
2. Nonrespondents	17	0.0 %	17.5 %	25.5 %	19.7 %	37.3 %
		(0.0)	(9.6)	(11.4)	(10.2)	(12.1)
C. All Veterans						
1. Respondents	466	7.1 %	30.5 %	43.9 %	11.3 %	7.2 %
		(2.5)	(3.3)	(3.8)	(2.4)	(1.6)
2. Nonrespondents	119	5.9 %	35.5 %	43.4 %	4.8 %	10.5 %
		(3.2)	(7.0)	(7.1)	(3.1)	(4.4)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	3.50	4	.477
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	3.53	4	.473

Table A-42 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Educational Attainment

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	Less Than High School Graduate	High School Graduate	Some College	College Graduate	Grad/Prof Work
A. Respond vs. Nonrespond-Male Vets		0.09	0.43	0.00	2.88	0.49
		(.762)	(.511)	(.951)	(.090)	(.482)
B. Respond vs. Nonrespond-Female Vets			0.02	0.00	1.73	1.58
			(.901)	(.985)	(.189)	(.208)
C. Respond vs. Nonrespond-All Vets		0.09	0.43	0.00	2.90	0.50
		(.762)	(.511)	(.952)	(.088)	(.480)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-43 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Current Work Status

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Current Work Status: Working Now With Job	Unemployed/ Permanent Layoff	Retired	Other
A. Male Veterans					
1. Respondents	374	93.3 %	3.0 %	0.4 %	3.3 %
		(1.8)	(1.2)	(0.2)	(1.4)
2. Nonrespondents	102	90.9 %	2.1 %	2.9 %	4.1 %
		(3.2)	(0.9)	(2.4)	(1.9)
B. Female Veterans					
1. Respondents	90	72.5 %	1.6 %	4.6 %	21.3 %
		(4.8)	(1.2)	(2.1)	(4.5)
2. Nonrespondents	17	83.6 %	0.0 %	0.0 %	16.4 %
		(9.0)	(0.0)	(0.0)	(9.0)
C. All Veterans					
1. Respondents	464	93.2 %	3.0 %	0.4 %	3.4 %
		(1.8)	(1.2)	(0.2)	(1.4)
2. Nonrespondents	119	90.8 %	2.1 %	2.9 %	4.2 %
		(3.2)	(0.9)	(2.4)	(1.9)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	1.69	3	.639
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	1.68	3	.641

Table A-43 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Current Work Status

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	Working Now With Job	Unemployed/ Permanent Layoff	Retired	Other
A. Respond vs. Nonrespond-Male Vets		0.44	0.43	1.16	0.11
		(.509)	(.514)	(.282)	(.737)
B. Respond vs. Nonrespond-Female Vets		1.20			0.24
		(.274)			(.627)
C. Respond vs. Nonrespond-All Vets		0.43	0.43	1.15	0.11
		(.513)	(.513)	(.283)	(.741)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-44 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Family Income

I. PERCENT DISTRIBUTION AND STANDARD ERRRORS	Sample Size	Family Income: Less Than $20,000	$20,000-$29,999	$30,000-$39,999	$40,000-$49,999	$50,000 Or More
A. Male Veterans						
1. Respondents	368	11.8 %	17.7 %	21.5 %	21.4 %	27.7 %
		(2.4)	(2.8)	(2.9)	(3.3)	(3.3)
2. Nonrespondents	97	13.4 %	16.4 %	29.2 %	14.8 %	26.1 %
		(4.8)	(5.5)	(6.8)	(4.9)	(6.7)
B. Female Veterans						
1. Respondents	88	5.6 %	5.9 %	11.1 %	24.9 %	52.5 %
		(2.5)	(2.6)	(3.4)	(4.8)	(5.4)
2. Nonrespondents	16	0.0 %	0.0 %	16.0 %	8.3 %	75.6 %
		(0.0)	(0.0)	(8.9)	(8.0)	(11.1)
C. All Veterans						
1. Respondents	456	11.8 %	17.7 %	21.4 %	21.4 %	27.8 %
		(2.4)	(2.7)	(2.9)	(3.3)	(3.3)
2. Nonrespondents	113	13.4 %	16.4 %	29.2 %	14.8 %	26.2 %
		(4.8)	(5.5)	(6.8)	(4.9)	(6.7)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.27	1	.603
B. Respondents vs. Nonrespondents (Female Vets)	3.20	1	.074
C. Respondents vs. Nonrespondents (All Vets)	0.27	1	.604

Table A-45 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Region of Current Residence

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Region of Current Residence: Northeast	North Central	South	West	Puerto Rico
A. Male Veterans						
1. Respondents	376	16.7 %	26.4 %	31.6 %	24.6 %	0.8 %
		(2.7)	(3.2)	(3.3)	(3.3)	(0.3)
2. Nonrespondents	102	27.4 %	16.2 %	36.0 %	20.1 %	0.3 %
		(6.7)	(5.3)	(6.8)	(5.5)	(0.2)
B. Female Veterans						
1. Respondents	90	13.2 %	24.2 %	36.1 %	26.5 %	0.0 %
		(3.8)	(4.7)	(5.2)	(4.7)	(0.0)
2. Nonrespondents	17	20.0 %	19.5 %	38.9 %	21.5 %	0.0 %
		(9.5)	(10.5)	(12.5)	(10.0)	(0.0)
C. All Veterans						
1. Respondents	466	16.6 %	26.4 %	31.6 %	24.6 %	0.8 %
		(2.7)	(3.2)	(3.3)	(3.3)	(0.3)
2. Nonrespondents	119	27.4 %	16.2 %	36.0 %	20.1 %	0.3 %
		(6.7)	(5.3)	(6.8)	(5.5)	(0.2)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	5.93	4	.205
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	5.93	4	.204

Table A-45 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Current Residence (Region-5 groups)

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	Northeast	North Central	South	West	Foreign
A. Respond vs. Nonrespond-Male Vets		2.24	2.73	0.33	0.49	1.40
		(.135)	(.098)	(.564)	(.486)	(.236)
B. Respond vs. Nonrespond-Female Vets		0.44	0.16	0.04	0.20	
		(.506)	(.687)	(.836)	(.652)	
C. Respond vs. Nonrespond-All Vets		2.24	2.73	0.33	0.49	1.40
		(.134)	(.098)	(.563)	(.485)	(.236)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-46 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Size of Place of Residence

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Size of Place of Residence: Very Large City (over 1,500,000)	Large City (250,000-1,499,999)	Suburb Near A Large City	Med-Sized City (50,000-249,999)	Small Town Or City Undr 50,000	Rural
A. Male Veterans							
1. Respondents	374	5.1 %	7.8 %	12.6 %	16.4 %	41.4 %	16.8 %
		(2.1)	(1.8)	(2.2)	(2.7)	(3.5)	(2.9)
2. Nonrespondents	101	5.9 %	9.7 %	9.6 %	21.0 %	52.2 %	1.5 %
		(2.7)	(3.5)	(3.7)	(5.7)	(7.1)	(1.2)
B. Female Veterans							
1. Respondents	90	3.9 %	14.1 %	19.7 %	16.3 %	28.3 %	17.8 %
		(1.9)	(3.7)	(4.2)	(3.9)	(4.9)	(4.2)
2. Nonrespondents	17	0.0 %	25.6 %	24.8 %	22.7 %	15.0 %	12.0 %
		(0.0)	(10.6)	(11.1)	(11.3)	(8.3)	(8.4)
C. All Veterans							
1. Respondents	464	5.1 %	7.8 %	12.6 %	16.4 %	41.3 %	16.8 %
		(2.1)	(1.8)	(2.2)	(2.7)	(3.5)	(2.9)
2. Nonrespondents	118	5.9 %	9.7 %	9.7 %	21.0 %	52.2 %	1.5 %
		(2.7)	(3.5)	(3.7)	(5.6)	(7.1)	(1.2)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	24.72	5	.000
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	24.76	5	.000

Table A-46 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Size of Place of Residence

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	Very Large City (over 1,500,000)	Large City (250,000-1,499,999)	Suburb Near A Large City	Med-Sized City (50,000-249,999)	Small Town Or City Undr 50,000	Rural
A. Respond vs. Nonrespond-Male Vets		0.05	0.23	0.46	0.56	1.85	23.44
		(.827)	(.633)	(.498)	(.456)	(.174)	(.000)
B. Respond vs. Nonrespond-Female Vets			1.04	0.19	0.28	1.90	0.38
			(.308)	(.665)	(.594)	(.168)	(.535)
C. Respond vs. Nonrespond-All Vets		0.05	0.23	0.46	0.56	1.84	23.48
		(.828)	(.631)	(.498)	(.455)	(.175)	(.000)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-47 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Number of Children

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Number of Children					
		0	1	2	3	4	5 Or More
A. Male Veterans							
1. Respondents	375	11.2 %	18.0 %	34.4 %	25.3 %	7.9 %	3.3 %
		(2.2)	(2.8)	(3.5)	(3.3)	(1.8)	(0.9)
2. Nonrespondents	102	23.4 %	14.3 %	29.5 %	17.7 %	10.9 %	4.3 %
		(6.3)	(4.9)	(6.9)	(4.9)	(4.2)	(2.4)
B. Female Veterans							
1. Respondents	90	30.0 %	20.3 %	26.8 %	18.4 %	2.3 %	2.2 %
		(4.9)	(4.3)	(4.8)	(4.3)	(1.6)	(1.6)
2. Nonrespondents	17	24.1 %	28.7 %	32.6 %	8.0 %	0.0 %	6.7 %
		(10.1)	(11.4)	(12.2)	(7.7)	(0.0)	(6.5)
C. All Veterans							
1. Respondents	465	11.2 %	18.0 %	34.4 %	25.3 %	7.9 %	3.3 %
		(2.2)	(2.8)	(3.5)	(3.3)	(1.8)	(0.9)
2. Nonrespondents	119	23.4 %	14.3 %	29.5 %	17.7 %	10.9 %	4.3 %
		(6.3)	(4.9)	(6.9)	(4.9)	(4.2)	(2.4)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.86	1	.354
B. Respondents vs. Nonrespondents (Female Vets)	0.01	1	.931
C. Respondents vs. Nonrespondents (All Vets)	0.86	1	.354

Table A-48 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on How Entered Military

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	How Entered Military: Drafted	Enlisted to Avoid Draft	Enlisted Voluntarily	Other
A. Male Veterans					
1. Respondents	376	27.6 %	12.7 %	55.5 %	4.2 %
		(3.1)	(2.5)	(3.5)	(1.4)
2. Nonrespondents	101	31.8 %	9.6 %	58.4 %	0.2 %
		(6.7)	(4.3)	(7.1)	(0.2)
B. Female Veterans					
1. Respondents	90	0.0 %	0.0 %	51.8 %	48.2 %
		(0.0)	(0.0)	(5.4)	(5.4)
2. Nonrespondents	17	0.0 %	0.0 %	29.9 %	70.1 %
		(0.0)	(0.0)	(11.2)	(11.2)
C. All Veterans					
1. Respondents	466	27.6 %	12.7 %	55.5 %	4.3 %
		(3.1)	(2.5)	(3.5)	(1.4)
2. Nonrespondents	118	31.8 %	9.6 %	58.4 %	0.3 %
		(6.7)	(4.3)	(7.1)	(0.2)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	8.28	3	.041
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	8.25	3	.041

Table A-48 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on How Entered Military

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	Drafted	Enlisted to Enlisted Avoid Draft	Voluntarily	Other
A. Respond vs. Nonrespond-Male Vets		0.32	0.38	0.13	7.70
		(.570)	(.538)	(.719)	(.006)
B. Respond vs. Nonrespond-Female Vets				3.13	3.13
				(.077)	(.077)
C. Respond vs. Nonrespond-All Vets		0.33	0.38	0.13	7.67
		(.569)	(.539)	(.721)	(.006)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-49 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Highest Pay Grade

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Highest Pay Grade E1-E3	E4	E5	E6-E9	W1-W4,O1-O8
A. Male Veterans						
1. Respondents	374	11.2 %	34.7 %	28.8 %	17.2 %	8.0 %
		(2.4)	(3.3)	(3.2)	(2.7)	(1.8)
2. Nonrespondents	100	4.5 %	38.0 %	23.2 %	29.6 %	4.7 %
		(3.0)	(7.1)	(5.7)	(6.7)	(3.2)
B. Female Veterans						
1. Respondents	90	0.0 %	2.2 %	1.2 %	3.8 %	92.8 %
		(0.0)	(1.6)	(1.2)	(1.9)	(2.7)
2. Nonrespondents	17	0.0 %	0.0 %	3.4 %	0.0 %	96.6 %
		(0.0)	(0.0)	(3.4)	(0.0)	(3.4)
C. All Veterans						
1. Respondents	464	11.2 %	34.7 %	28.8 %	17.2 %	8.2 %
		(2.4)	(3.3)	(3.2)	(2.7)	(1.8)
2. Nonrespondents	117	4.5 %	37.9 %	23.2 %	29.5 %	4.8 %
		(3.0)	(7.1)	(5.7)	(6.7)	(3.2)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	6.39	4	.172
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	6.40	4	.171

Table A-49 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Highest Pay Grade

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	E1-E3	E4	E5	E6-E9	W1-W4,O1-O6
A. Respond vs. Nonrespond-Male Vets		3.13	0.17	0.72	2.77	0.76
		(.077)	(.683)	(.396)	(.096)	(.383)
B. Respond vs. Nonrespond-Female Vets				0.39		0.77
				(.535)		(.379)
C. Respond vs. Nonrespond-All Vets		3.12	0.17	0.72	2.77	0.78
		(.077)	(.682)	(.397)	(.096)	(.378)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-50 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Year Began 1st Vietnam-Related Tour

I. PERCENT DISTRIBUTION AND STANDARD ERRRORS	Sample Size	Year Began 1st Vietnam-Related Tour					
		1965 or Earlier	1966	1967	1968	1969	1970 or Later
A. Male Veterans							
1. Respondents	369	13.2 %	9.4 %	21.9 %	18.9 %	14.5 %	22.1 %
		(2.2)	(1.9)	(3.2)	(2.7)	(2.5)	(2.8)
2. Nonrespondents	98	3.8 %	22.8 %	11.4 %	26.8 %	22.4 %	12.8 %
		(1.4)	(6.2)	(4.2)	(6.9)	(6.2)	(5.3)
B. Female Veterans							
1. Respondents	90	5.0 %	6.7 %	14.3 %	20.4 %	14.5 %	39.1 %
		(2.2)	(2.5)	(3.7)	(4.4)	(3.8)	(5.3)
2. Nonrespondents	17	0.0 %	13.1 %	12.5 %	14.7 %	12.0 %	47.8 %
		(0.0)	(8.7)	(7.2)	(9.6)	(8.4)	(12.7)
C. All Veterans							
1. Respondents	459	13.2 %	9.4 %	21.9 %	18.9 %	14.5 %	22.1 %
		(2.2)	(1.9)	(3.2)	(2.7)	(2.5)	(2.8)
2. Nonrespondents	113	3.8 %	22.8 %	11.4 %	26.8 %	22.4 %	12.9 %
		(1.4)	(6.2)	(4.1)	(6.9)	(6.2)	(5.3)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	25.53	5	.000
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	25.54	5	.000

Table A-50 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Year Began 1st Vietnam-related Tour

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	1965 or Earlier	1966	1967	1968	1969	1970 or Later
A. Respond vs. Nonrespond-Male Vets		12.94	4.20	4.05	1.14	1.34	2.20
		(.000)	(.041)	(.044)	(.286)	(.247)	(.138)
B. Respond vs. Nonrespond-Female Vets			0.50	0.05	0.30	0.07	0.40
			(.481)	(.824)	(.584)	(.786)	(.528)
C. Respond vs. Nonrespond-All Vets		12.96	4.20	4.05	1.14	1.34	2.20
		(.000)	(.040)	(.044)	(.286)	(.247)	(.138)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-51 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Months Served in Vietnam

I. PERCENT DISTRIBUTION AND STANDARD ERROR	Sample Size	Months Served in Vietnam: 6 or Less Months	7-11 Months	12 Months	13-23 Months	24 or More Months
A. Male Veterans						
1. Respondents	357	11.5 %	16.2 %	38.2 %	25.0 %	9.0 %
		(2.6)	(2.6)	(3.6)	(3.4)	(1.9)
2. Nonrespondents	98	7.8 %	15.6 %	43.5 %	25.7 %	7.4 %
		(4.1)	(5.6)	(7.4)	(6.5)	(3.2)
B. Female Veterans						
1. Respondents	89	4.1 %	18.9 %	61.8 %	12.2 %	2.9 %
		(2.3)	(4.3)	(5.3)	(3.4)	(1.7)
2. Nonrespondents	17	0.0 %	24.0 %	70.1 %	5.9 %	0.0 %
		(0.0)	(10.9)	(11.8)	(5.8)	(0.0)
C. All Veterans						
1. Respondents	446	11.5 %	16.2 %	38.3 %	25.0 %	9.0 %
		(2.6)	(2.6)	(3.6)	(3.4)	(1.9)
2. Nonrespondents	115	7.8 %	15.6 %	43.5 %	25.7 %	7.4 %
		(4.1)	(5.6)	(7.4)	(6.5)	(3.2)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.07	1	.798
B. Respondents vs. Nonrespondents (Female Vets)	0.35	1	.555
C. Respondents vs. Nonrespondents (All Vets)	0.07	1	.798

Table A-52 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Wounded or Injured in or around Vietnam

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Wounded or Injured in or around Vietnam: No	Yes Non-Combat	Yes In Combat
A. Male Veterans				
1. Respondents	371	76.4 %	5.3 %	18.3 %
		(3.2)	(2.3)	(2.6)
2. Nonrespondents	99	81.3 %	0.4 %	18.3 %
		(5.5)	(0.3)	(5.5)
B. Female Veterans				
1. Respondents	90	97.6 %	2.4 %	0.0 %
		(1.7)	(1.7)	(0.0)
2. Nonrespondents	17	94.1 %	5.9 %	0.0 %
		(5.8)	(5.8)	(0.0)
C. All Veterans				
1. Respondents	461	76.4 %	5.3 %	18.3 %
		(3.2)	(2.3)	(2.6)
2. Nonrespondents	116	81.3 %	0.4 %	18.2 %
		(5.5)	(0.3)	(5.5)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	4.42	2	.109
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	4.42	2	.110

Table A-52 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Wounded or Injured in or around Vietnam

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	No	Yes Non-Combat	Yes In Combat
A. Respond vs. Nonrespond-Male Vets		0.61	4.40	0.00
		(.437)	(.036)	(.993)
B. Respond vs. Nonrespond-Female Vets		0.34	0.34	
		(.559)	(.559)	
C. Respond vs. Nonrespond-All Vets		0.60	4.40	0.00
		(.438)	(.036)	(.994)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-53 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Sample Selection Criteron

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Sample Selection Criteron: PTSD Pos	PTSD Neg High Cmbt	PTSD Neg Low Cmbt High Distrs	No PTSD Low Cmbt Low Distrs
A. Male Veterans					
1. Respondents	378	18.2 %	13.4 %	15.0 %	53.5 %
		(2.3)	(2.3)	(2.5)	(3.6)
2. Nonrespondents	102	17.0 %	20.2 %	13.0 %	49.8 %
		(4.1)	(6.0)	(4.8)	(7.2)
A. Female Veterans					
1. Respondents	90	2.9 %	0.6 %	25.9 %	70.6 %
		(1.3)	(0.6)	(4.8)	(4.9)
2. Nonrespondents	17	14.4 %	3.3 %	21.5 %	60.8 %
		(7.1)	(3.3)	(11.0)	(12.1)
A. All Veterans					
1. Respondents	468	18.1 %	13.4 %	15.0 %	53.5 %
		(2.3)	(2.3)	(2.5)	(3.6)
2. Nonrespondents	119	17.0 %	20.2 %	13.0 %	49.8 %
		(4.1)	(6.0)	(4.8)	(7.2)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	1.16	3	.763
B. Respondents vs. Nonrespondents (Female Vets)	3.22	3	.359
C. Respondents vs. Nonrespondents (All Vets)	1.16	3	.762

Table A-53 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Sample Selection Criterion

I. STATISTICAL CONTRASTS (BY LEVEL)	Sample Size	PTSD Pos	PTSD Neg High Cmbt	PTSD Neg Low Cmbt High Distrs	No PTSD Low Cmbt Low Distrs
A. Respond vs. Nonrespond-Male Vets		0.06	1.12	0.13	0.21
		(.810)	(.290)	(.717)	(.646)
B. Respond vs. Nonrespond-Female Vets		2.52	0.67	0.13	0.57
		(.112)	(.414)	(.714)	(.452)
C. Respond vs. Nonrespond-All Vets		0.06	1.12	0.13	0.21
		(.813)	(.289)	(.715)	(.644)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-54 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on War Zone Stressor Exposure

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	War Zone Stressor Exposure: Low/Mod War Zone Stressor	War Zone Stressor Exposure: High War Zone Stressor
A. Male Veterans			
1. Respondents	372	76.7 %	23.3 %
		(2.8)	(2.8)
2. Nonrespondents	99	66.0 %	34.0 %
		(7.0)	(7.0)
B. Female Veterans			
1. Respondents	90	71.5 %	28.5 %
		(4.9)	(4.9)
2. Nonrespondents	17	53.0 %	47.0 %
		(12.6)	(12.6)
C. All Veterans			
1. Respondents	462	76.7 %	23.3 %
		(2.8)	(2.8)
2. Nonrespondents	116	66.0 %	34.0 %
		(7.0)	(7.0)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	2.01	1	.156
B. Respondents vs. Nonrespondents (Female Vets)	1.88	1	.170
C. Respondents vs. Nonrespondents (All Vets)	2.02	1	.155

Table A-55 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on PERI Demoralization Score

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	PERI Demoralization Score: Low 0-.49	.50-.99	1.00-1.49	High 1.50 +
A. Male Veterans					
1. Respondents	376	35.0 %	32.9 %	17.6 %	14.5 %
		(3.6)	(3.4)	(2.7)	(2.3)
2. Nonrespondents	102	24.6 %	42.8 %	23.0 %	9.7 %
		(6.2)	(7.3)	(5.9)	(2.7)
B. Female Veterans					
1. Respondents	90	30.9 %	45.0 %	14.4 %	9.7 %
		(5.0)	(5.4)	(3.8)	(3.1)
2. Nonrespondents	17	13.8 %	50.3 %	21.5 %	14.4 %
		(9.1)	(12.7)	(11.0)	(7.1)
C. All Veterans					
1. Respondents	466	34.9 %	33.0 %	17.6 %	14.5 %
		(3.5)	(3.4)	(2.6)	(2.3)
2. Nonrespondents	119	24.6 %	42.8 %	23.0 %	9.7 %
		(6.2)	(7.3)	(5.9)	(2.7)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.56	1	.453
B. Respondents vs. Nonrespondents (Female Vets)	2.34	1	.126
C. Respondents vs. Nonrespondents (All Vets)	0.57	1	.451

Table A-56 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Classification by M-PTSD Scale

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Classification by M-PTSD Scale: Score of 35-88	Score of 89 or More
A. Male Veterans			
1. Respondents	374	81.6 %	18.4 %
		(2.3)	(2.3)
2. Nonrespondents	101	82.9 %	17.1 %
		(4.1)	(4.1)
B. Female Veterans			
1. Respondents	90	97.1 %	2.9 %
		(1.3)	(1.3)
2. Nonrespondents	17	85.6 %	14.4 %
		(7.1)	(7.1)
C. All Veterans			
1. Respondents	464	81.7 %	18.3 %
		(2.3)	(2.3)
2. Nonrespondents	118	82.9 %	17.1 %
		(4.1)	(4.1)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.07	1	.794
B. Respondents vs. Nonrespondents (Female Vets)	2.52	1	.112
C. Respondents vs. Nonrespondents (All Vets)	0.07	1	.797

Table A-57 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Evr Experiencd Any Disorder(Except PTSD)

I. PERCENT DISTRIBUTION AND STANDARD ERRRORS	Sample Size	Evr Experiencd Any Disorder(Except PTSD) No	Yes
A. Male Veterans			
1. Respondents	375	52.5 %	47.5 %
		(3.6)	(3.6)
2. Nonrespondents	101	66.8 %	33.2 %
		(6.5)	(6.5)
B. Female Veterans			
1. Respondents	88	76.2 %	23.8 %
		(4.6)	(4.6)
2. Nonrespondents	17	77.6 %	22.4 %
		(9.8)	(9.8)
C. All Veterans			
1. Respondents	463	52.5 %	47.5 %
		(3.6)	(3.6)
2. Nonrespondents	118	66.9 %	33.1 %
		(6.5)	(6.5)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	3.66	1	.056
B. Respondents vs. Nonrespondents (Female Vets)	0.02	1	.892
C. Respondents vs. Nonrespondents (All Vets)	3.66	1	.056

Table A-58 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Substance Abuse (Lifetime)

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Substance Abuse (Lifetime) Negative	Positive
A. Male Veterans			
1. Respondents	375	56.9 %	43.1 %
		(3.6)	(3.6)
2. Nonrespondents	101	72.0 %	28.0 %
		(6.3)	(6.3)
B. Female Veterans			
1. Respondents	88	96.6 %	3.4 %
		(1.8)	(1.8)
2. Nonrespondents	17	92.5 %	7.5 %
		(5.2)	(5.2)
C. All Veterans			
1. Respondents	463	57.0 %	43.0 %
		(3.6)	(3.6)
2. Nonrespondents	118	72.1 %	27.9 %
		(6.3)	(6.3)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	4.26	1	.039
B. Respondents vs. Nonrespondents (Female Vets)	0.53	1	.467
C. Respondents vs. Nonrespondents (All Vets)	4.25	1	.039

Table A-59 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Service Connected Physical Disability

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Service Connected Physical Disability		
		No SCPD	Low SPCD	High SCPD
A. Male Veterans				
1. Respondents	378	89.4 %	7.7 %	2.8 %
		(2.0)	(1.9)	(0.8)
2. Nonrespondents	102	91.0 %	4.9 %	4.1 %
		(3.5)	(2.6)	(2.5)
B. Female Veterans				
1. Respondents	90	91.0 %	3.3 %	5.7 %
		(2.9)	(1.9)	(2.3)
2. Nonrespondents	17	96.7 %	3.3 %	0.0 %
		(3.3)	(3.3)	(0.0)
C. All Veterans				
1. Respondents	466	89.4 %	7.7 %	2.9 %
		(2.0)	(1.8)	(0.8)
2. Nonrespondents	119	91.0 %	4.9 %	4.1 %
		(3.5)	(2.6)	(2.4)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.99	2	.609
B. Respondents vs. Nonrespondents (Female Vets)	.	.	.
C. Respondents vs. Nonrespondents (All Vets)	0.99	2	.610

Table A-59 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Service Connected Physical Disability

I. STATISTICAL CONTRASTS (BY LEVEL)

	Sample Size	No SCPD	Low SPCD	High SCPD
A. Respond vs. Nonrespond-Male Vets		0.14	0.77	0.25
		(.706)	(.381)	(.620)
B. Respond vs. Nonrespond-Female Vets		1.61	0.00	
		(.204)	(.992)	
C. Respond vs. Nonrespond-All Vets		0.14	0.77	0.24
		(.705)	(.381)	(.622)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-60 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on No. of Current Serious Readj Problems

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	No. of Current Serious Readj Problems: None	1	2-3	4 or More
A. Male Veterans					
1. Respondents	376	77.4 %	12.0 %	7.0 %	3.6 %
		(2.7)	(2.2)	(1.4)	(0.9)
2. Nonrespondents	102	81.3 %	9.8 %	3.3 %	5.6 %
		(4.4)	(3.4)	(1.5)	(2.2)
B. Female Veterans					
1. Respondents	90	85.7 %	11.0 %	2.6 %	0.7 %
		(3.7)	(3.4)	(1.6)	(0.7)
2. Nonrespondents	17	67.2 %	22.0 %	6.9 %	3.9 %
		(11.8)	(11.1)	(4.9)	(3.9)
C. All Veterans					
1. Respondents	466	77.4 %	12.0 %	7.0 %	3.6 %
		(2.7)	(2.2)	(1.4)	(0.9)
2. Nonrespondents	119	81.3 %	9.8 %	3.3 %	5.6 %
		(4.4)	(3.4)	(1.5)	(2.2)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.49	1	.482
B. Respondents vs. Nonrespondents (Female Vets)	2.27	1	.132
C. Respondents vs. Nonrespondents (All Vets)	0.49	1	.486

Table A-61 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Family Adjustment Index (All Couples)

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Family Adjustment Index (All Couples) Balanced Cohesion-Adaptablity	Mid-Range Cohesion-Adaptablity	Extreme on Cohesion or Adptblity
A. Male Veterans				
1. Respondents	375	39.1 %	35.3 %	25.5 %
		(3.5)	(3.4)	(3.4)
2. Nonrespondents	98	43.2 %	27.8 %	29.0 %
		(7.3)	(6.5)	(6.5)
B. Female Veterans				
1. Respondents	89	35.7 %	41.0 %	23.3 %
		(5.2)	(5.4)	(4.5)
2. Nonrespondents	17	55.1 %	18.1 %	26.9 %
		(12.7)	(9.9)	(11.5)
C. All Veterans				
1. Respondents	464	39.1 %	35.4 %	25.5 %
		(3.4)	(3.4)	(3.4)
2. Nonrespondents	115	43.2 %	27.8 %	29.0 %
		(7.3)	(6.5)	(6.5)

II. STATISTICAL CONTRASTS (NOMINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	1.05	2	.591
B. Respondents vs. Nonrespondents (Female Vets)	4.31	2	.116
C. Respondents vs. Nonrespondents (All Vets)	1.06	2	.588

Table A-61 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Family Adjustment Index (All Couples)

I. STATISTICAL CONTRASTS (BY LEVEL)	Sample Size	Balanced Cohesion-Adaptablty	Mid-Range Cohesion-Adaptabltyor	Extreme on Cohesion Adptblty
A. Respond vs. Nonrespond-Male Vets		0.25	1.05	0.22
		(.616)	(.306)	(.635)
B. Respond vs. Nonrespond-Female Vets		2.00	4.15	0.08
		(.157)	(.042)	(.772)
C. Respond vs. Nonrespond-All Vets		0.25	1.06	0.23
		(.614)	(.304)	(.635)

Note: 1) The values presented in the first row for each contrast are Chi-Square statistics (with 1 degree of freedom) for a test of the category represented in that column versus all others.

2) P-values appear in parentheses below each Chi-Square.

Table A-62 Comparisons of Veterans' Interview Data for Respondents and Nonrespondents to the Family Interview on Marital Problems Index

I. PERCENT DISTRIBUTION AND STANDARD ERRORS	Sample Size	Marital Problems Index: Low 0.00-1.50	1.51-2.00	2.01-2.50	High 2.51-4.00
A. Male Veterans					
1. Respondents	376	38.8 %	34.6 %	15.7 %	12.9 %
		(3.5)	(3.6)	(2.5)	(2.2)
2. Nonrespondents	100	37.8 %	29.2 %	19.8 %	13.1 %
		(7.0)	(6.8)	(5.9)	(4.4)
B. Female Veterans					
1. Respondents	90	41.8 %	21.4 %	21.4 %	15.4 %
		(5.3)	(4.4)	(4.5)	(3.8)
2. Nonrespondents	17	19.7 %	41.1 %	22.1 %	17.0 %
		(10.3)	(12.5)	(10.4)	(9.5)
C. All Veterans					
1. Respondents	466	36.8 %	34.6 %	15.7 %	12.9 %
		(3.5)	(3.6)	(2.4)	(2.2)
2. Nonrespondents	117	37.8 %	29.2 %	19.8 %	13.2 %
		(6.9)	(6.8)	(5.9)	(4.4)

II. STATISTICAL CONTRASTS (ORDINAL)	Chi-Square	df	Probability
A. Respondents vs. Nonrespondents (Male Vets)	0.03	1	.863
B. Respondents vs. Nonrespondents (Female Vets)	1.24	1	.265
C. Respondents vs. Nonrespondents (All Vets)	0.03	1	.861

APPENDIX B

NSVG Sample Design

APPENDIX B

NSVG Sample Design and Analysis Strategy

The study sample for the NSVG consisted of 2,330 Vietnam veteran respondents and 650 civilian counterpart respondents. For this survey, we defined eligible veterans as all persons who served in the military during the Vietnam era (August 5, 1964, to May 7, 1975) and who either have separated from the military or are currently serving in the Reserves or the National Guard. Personnel currently on active duty are excluded from the study's inferential population for logistical and analytical reasons. Civilian counterparts are persons who in principle could have served in the military during the Vietnam era but who did not.

The NSVG sample design was driven by the desire to conduct analytical comparisons between high-combat and low war-zone stress-exposure Vietnam theater veterans, between theater and era veterans, and between theater veterans and civilian counterparts. The era veteran and civilian counterpart samples were intended to serve as comparison groups, and were matched to the theater veterans on ethnicity and sex. The targeted respondent sample sizes were derived within ethnicity/sex strata based on power analysis to detect twofold differences in PTSD prevalence rates with alpha at 0.05 and with 0.80 power (Folsom, 1984). Exhibit B-1 gives the respondent sample sizes required to meet these specifications.

We employed separate sampling strategies for the veteran and civilian counterpart samples. We used an area probability sample design directed toward oversampling the Hispanic and non-Hispanic population to select most of the civilian counterpart sample (female civilian nurses were selected using a list frame). However, because area probability methods involving screening for veteran status have been shown to undercount veterans, a list sampling approach to the veteran samples was necessary. Because no comprehensive list of veterans of the Vietnam era existed, a combination of a two-phase sampling scheme to identify most of the veteran samples and Department of Defense list frames for certain veteran groups (including female theater veterans and veterans currently in the Reserves or the National Guards) was implemented. The following sections describe these sample designs.

Exhibit B-1. Target Respondent Sample Sizes in Study Domains

Sex/ethnicity	Sample sizes: Theater veterans	Era veterans	Civilian counterparts	Total
Hispanic males	300	125	125	550
Black males	300	125	125	550
Other males	600*	200	200	1,000
Females	400	280	200	880
Total	1,600	730	650	2,980

*Includes the supplemental sample of 100 Vietnam Theater veterans disabled as the result of wounds received in combat.

I. VETERAN SAMPLES

For the two-phase sampling design, we chose a screening sample of military personnel records from the National Personnel Records Center (NPRC); based on data abstracted from these records, ethnicity and sex-specific sampling frames were constructed. Personnel records were selected from NPRC using a sampling frame based on NPRC's Chronological Model, which maps the Center's personnel record numbering system to the veteran's approximate month of discharge from the military and provides coverage on personnel who completed military service between January 1966 and approximately June 1977.

Although the Chronological Model provides coverage for most veterans of the Vietnam era, it does not include veterans who currently are in the Reserves or the National Guard or who were discharged after June 1977. We covered these populations by constructing list frames from military databases maintained by the Defense Manpower Data Center (DMDC) in Monterey, California.

We constructed the sample of female theater veterans separately. Because the female theater veteran population is relatively small compared

to the male theater veteran population, we selected the sample of female theater veterans from a list compiled by the Environmental Support Group of the DoD.

Estimates indicate that the U.S. has a total of approximately 8.9 million veterans of the Vietnam era. This number is based on an estimate of 8,263,000 living Vietnam era veterans in the civilian population of the United States and Puerto Rico as of September 30, 1984 (Veterans Administration, 1984) and an estimate of 530,000 to 640,000 veterans of the Vietnam era currently on active duty in the military (Army, Air Force, Navy, Marine Corps, and Coast Guard). The former estimate is based on the 1980 Census of Population count of all veterans of the Vietnam era, with adjustment for subsequent deaths and military separations. This count includes military reservists and National Guard personnel. The active duty estimate is based on a military strength of 2.16 million persons, of whom an estimated 25 to 30 percent are veterans of the Vietnam era. An approximate distribution of the current military status of those who served in the military during the Vietnam era, based on written and oral communication with the individual military services, the DoD, and other sources, is given in Exhibit B-2. Approximately 90 percent of those who served during the Vietnam era have been separated from the military, either as retired career personnel or as enlistment terminations.

For purposes of the NVVRS, the veteran populations were defined as all Vietnam era veterans who are not currently on active duty. Therefore, the definition includes:

- reservists
- National Guards personnel
- career retirees
- enlistment terminations

An estimated 93 to 94 percent of the total Vietnam era veteran population is included in the study under this definition.

The recommendation to exclude those still serving on active duty in the military stems from these considerations:

(1) The pragmatic rationale is that persons serving on active duty are technically not veterans

(2) The cost of including active duty personnel would be relatively high, because an estimated one-third of a proportionally allocated active duty sample would be living outside of the United States

Exhibit B-2. Estimated Distribution of The Current Military Status of Veterans of the Vietnam Era

Military Current Status	Estimated population size (millions)	Estimated number of era veterans (millions)	Percentage of all veterans of the Vietnam era	Percentage of those veterans of the Vietnam era no longer on active duty
Active duty	2.2	0.6	6.6	-
Reserves	1.0	0.4	4.5	4.8
National Guards	0.6	0.1	1.1	1.1
Career retirees	1.5	1.1	12.5	13.2
Enlistment terminations	-	6.7	75.3	79.9
Total	-	8.9	100.0	100.0

Source: Counts and estimated percentages of veterans of the Vietnam era on active duty, or in the Reserves or the National Guards, were obtained from military branches and the Department of Defense. Estimated count of civilian (including Reserves and National Guards) Vietnam Era veterans were obtained from the Veterans Administration (Veteran Administration 1984).

(3) Including active duty personnel in the target population would provide minimal benefit to the study

Although complete coverage of the more broadly defined study universe (that is, everyone who served in the military during the war era) has theoretical appeal, a strong case can be made that token representation of the active duty subpopulation as provided by a proportional sample allocation would not enhance the survey's analytical potential.

A. Veteran Sampling Frame Construction

Because no single data base of veterans of the Vietnam era exists, sampling frame construction involved identifying primary and supplemental sources for frame construction. The NPRC is the primary final depository of military personnel records. NPRC houses more than 44 million military personnel records. Since 1964, NPRC has maintained a computerized database known as the Registry System to control these personnel records. Each personnel record, and in some cases medical record, sent to NPRC receives a unique, sequentially assigned registry number that identifies the physical file location reserved for the personnel record (Rademacher, undated). When sampling frame construction began in January of 1985, the Registry for the Army, Air Force, Navy, Marine Corps, and Coast Guard files contained 21,971,279 computer records. These records contain data on each person's name, social security number or service number, and branch of service.

Although this data base does not specifically indicate Vietnam era veteran status, the sequential assignment of registry numbers to personnel records permitted us to identify sets of registry numbers that were assigned to personnel records received during and shortly after the Vietnam era. The set of registry numbers called the NPRC Chronological Model identifies 13,346,165 registry numbers for personnel records that were received between January 1966 and June 1977. The Chronological Model count of registry numbers exceeds the established number of veterans of the Vietnam era because:

(a) personnel and medical records for Navy and Marine Corps personnel are generally filed under two separate registry numbers and

(b) not all registry numbers are associated with a personnel record (see Exhibit B-3 for a distribution of registry numbers by service)

Exhibit B-3. Distribution of Registry Numbers in NPRC's Chronological Model

Service	Registry numbers assigned	Percent
Army	4,945,573	37.1
Air Force	2,261,087	16.9
Navy and Marine Corps	6,149,505	46.0
Total	13,347,165	100.0

Source: National Personnel Records Center.

The Chronological Model of registry numbers does not purport to contain all veterans of the Vietnam era; rather, it leads one to expect a higher Vietnam veteran hit rate for registry numbers within the Chronological Model than for registry numbers outside of the model.

The specific dates that determine the Chronological Model were established by NPRC. The basis for these dates is that most personnel separated from active duty have a two-year Reserve or National Guard commitment. Therefore, personnel separating from active duty after August 1964 generally would not be discharged from the military until after January 1966. Similarly, personnel who separated from active duty on or before May 1975 would be discharged from the military before June 1977. Because the major buildup of the military occurred between 1966 and 1970, we expected that using NPRC's Chronological Model would provide coverage for most veterans of the Vietnam era.

However, using the Chronological Model solely would have resulted in excluding veterans of the Vietnam era who were discharged after June 1977 and those currently in the Reserves or National Guards. To provide coverage for these populations, we constructed supplemental frames with the assistance of DMDC, the primary computer facility for military personnel strength data for the DoD.

The DMDC maintains three computerized data bases of particular relevance to this study:

(1) The active duty master file, which contains selected data on all personnel currently on active duty

(2) The active duty loss file, which, starting in July 1970, contains data on all personnel who have left active duty (some of these personnel may still be in the Reserves or the National Guards)

(3) The Reserves and National Guards master file, which contains data on all personnel classified by the DoD as in the Reserves or the National Guard

The Reserves and National Guard master file contains data on personnel who are currently serving in Reserve or National Guard units, personnel who are not assigned to units but have a Reserve commitment, and personnel who have retired after 20 years. These retired personnel are classified as "mobilization assets" by the DoD and are considered among the available Reserves. For the most part, data on this master file are complete for key items such as sex and race. Data are also available on whether an individual served in the Vietnam theater; however, the data vary in accuracy by branch of service and by date of data entry into the computer file. In addition, the definition of the Vietnam theater varies by service.

To provide the coverage of the population whose personnel records were received at NPRC after June 1977, DMDC constructed a supplemental frame for personnel who were separated after June 1977 and who were on active duty prior to May 8, 1975. Exhibit B-4 summarizes the population counts by sex, theater status, and ethnicity/race.

To provide coverage on veterans of the Vietnam era who are currently in the Reserves or the National Guard, we used the DMDC Reserves file and the active duty separations file to construct two Reserve and National Guard sampling frames. Because the DMDC Reserves file contains information on almost 2 million persons, we constructed two sampling frames to reflect the availability of data from the active duty separation file. The first frames consist of all reservists and National Guard personnel who were either separated from active duty between July 1970 and June 30, 1975, or who were on active duty on June 30, 1975. This portion of the Reserves

Exhibit B-4. Population Counts for Personnel with Active Military Service Prior to May 8, 1975, Who Were Separated After June 1977

Stratum	Army	Navy	Marine Corps	Air Force	Air Force Reserves	Stratum total
Males						
Vietnam Theater veterans						
Hispanic	2,327	93	334	1,842	32	4,628
Black	16,342	283	1,074	8,472	96	26,867
All other males	82,029	5,110	14,750	64,760	2,492	169,141
All other veterans						
Hispanic	5,584	6,884	2,483	4,999	178	20,128
Black	35,475	14,668	9,431	17,284	393	77,251
All other males	138,953	196,164	46,556	126,874	10,061	518,608
Females	17,579	9,770	1,050	11,630	1,184	41,213
Total	298,289	232,972	75,678	235,861	14,436	857,236

Source: Defense Manpower Data Center.

sampling frame contains 531,268 reservists and provides coverage of veterans who were on active duty between July 1970 and June 30, 1975 (Exhibit B-5).

The second supplemental DMDC fame consisted of all reservists who were born before July 1951 (that is, those who were at least 19 years old in 1970), who were not separated from active duty at any time from 1971 through December 1984, and who did not retire from the military before August 1964. This sampling frame contained over 762,891 personnel and is summarized in Exhibit B-6. The two Reserves and National Guard sampling frames contained a total of 1,294,159 personnel.

In total, these three sampling frames comprised more than 15 million units, including:

- 13,347,165 Registry numbers from the NPRC Chronological Model
- 857,836 personnel in the post-NPRC Chronological Model
- 1,294,159 personnel in the combined reserves and National Guards sampling frames

In addition to these sampling frames, a special frame was used for sampling female Vietnam theater veterans. This frame was necessary because fewer than 10,000 Vietnam theater veterans were female. The Environmental Support Group of the DoD compiled a listing of women who served in the Vietnam theater by reviewing records of over 90 Army units stationed in South Vietnam that were likely to have female personnel assigned (such as hospitals and administrative support units). In addition, the Environmental Support Group used a computerized listing of female Air Force personnel on active duty in Vietnam and listings provided by the Navy and Marine Corps. The combined listing they created was used as the sampling frame for female theater veterans.

B. Sample Size and Selection

To select the target respondent samples given in Exhibit B-1, sex-and ethnicity-specific sampling frames were needed. For the populations covered by the supplemental frames, data were available to allow theater, sex, and ethnic stratification of these populations. For the population covered by the NPRC Chronological Model, stratification was based on data

Exhibit B-5. Population Counts for Reserves and National Guard Personnel On Active Duty from July 1970 to May 7, 1975

Stratum	Branch and component							
	Army Reserves	Army National Guard	Navy Reserves	Marine Corps Reserves	Air Force Reserves	Air National Guard	Coast Guard Reserves	Stratum total
Males								
Vietnam Theater veterans								
Hispanic	469	1,007	15	51	194	153	6	1,895
Black	25,523	2,277	68	153	7,771	382	8	36,182
All other males	122,483	14,386	1,728	10,934	59,172	4,053	149	212,905
All other veterans								
Hispanic	1,765	3,127	536	186	909	626	42	7,191
Black	14,256	7,291	3,195	755	6,118	1,354	26	32,993
All other males	61,716	33,095	46,620	5,786	58,340	14,178	825	220,560
Females	7,334	1,452	3,615	420	5,449	1,240	32	19,542
Total	233,546	62,635	55,777	18,285	137,951	21,986	1,088	531,268

Source: Defense Manpower Data Center.

Exhibit B-6. Population Counts for Reserves and National Guard Personnel Who Were Born Before July 1951, Are Not in the Loss Files (1971-1984), and Did Not Retire Before August 1984

Stratum	Branch component							
	Army Reserves	Army National Guard	Navy Reserves	Marine Corps Reserves	Air Force Reserves	Air National Guard	Coast Guard Reserves	Stratum total
Males								
Vietnam Theater veterans								
Hispanic	21	30	1	4	4	4	0	64
Black	1,454	88	2	5	526	8	0	2,083
All other males	5,729	405	130	518	3,203	98	5	10,086
All other veterans								
Hispanic	2,628	7,926	227	135	1,274	1,724	151	14,065
Black	22,207	11,040	1,989	425	3,413	1,786	200	41,060
All other males	275,793	98,300	103,329	10,456	134,601	37,077	7,932	665,488
Females	14,505	3,193	5,053	98	4,703	1,941	554	30,045
Total	322,337	118,982	110,731	11,639	147,724	42,638	8,842	762,891

Source: Defense Manpower Data Center.

abstracted from the personnel records associated with the sampled registry numbers. To project the number of registry numbers required, the 1980 Census of Population's one-percent sample of veterans of the Vietnam era was used to estimate the race/ethnicity distribution of veterans; the estimated distribution is 4.297 percent Hispanic, 9.064 percent black, and 86.639 percent white and other. Based on VA data and on two recent studies of Vietnam Era veterans (Fischer, Boyle, Bucuvales, & Schulman, 1980; Hammond, 1980), the distribution of veterans of the Vietnam era by sex, ethnicity, and theater status was estimated (Exhibit B-7). Based on these estimates, Hispanic male theater veterans were identified as the smallest subgroup, representing approximately 1.852 percent of the population of Vietnam era veterans. Allowing for a projected screening rate of 56.36 eligible era veterans per 100 Registry numbers, a one-percent missing personnel record rate, and a 78-percent combined location and participation rate, a sample of 34,000 registry numbers was selected to yield the required 300 Hispanic male theater veterans. The size of the registry number sample was driven by the requirement that the study sample include an oversample of Hispanic males (to support subgroup analyses). As a result, the registry number sample would yield many more veterans in the larger demographic subgroups (for example, white/other) than were required.

The sample of registry numbers was chosen so that each service branch received its proportional allocation of the sample. The frame of registry numbers was sorted to permit proportional allocation of the within-service sample across the years of the Vietnam era. Chromy's (1979) sequential selection procedure was used to select the sample. Additionally, the 34,000 registry number sample was divided into 10 random subsamples, or replicators. Abstraction data were processed by replicate, permitting in-process projection of certain key sample characteristics.

For the supplemental frames, sampling fractions were projected for each stratum based on the desired respondent sample sizes and the estimated count of veterans in each stratum. A total sample of 966 personnel were selected from these supplemental frame samples. This total included 432 personnel from among the 857,836 individuals classified as post-chronological model veterans, and 534 personnel from among the 1,294,159 Reserve and National Guard personnel.

Exhibit B-7. Estimated Veteran Population Sizes for National Vietnam Veteran Readjustment Study

Sex	Ethnicity	Veterans of the Vietnam Era		
		Theater	Era	Total
Male	Hispanic	153,024	190,849	343,873
Male	Black	344,546	380,813	725,359
Male	White/Other	2,842,693	4,090,704	6,933,397
Female	Total	10,000	250,371	260,371
	Total	3,350,263	4,912,737	8,263,000

Source: Estimates are based on VA estimates of numbers of male and female veterans of the Vietnam era, 1980 Census data on ethnicity of veterans of the Vietnam era, and estimated distribution of theater veterans by sex and ethnicity.

C. Multiplicity

In these sampling activities, at least two types of multiplicity were possible: (1) some Navy and Marine Corps veterans had multiple records (a personnel record and a medical record) stored at NPRC under different registry numbers, and (2) records for some veterans may have been included in the NPRC Chronological Model and in the supplemental frames.

The multiplicity within the NPRC Chronological Model was reduced by establishing the rule that a Navy or Marine Corps veteran was included in the sample only if the selected Registry number was associated with a personnel record. A total of 7,649 Navy or Marine Corps medical records were associated with sampled registry numbers, representing 22.5 percent of the 34,000 sampled registry numbers.

Because we used multiple sources to construct the sampling frame, some veterans have been included more than once. We could have used one of two methods to account for this multiplicity:

(1) incorporating the multiple ways a veteran may be included in the sample into the selection probabilities or

(2) establishing a hierarchy among the sampling frames and eliminating frame overlap by declaring sample cases ineligible that were on a higher ranking frame.

For NVVRS, we chose the latter approach and established the following hierarchy among the sampling frames:

(1) The NPRC Registry System Chronological Model
(2) The frames of Reserve and National Guard personnel
(3) A frame of personnel discharged from active duty after the NPRC Chronological Model

The hierarchy defines the NPRC Chronological Model as the primary frame, the two sampling frames providing coverage on Reserve/National Guard personnel as the secondary frame, and the sampling frame of post-chronological model personnel as the tertiary frame.

Using this hierarchical system, all eligible persons who were identified through the NPRC Chronological Model. All persons selected from the Reserves and National Guard file who were not in the NPRC Chronological Model were kept, but those who were found to be in the NPRC Chronological Model sampling frame were declared ineligible. Similarly, all persons selected from the post-Chronological Model separation frame who were not in the Chronological Model frame or the Reserve/National Guard listing were kept, and all selected persons that were in the Chronological Model or the Reserve/National Guard frame were judged out-of-scope. Based on these multiplicity rules, 81 (15.2 percent) veterans selected from the Reserves/National Guard personnel frame were declared ineligible, and 126 (29.2 percent) from the post-Chronological Model frame were declared ineligible. In total, 207 (21.4 percent) of the 966 personnel selected from the supplemental frames were declared ineligible.

Because we used the proposed frame hierarchy and associated eligibility rules, the three samples should in principle have represented selections from mutually exclusive strata, allowing the sampling weights to be computed directly as the inverse of the selection probability within each frame. To examine this assumption, we took the following steps:

1. the NPRC registry numbers for the veteran sample were matched to the 21 million record master registry file to identify the service numbers or the Social Security number of each sampled veteran

2. the identified service numbers and Social Security numbers were matched to registry numbers associated to each sampled veteran
3. the registry number(s) identified in step 2 were compared to the sampled registry numbers used in step 1

The comparison identified 27 sampled veterans with two registry numbers in the chronological model (that is, two ways of being selected into the veteran sample). For female era nurses identified through the 205,000 registry number supplemental sample, RTI identified six veterans with two registry numbers in the NPRC Chronological model. For these veterans, the sampling weight was divided by the number of ways the sample member could enter the sample.

D. Results

More than 96 percent of the 34,966 records selected were found or otherwise accounted for. These include 32,895 (96.8 percent) of the 34,000 registry numbers selected from the NPRC Chronological Model, and 868 (89.8 percent) of the 966 personnel chosen from the supplemental frames (Exhibit B-8). However, we did expect a higher success rate with NPRC because this facility is the final depository of military records. Of the records not accounted for at NPRC, approximately 630 had been signed out to an individual or a government agency.

Personnel records for post-Chronological Model separations and for Reserve/National Guard personnel are more likely to be in transit between facilities than are records accessed through the NPRC Chronological Model. To obtain personnel records for Reserve/National Guard personnel, we contacted eight agencies and record storage facilities. These agencies included the Army, Navy, Marine Corps, Air Force, Coast Guard Reserves, the Army National Guards, and the Air National Guard.

From the personnel records identified through the NPRC Chronological Model, 17,680 veterans of the Vietnam era were identified. These included 468 veterans that the personnel records indicated were deceased. Among the remaining 17,212 veterans of the Vietnam era, 692 (4.0 percent) were Hispanic males; 1,660 (9.6 percent) were black males; 14,552 (84.5 percent) were white/other males; and 308 (1.8 percent) were females. Because the

Exhibit B-8. Results of Military Records and Personnel Sampling and Search Efforts

	Total		NPRC Chronological Model		Supplemental frame samples	
	Count	Percent	Count	Percent	Count	Percent
Registry numbers or personnel selected	34,966	100.0	34,000	100.0	966	100.0
Registry numbers or personnel accounted for	33,763	96.6	32,895	96.8	868	89.8
Personnel records abstracted	25,907	74.1	25,246	74.3	661	68.4
Multiplicity cases[a]	7,856	22.5	7,649	22.5	207	21.4

[a]Multiplicity cases included Navy and Marine Corps personnel whose medical records were selected at NPRC and, for the supplemental frame samples, personnel that were also in another frame higher in the hierarchy.

Registry numbers were selected at a rate of 2.547 per thousand, (34,000/13,347,105), an initial sampling weight of 392.56 was assigned to Hispanic males, black males, and females. For white/other males, a 20 percent subsampling rate was imposed (since the registry number sample included many more than were required), and only those identified in the first six of the ten NPRC replicates were included. Therefore, white/other males were effectively subsampled at 0.12 rate ((1/5) • (6/10)). Thus, white/other males were assigned an initial sampling weight of 3,721.36 (1/(34,000/13,347,165) • (.12)).

After further subsampling in age categories for selected race/ethnicity, preliminary estimates of coverage afforded by the NPRC Chronological Model were computed (Exhibit B-9). The NPRC Chronological Model was found to cover approximately 6.485 million (78.5 percent) of the VA-estimated 8.263 million veterans of the Vietnam era living in the United States or Puerto Rico as of September 30, 1984.

From the supplemental frames samples, 503 veterans of the Vietnam era were identified. The estimated population counts from these frame are also given in Exhibit B-9. The supplemental frames samples provide coverage of an estimated 1.271 million (15.4 percent) of the estimated 8263 million veterans of the Vietnam era.

In combination, the samples from the NPRC Chronological Model and the supplemental frames estimated a population of 7,756,000 veterans, or approximately 93.9 percent of the population of veterans of the Vietnam era.

To evaluate the utility of the supplemental frames, the relative contribution of each frame to the total estimated population of 7,756,000 veterans was investigated. The estimated population coverage afforded by the NPRC Chronological Model sample was 83.6 percent and by the supplemental frames samples 16.4 percent (see Exhibit B-10). The NPRC Chronological Model sample represented essentially the same percentage of theater and era veterans (83.8 percent and 83.5 percent, respectively) of theater and era veteran populations. Similarly for the male race/ethnic study populations, the chronological model sample provided coverage for 82.4, 81.0, and 84.4 percent of the estimated Hispanic, non-Hispanic black, and white/other male populations, respectively. For women veterans, only

Exhibit B-9. Preliminary Estimates of Study Population Sizes Based on Personnel Record Data Abstractions

Frame Population	Veteran status: Theater Sample	Theater Estimated veterans	Era Sample	Era Estimated veterans	Total Sample	Total Estimated veterans
NPRC Chronological Model						
Male						
Hispanic	286	112,000	242	155,000	528	267,000
Black	500	265,000	246	378,000	746	643,000
Other	654	2,139,000	327	3,315,000	981	5,455,000
Total male	1,440	2,517,000	815	3,848,000	2,255	6,365,000
Female	10	4,000	296	116,000	306	120,000
Total	1,450	2,521,000	1,111	3,964,000	2,561	6,485,000
Supplemental frames samples						
Male						
Hispanic	28	21,000	90	37,000	118	57,000
Black	57	60,000	87	91,000	144	151,000
Other	80	406,000	114	606,000	194	1,011,000
Total male	165	487,000	291	734,000	456	1,219,000
Female	2	2,000	45	50,000	47	52,000
Total	167	489,000	336	782,000	503	1,271,000
All samples						
Male						
Hispanic	314	133,000	332	191,000	646	324,000
Black	557	325,000	333	469,000	890	794,000
Other	734	2,545,000	441	3,921,000	1,175	6,466,000
Total male	1,605	3,003,000	1,106	4,580,000	2,711	7,584,000
Female	12	6,000	341	166,000	353	172,000
Total	1,617	3,009,000	1,447	4,746,000	3,064	7,756,000

69.8 percent of the estimated population was covered by the chronological model.

For veterans classified from personnel records as enlisted personnel, the Chronological Model sample provided coverage on 85.1 percent of the estimated enlisted population but on only 63.9 percent of the officer population (Exhibit B-10). [It is possible that more officers stay in the Reserves on National Guards, or stay in the military until retirement, than enlisted personnel.] For veterans who served in the Navy, Army, or Marine Corps, 84.0 to 86.4 percent of the estimated populations were represented by the Chronological Model, whereas 77.7 percent of those who served in the Air Force were covered. Both the estimated theater and era veteran subgroups were covered by the Chronological Model in approximately the same relative magnitude except for the Marine Corps personnel. The Chronological Model covered 94.4 percent of the estimated Marine Corps theater veteran population and 77.6 percent of the estimated Marine Corps era veteran population.

The Chronological Model covered 71.5 percent of veterans born before 1935, 70.2 percent of veterans born 1936-40, 89.8 percent of those born 1941-45, 92.6 percent of those born 1946-50, and for 59.5 percent of those born after 1950. These percentages were not maintained across theater and era subgroups. Noteworthy examples were veterans born before 1935, the chronological model covered only 57.9 percent of the estimated theater veterans and on 81.1 percent of the era veterans. Similarly for veterans born between 1936 and 1940, 38.7 percent and 91.5 percent of the estimated era and theater veteran populations were covered.

It might be hypothesized that these interactive effects resulted from theater veterans being more likely to be career military, and therefore not included in the Chronological model. On the other hand, for veterans born after 1950, 89.9 percent of the estimated theater veterans and only 55.1 percent of the era veterans were covered by the Chronological Model. Review of the time period covered by the Chronological Model indicated that coverage by the model for personnel discharged from the military after June 1977 was inadequate. Therefore, using data files maintained by DMDC, we constructed a specific supplemental frame to provide coverage for this subgroup.

Exhibit B-10. Estimated Percentage of Study Population Covered by NPRC Chronological Model and DMDC Supplemental Frames

	Veterans of the Vietnam Era		Theater Veterans		Era Veterans	
	Chronological Model	Supplemental Frames	Chronological Model	Supplemental Frames	Chronological Model	Supplemental Frames
Total	83.6	16.4	83.8	16.2	83.5	16.5
Study Population						
Males	83.9	16.1	83.8	16.2	84.0	16.0
Hispanic	82.4	17.6	84.5	15.5	80.9	19.1
Black	81.0	19.0	81.6	18.4	80.7	19.3
Other	84.4	15.6	84.1	15.9	84.6	15.4
Females	69.8	30.2	1/	1/	70.0	30.0
Enlistment Status						
Enlisted	85.1	14.9	86.0	14.0	84.5	15.5
Officer	63.9	36.1	59.8	40.2	67.6	32.4
Branch of Service						
Air Force	77.7	22.3	73.4	26.6	79.4	20.6
Army	85.7	14.3	83.6	16.4	87.2	12.8
Marine Corps	86.4	13.6	94.4	5.6	77.6	22.4
Navy (including Coast Guard)	84.0	16.0	86.9	13.1	82.3	17.7
Date of Birth						
Before 1936	71.5	28.5	57.9	42.1	81.1	18.9
1936-1940	70.2	29.8	38.7	61.3	91.5	8.5
1941-1945	89.8	10.2	84.0	16.0	93.1	6.9
1946-1950	92.6	7.4	93.7	6.3	91.5	8.5
1951 or later	59.5	40.5	89.9	10.1	55.1	44.9

1/ Number of sampled veterans in cell is too small for reliable estimate of coverage percentage.

II. CIVILIAN COUNTERPART SAMPLES

The sample design for the civilian counterpart sample comprised two components to enhance the similarity of the civilian and veteran samples. The first component was an area probability sample of households to be screened for Hispanic, black, and other males and for females who were not nurses, and the second was a list sample from a national list of registered nurses. The civilian registered nurse list sample was required for the female control group to permit occupational matching of the civilian sample to the female theater veteran sample, estimated to be 80 percent registered nurses (Willenz, 1983). Sufficient numbers of civilian registered nurses would not have been identified in an area probability sample of households. The household survey was designed to identify a sufficiently large sample of age-eligible Hispanic and black males (and, hence, white/other males and non-nurse females) such that through subsampling the counterpart sample age distribution could be made to match the Vietnam theater veteran age distribution. The following sections discuss these two components.

A. Civilian Counterpart Area Sample

To achieve the required sample size in the male civilian counterpart and the non-nurse female civilian counterpart groups, households were screened in an area probability sample. Aside from the oversampling of Hispanic and black males, the goal of this screening process was to identify a sufficiently large sample of age-eligible persons (26 years of age or older) so that the civilian counterpart sample age distribution would match the Vietnam veteran age distribution. Applying the September 1984 age distribution for Vietnam veterans to the male counterpart sample sizes, the desired September 1986 sample age distributions (Exhibit B-11). The following discussion ignores the non-nurse female component of the area sample. The associated sample size (50 subjects) was the smallest required and the female screening rate per sample household was the largest among the four sex/ethnicity subpopulations. Thus a design that achieved the male sample sizes would clearly exceed the female sample requirement.

Achieving the desired sample allocation to the model 36-to-40 age interval drove the household screening-rate determinations because this age

interval required the most disproportionate share of the sample relative to the corresponding population distributions. Among Vietnam veterans, the 36-to-40 age interval accounted for 40.9 percent of the age eligibles in August 1986. In the U.S. civilian counterpart population, the percentages in this age interval ranged from 8.6 percent for other males to 11.6 percent for Hispanic males. Exhibit B-12 displays these counterpart population percentages for the 36-to-40 age interval and the associated subpopulation sample sizes required to yield the desired age interval counts of 51.2 for both Hispanic and black males and 81.8 for other males.

The age-interval percentages in Exhibit B-11 were calculated by aging forward the corresponding 1980 single-year age distributions and removing the counts of Vietnam-era veterans from the appropriate age intervals. The entries for the percentage of males 36-to-40 years had the corresponding age-eligible (26 years or older) population as a base. The entries for the percentage of males 26 years or older represent the ratio of subpopulation age-eligibles to the total ethnic population; that is, Hispanic males 26 years of age or older in August 1986 represent approximately 24.72 percent of all Hispanics. The Total/HH entries in Exhibit B-12 present the ethnic group population screening rates per household in 1980. For example, the 1980 population contained 14,609,000 Hispanics and a total count of 80,390,000 households; dividing the number of Hispanics by the number of households yielded the overall Hispanic screening rate of 0.1817. The corresponding screening rate per household for age-eligible Hispanic males (26 years or older) is therefore 0.0449 = (0.1817)(0.2472). With no oversampling of Hispanic-concentrated areas and assuming 95 percent screening and 85 percent interview-completion rates, one would require:

$$12{,}185 = 442/(.95)(.85)(.0449)$$

attempted household screenings to yield the required 442 age-eligible Hispanic males.

Noting that a substantial majority of the Hispanic population was concentrated in a relatively small number of SMSAs, optimum sample design considerations suggested that one can effectively oversample households where the concentration of Hispanics was highest. The extent of disproportionate sampling from a concentrated stratum that was effective (optimal) depended on the degree of concentration achieved by stratification and on the relationship between screening and subsequent

Exhibit B-11

Desired Age Distribution for Counterpart Subpopulations

Subgroup	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66+	Total
Hispanic males	7.1	26.5	51.2	23.8	6.5	4.4	2.8	1.6	1.1	125
Black males	7.1	26.5	51.2	23.8	6.5	4.4	2.8	1.6	1.1	125
Other males	11.4	42.3	81.8	38.0	10.4	7.1	4.5	2.6	1.8	200

Exhibit B-12

Required Sample Size for Male Counterpart Subpopulations

Race/ethnicity subpopulation	Hispanic males	Black males	Other males
Percentage 36-40 years	11.59	9.44	8.62
Sample size of 26 years or older	442	542	949
Percentage 26 years or older	24.72	23.22	27.57
Total/HH	0.1817	0.3297	2.2941

interviewing costs. Reduced screening costs achieved through oversampling had to be balanced against the increased interviewing costs required to achieve the specified precision level in the face of variance inflation resulting from the disproportionate stratum allocation.

To develop a Hispanic-concentrated stratification scheme, it was noted that the 22 largest SMSAs plus six densely Hispanic SMSAs contained 60.3 percent of all Hispanics, and that the bulk of this SMSA Hispanic population resided in census blocks where 50 percent or more of the population was Hispanic (see Exhibit B-13 for list of SMSAs). Census blocks were sorted by the number of Hispanics per household and a subset of the blocks in the 28 SMSAs was identified that contained 45 percent of the U.S. Hispanic population. Forty-six percent of the persons residing in the stratum were Hispanic (1.48 Hispanics per household in the stratum), 12 percent were non-Hispanic blacks and 42 percent were in other racial or ethnic groups (see Exhibit B-14).

Similarly, the blocks not contained in the concentrated Hispanic stratum were sorted by the number of non-Hispanic blacks per household and a concentrated non-Hispanic black stratum was identified. This concentrated non-Hispanic black stratum contained 30 percent of the U.S. non-Hispanic black population, and 88 percent of the persons residing in this stratum were non-Hispanic blacks (2.71 non-Hispanic blacks per household in the stratum). The remaining 12 percent consisted of 3 percent Hispanic and 9 percent other racial or ethnic groups.

The population in blocks not included in the concentrated Hispanic stratum or in the concentrated non-Hispanic black stratum was defined as a residual SMSA stratum. Of the persons residing in this residual SMSA stratum, 3.8 percent were Hispanic and 3.8 percent were non-Hispanic black. Finally, the population in areas outside the 28 SMSAs was defined as a fourth stratum.

In association with this stratification scheme, it was noted that if households were selected with equal probability in each stratum, households containing the residual population (non-Hispanic non-blacks) would be expected at rates of 49 households per 100 selected in the concentrated Hispanic stratum, 12 households per 100 in the concentrated non-Hispanic black stratum, and better than 80 households per 100 selected in the other strata. To reduce the number of households selected for screening for

Exhibit B-13

SMSAs Included in Civilian Household Counterpart Survey

No.	State	SMSA
1	CA	Los Angeles
2		San Francisco
3		Anaheim
4		San Diego
5		Riverside[1]
6	CO	Denver
7	DC	Washington
8	GA	Atlanta
9	FL	Miami
10	IL	Chicago
11	MD	Baltimore
12	MA	Boston
13	MI	Detroit
14	MN	Minneapolis
15	MO	St. Louis
16	NJ	Newark
17	NM	Albuquerque[1]
18	NY	New York
19		Nassau-Suffolk
20	OH	Cleveland
21	PA	Philadelphia
22		Pittsburgh
23	TX	Corpus Christi[1]
24		Dallas/Fort Worth
25		El Paso[1]
26		Houston
27		McAllen[1]
28		San Antonio[1]

[1]SMSAs included because of substantial Hispanic population.

Exhibit B-14

Household Strata Population and Housing Characteristics

Characteristics	Stratum (1) Hispanic	(2) Non-Hispanic black	(3) Residual	(4) 28 SMSAs subtotal	(4) Outside 28 SMSAs	United States total
A. Hispanic						
Population	8,574,080	231,943	2,008,829	8,812,852	5,795,821	14,608,673
Percent of U.S. total	46.0%	1.6%	13.7%	60.3%	39.7%	100.0%
Percent in stratum	48.4%	2.6%	3.8%	11.6%	3.9%	8.4%
Households	1,765,128	66,822	831,109	2,463,859	1,554,037	4,007,896
Percent in stratum	39.8%	2.3%	3.1%	9.0%	2.9%	5.0%
Hispanics per household	1.48	.08	.10	.32	.11	.18
B. Non-Hispanic black						
Population	1,688,375	7,831,435	2,008,107	11,527,917	14,576,256	26,104,173
Percent of U.S. total	6.8%	30.0%	7.7%	44.2%	55.8%	100.0%
Percent in stratum	11.9%	88.4%	3.8%	16.1%	9.7%	11.5%
Households	529,053	2,476,235	838,125	3,843,413	4,422,190	8,265,603
Percent in stratum	11.9%	86.8%	4.2%	14.0%	8.3%	10.3%
Non-Hispanic blacks per household	.38	2.71	.10	.42	.28	.32
C. Residual (Non-Hispanic non-black)						
Population	5,918,574	791,732	49,298,914	56,009,220	129,823,739	185,832,959
Percent of U.S. total	3.2%	.4%	26.5%	30.1%	69.9%	100.0%
Percent in stratum	41.7%	8.9%	92.5%	73.4%	86.4%	82.1%
Households	2,154,288	344,792	18,600,858	21,099,934	47,016,240	68,116,174
Percent in stratum	48.5%	11.9%	92.7%	77.0%	88.7%	84.7%
Non-Hispanic non-blacks per household	1.33	.27	2.48	2.04	2.46	2.31

Exhibit B-14 (continued)

Household Strata Population and Housing Characteristics

Characteristics	Stratum (1) Hispanic	(2) Non-Hispanic black	(3) Residual	(4) 28 SMSAs subtotal	(4) Outside 28 SMSAs	United States total
Total in stratum						
Population	14,181,029	8,855,110	53,313,850	76,349,989	150,195,816	226,545,805
Percent of U.S. total	6.3%	3.9%	23.5%	33.7%	66.3%	100.0%
Percent in stratum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Households	4,439,467	2,887,649	20,070,090	27,397,206	52,992,467	80,389,673
Percent of U.S. total	5.5%	3.6%	25.0%	34.1%	65.9%	100.0%

Source: RTI computations using the Bureau of the Census Standard Tape File (STF) 1B for the 1980 Census.

eligible civilian counterparts, we employed a strategy that consisted of quick screening for household ethnicity. This would permit subsampling of households prior to the roster screening for eligible civilian counterparts.

We used quick screening process to classify dwelling units as Hispanic, black, and other during the area segment listing process. Area segment listing is the process by which up-to-date lists of dwelling units are created by survey staff working in the field. The area segments are typically city blocks or block groups in urban areas and census enumeration districts in rural areas. Sample segments are sent to the field staff along with segment sketch maps clearly delineating area boundaries.

The field staff were instructed to traverse the area quickly to obtain an approximate count of associated dwelling units. When this count was substantially larger than expected, based on 1980 census data, the area was divided into listing units of the desired size, and a unit was selected with a probability proportional to the associated count. Having obtained a listing unit of the desired size and following a rigorous process, field staff then listed each dwelling unit in the area. Detailed addresses and any additional descriptive information required for subsequent location was provided with the listing. The position of dwelling units was also noted on the segment sketch map.

It was during this counting and listing process that the quick screen for ethnicity occurred. Field staff classified each listed dwelling as Hispanic, black, or other; the other category may have included unclassified units. Maximum use of neighbor information was encouraged.

Although this quick screen was clearly subject to some degree of misclassification in mixed ethnic areas, quick-screen misclassification will not damage the validity of the sample. If too many Hispanic and black households were misclassified as "other," it would simply have been necessary to select and roster-screen additional households from this stratum. Poor preclassification would have reduced the cost-effectiveness of the quick-screen design, but would not have damaged its validity.

Because the targeted sample sizes of Hispanics and blacks were rather small and the screening process yield was subject to sampling variation as well as variable screening success rates, roughly 40 percent more dwelling units were listed and quick screened than were minimally required. By

randomly allocating subsamples of the listed dwelling units to the three sample waves, we used the first- and second-wave experience to project the sample yield and to supplement the final wave sample from the unused listings as necessary.

To estimate the number of households required in the screening sample, cost and variance models were developed to permit a cost-variance optimization of the screening sample size and allocation. The cost model can be denoted as:

$$C = C_o + C_1 n_Q + C_2 n_R + C_3 n_I$$

where C = total survey cost

C_o = fixed survey costs

C_1 = per household cost for the quick screening

C_2 = cost per household for roster screening for eligible civilians

C_3 = cost per interview

n_Q = number of households quick screened

n_R = number of households roster screened

n_I = number of persons interviewed.

The basic variance model assumes equal within-stratum variance components and can be denoted as:

$$v_j^2 = \sum_h W_{hj}^2 \; V^2 / n_{hj}$$

where

W_{hj} = the stratum-h proportion of population j with j indexing the Hispanic, non-Hispanic black, and other races and ethnicities

V^2 = the common stratum level variance component

n_{h_j} = the number of completed interviews in stratum h among population j.

These basic cost and variance models were reparameterized in terms of stratum level household sample sizes and race/ethnicity-specific subsampling rates.

Using these cost and variance models, a mathematical optimization was performed. The algorithm seeks to minimize total costs subject to multiple variance constraints and produces an optimal sample size and allocation. Separate variance constraints were imposed for a typical estimate from each of the race/ethnicity subpopulations.

Based on this optimization analysis, the subsampling rates for households quick-screened classified as "other" were 0.5 for the concentrated Hispanic stratum and 0.2 for the other strata. A higher subsampling rate was used in the Hispanic stratum to account for an anticipated higher quick-screening misclassification rate. The mathematical optimization indicated a design consisting of 348 area segments (each containing approximately 35 households). A total of 156 of the 348 area segments were drawn from the 28 SMSAs, with 60 area segments selected in the concentrated Hispanic stratum, 12 area segments in the non-Hispanic black stratum, and 84 segments in the rest of the 28 SMSAs (see Exhibit B-15). Area segments were selected in each stratum with probability strictly proportional to 1980 census counts of occupied housing units, using Chromy's (1979) sequential probability selection procedure.

A total of 32 non-self-representing PSUs (counties or county equivalents) were drawn from the remaining SMSAs and non-SMSA counties. Primary unit selections were made with probability proportional to 1980 households counts. Sorting the primary frame listing by region and percent Hispanic population prior to implementing Chromy's sequential probability selection scheme guaranteed a proportional-to-size allocation across regions and concentrated Hispanic areas. Each of the 32 non-self-representing PSUs were assigned six area segments. These segments were defined as single blocks, block clusters, or enumeration districts. Segment selection was with probability proportional to 1980 occupied housing unit counts.

As shown in Exhibit B-15, the number of household roster screenings required was 4,605 -- 38 percent of the projected 12,185 household screenings required if ethnic stratification or quick screening had not been used.

Exhibit B-15

Summary of Civilian Household Survey Design

Characteristics	Stratum (1) Hispanic	(2) Non-Hispanic black	(3) Residual	(4) 28 SMSAs subtotal	(4) Outside 28 SMSAs	Total United States
Area segments	60	12	84	156	192	348
Listed and quick-screened households						
Hispanic	830	10	92	932	179	1,111
Non-Hispanic black	260	360	123	733	485	1,218
Other	1,020	50	2,725	3,795	6,066	9,861
Total	2,100	420	2,940	5,460	6,720	12,180
Households roster-screened for eligible civilians						
Hispanic	830	10	92	932	179	1,111
Non-Hispanic black	260	360	123	733	485	1,218
Other	510	10	545	1,065	1,211	2,276
Total	1,590	380	7,800	2,730	1,875	4,605
Projected males ages 26 or older						
Hispanic	672	7	63	742	164	906
Non-Hispanic black	177	253	65	495	392	887
Other	803	33	2,071	2,907	4,100	7,007
Projected males ages 36 to 40						
Hispanic	78	1	7	86	19	105
Non-Hispanic black	17	24	6	47	37	84
Other	69	3	179	251	353	604

Source: RTI calculations.

B. Civilian Female Nurse Sample

Because an estimated 80 percent of female theater veterans are registered nurses (Willenz, 1983), part of the female civilian control sample was selected from a listing of registered nurses. To determine the required sample sizes, we conducted a power analysis to detect PTSD rate differentials, primarily between female theater veterans and female civilian counterparts and, secondarily, between female era veterans and female civilians, when occupational matching is imposed. Based on this power analysis, the optimized sample allocation of the female civilian sample was 150 civilian female RNs and 50 civilian female non-nurses.

The initial frame listing for the female civilian nurse sample was the American Nursing Index, compiled by Executive Services Companies. This index, compiled from State directories of nurses, contained information on almost 1.6 million registered nurses who represent approximately 85 percent of the estimated 1985 registered nurse population. Nurses in Massachusetts, Washington, and Tennessee, plus a few small-population states, are not fully enumerated on the index because State nurse directories could not be obtained by the compiler.

Considering the relatively small size of the proposed female civilian counterpart sample (200 subjects with 150 allocated to the registered nurse frame), the coverage of the Nursing Index was deemed sufficient for the purposes of this study. The analytic goal of the female civilian counterpart sample was not to provide accurate PTSD prevalence rates for the current universe of civilian RNs. The associated PTSD prevalence estimates would be directed at a hypothetical population of civilian nurses having the same age distribution as the female theater veteran population. With this perspective, the potential estimation bias associated with frame undercoverage was of minimal concern.

To ensure comparability and to minimize potential confounding, eligible civilian nurses included only those female registered nurses who were <u>active</u> in nursing between 1964 and 1975, who were <u>not in the military</u> during the Vietnam era, and were not presently in the military. Hence, a screening procedure was necessary before the sampling frame of eligible nurses was developed. The eligibility-screened sampling frame of civilian nurses was then stratified by age prior to selection of the final sample.

The civilian nurse sample was allocated to age strata corresponding to the age distribution among female theater veteran nurses.

The number of nurses required in the screening sample was projected based on the eligibility criteria imposed on the nurses, the expected completeness and accuracy of the data on the Nursing Index, and the desired sample size of eligible subjects. The American Nursing Index contained information on sex and date of birth; however, this information was incomplete for five and 44.6 percent of the file, respectively. The Index does not provide information on past work history or veteran status.

Because statistical control was desired on the age distribution of the female civilian nurse sample, the screening sample was stratified by birthdate. To account for the availability of birthdate information for only 55 percent of the Nursing Index, 55.4 percent (83.1 nurses) of the 150 civilian nurses were allocated to age-specific strata, and the remainder (66.9 nurses) were allocated to an age-unknown stratum.

Preliminary data from the female theater veteran nurse sample indicated a date of birth distribution among female theater veteran nurses, as shown in column one of Exhibit B-16. The allocation of the sample is shown in column two of the exhibit Assuming response rates of 85 percent for both the screening and the full interviews, the fact that approximately 95 percent of civilian nurses are female, and the estimated percentages of nurses actively working as nurses during the Vietnam era,[1] a screening sample of 163 civilian nurses from among those with date-of-birth information was estimated to be required to achieve the desired sample size (Exhibit B-17).

To estimate the number of nurses required among those without birthdate information, it was noted that the modal birthdate interval was from 1940 to 1949 (71.1 percent of female theater veteran nurses). Therefore, among the 67.3 responding civilian nurses allocated to the age-unknown stratum, 47.9 of these could have been expected to have birthdates between 1940 and 1949. In addition to the anticipated response rates of 85 percent for both

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1/ Estimated percentages of civilian nurses actively working in nursing are computed from data in the Source Book: Nursing Personnel (DHHS Publication No. [HRA] 81-21) that provides age-specific rates of the percentage of RNs actively working as RNs for years 1962, 1972, and 1977.

Exhibit B-16

Estimated Sample Sizes for Female Civilian Nurse Sample
Total Sample Size = 150

Cases with Date of Birth
Sample Allocation = 83.1, 55.4 Percent of Sample

Date of birth	Female theatre veteran nurses[1]	Sample allocation	Adjusted for full study response rate (85%)	Percentage actively working in nursing[2]	Adjusted for actively working in nursing	Adjusted for percentage of females (95%)	Adjusted for screening response rate (85%)	Rounded sample size
Before 1930	8.8%	7.3	8.6	71.26	12.1	12.7	14.9	15
1930 - 1939	18.4%	15.3	18.0	64.16	28.1	29.6	34.8	35
1940 - 1949	71.1%	59.1	69.5	78.71	88.3	92.9	109.3	110
1950 or later	1.7	1.4	1.6	78.71	2.0	2.1	2.5	3
Total	100.0%	83.1	97.7		130.5	137.3	161.5	163

[1]Estimated distribution of female theatre veteran nurses is based on preliminary information from data abstraction from military personnel records data abstraction.

[2]The percentage of nurses actively working as registered nurses is the average percentage of active registered nurses by age for years 1962 through 1977; Source: Source Book: Nursing Personnel, DHHS Publications No. [HRA] 81-21.

Exhibit B-17

Estimated Sample Size for Female Civilian Nurse Sample

Cases Without Date of Birth Information
Sample Allocation = 66.9, 44.6 Percent of the Sample

Date of birth	Female theatre veteran nurses (Percent)[1]	Sample allocation	Adjusted for full study response (85%)	RNs on nursing index[2] (Percent)	Screening sample
Before 1930	8.8	5.9	6.9	20.9	-
1930 - 1939	18.4	12.3	14.5	20.0	-
1940 - 1949	711	47/6	56.0	26.7	330[3]
1950 or later	1.7	1.1	1.3	32.4	-
Total	100.0	66.9	78.7	100.0	

[1]Estimated distribution of female theatre veteran nurses is based on preliminary information from military personnel records data abstraction.

[2]Based on birthdate of RNs on American Nursing Index.

[3]Note: Screening sample size of modal birthdate interval is adjusted for 85 percent response rates for screening and full study questionnaire, 78.7 percent of RNs actively nursing during Vietnam era, and 95 percent of nurses are female.

the screening and the full interviews and the projection that 95 percent of selected nurses would be female, it was assumed that for the modal birthdate interval, 78.7 percent of nurses were actively working as nurses during the Vietnam era. Based on these assumptions, a screening sample of 333 civilian nurses without age information on the Nursing Index was estimated to be required to achieve 48 nurses in the modal birthdate interval (see Exhibit B-19). Because a screening sample of 333 was expected to result in excess eligible nurses in all years but the 1940 and 1949 birthdate interval, a subsample of the eligible nurses was selected in other birthdate intervals. A total of 493 civilian nurses were selected for screening to identify eligible female civilian nurses.

III. SAMPLING WEIGHTS AND POPULATION ESTIMATES

The initial sampling weight for a veteran was computed from the inverse of the veteran's selection probability. In general, the probability of being selected in the veteran sample was the product of the probability of being selected for the screening sample and the conditional probability of being selected within the sampling strata. The sampling strata were defined by (a) theater status, (b) sex, (c) race/ethnicity (for male veterans), (d) occupation (for female veterans), and (e) age. Nonresponse and poststratification adjustments were conducted in stages. First, the weights for all known eligible and ineligible sample numbers were adjusted for sample members for whom eligibility could not be determined (sample members that could not be located). Those adjusted weights for all eligible veterans were poststratified to VA estimates of Vietnam era veterans.[2] No poststratification population counts were available for the civilian counterpart sample. After this, the weights for eligible responding veteran and civilian sample members were adjusted to compensate for nonresponse. These adjusted weights were evaluated and these adjusted weights were trimmed for approximately 33 cases. Trimming sampling weights improves the overall precision for an estimate in the sense of the mean

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2/ VA estimates for March and September '87 were used to estimate total for June '87 (the midpoint of data collection).

squared error (of SB = Variant (Bias) by reducing the sampling variance sufficiently to affect the possible bias introduced by the weight trimming.

Using the sampling weights, we estimate the population counts of eligible veterans in each stratum. The estimated population counts of study eligible veterans by theater status, sex, and ethnicity are given in Exhibit B-18.

Exhibit B-18

Population Estimates for Theater and Era Vietnam Veterans

Population	Total	Theater	Era
Total	8,269,881	3,150,811	5,119,070
Males	8,007,496	3,143,645	4,863,851
White/Other	6,795,465	2,621,871	4,173,594
Black	840,850	352,885	487,965
Hispanic	371,181	168,889	202,292
Female	262,385	7,166	255,219
Nurse	35,175	6,039	29,136
Other	277,210	1,127	226,083

Based on VA estimates of male and female Vietnam era veterans and NVVRS data.

IV. WEIGHTED ANALYSIS AND VARIANCE ESTIMATION PROCEDURES

Weighted parameter estimates and variance estimates were computed using survey data analysis software developed by RTI for analyzing data from surveys with complex sample designs. For the estimation of totals and proportions, the finite population correction was ignored. Since all veteran sample strata, except those for female theater veterans, had

estimated population counts in excess of 10,000, the finite population correction would have had little effect on the variance estimates.

For computing standardized estimates for theater and era veterans, the theater population parameters were estimated based on the sampling strata. The population estimates used in the standardization were those shown in Exhibits B-19 through B-21. The standardized estimates are standardized by age, sex, race/ethnicity (for male veterans), and occupation (for female veterans). In a few cases, veterans selected as era veterans were found on the basis of their self report to be theater veterans, or were found to belong to a different racial/ethnic subgroup than that indicated in their personnel record. Therefore, the interview-based classification of the theater population was slightly different from the estimated theater population used for standardization. This results in some small differences between the unstandardized and the standardized theater veteran estimates.

Exhibit B-19

Theater Veteran Standardization Population Estimates
and Sample Counts

Subgroup	Theater Veterans Sample Cases	Theater Veterans Population Estimate	Era Veterans Sample Cases	Civilians Sample Cases
Males				
Black				
Before 1945	115	108,626	39	61
After 1944	198	244,259	70	67
Hispanic				
Before 1945	61	42,636	22	59
After 1944	220	126,254	83	65
White/Other				
Before 1940	75	364,803	24	33
1940 - 1944	123	447,796	34	44
1945 - 1949	339	1,391,730	113	91
After 1949	69	417,542	27	30
Females				
Nurses				
Before 1940	120	1,641	32	48
1940 - 1944	98	1,660	52	42
1945 - 1949	144	2,738	58	58
Non-Nurses				
Before 1945	45	646	82	35
After 1944	25	481	80	35

Exhibit B-20

High War Zone Stress Theater Veteran Standardization Population Estimates and Sample Counts

Subgroup	High War Zone Stress Theater Veterans: Sample Cases	High War Zone Stress Theater Veterans: Population Estimate	Era Veterans Sample Cases	Civilians Sample Cases
Males				
Black				
Before 1945	27	25,363	39	61
After 1944	94	106,219	70	67
Hispanic				
Before 1945	21	10,447	22	59
After 1944	79	44,563	83	65
White/Other				
Before 1945	42	124,660	58	77
1945 - 1949	122	364,014	113	91
After 1949	21	100,929	27	30
Females				
Before 1940	44	567	76	71
1940 - 1944	51	864	90	54
1945 - 1949	75	1,428	138	93

Exhibit B-21
Low/Moderate War Zone Stress Theater Veteran Standardization
Population Estimates and Sample Counts

Subgroup	Low/Moderate War Zone Stress Theater Veterans: Sample Cases	Low/Moderate War Zone Stress Theater Veterans: Population Estimate	Era Veterans Sample Cases	Civilians Sample Cases
Males				
Black				
Before 1945	87	82,397	39	N/A
After 1944	104	138,040	70	N/A
Hispanic				
Before 1945	40	32,189	22	N/A
After 1944	140	81,237	83	N/A
White/Other				
Before 1940	60	312,127	24	N/A
1940 - 1944	94	368,531	34	N/A
1945 - 1949	210	989,558	113	N/A
After 1949	48	316,612	27	N/A
Females				
Nurses				
Before 1940	81	1,139	32	N/A
1940 - 1944	50	847	52	N/A
1945 - 1949	73	1,388	58	N/A
Non-Nurses				
Before 1945	37	530	82	N/A
After 1944	21	404	80	N/A

APPENDIX C

Assessment of War Zone Stress Exposure

Appendix C: Assessment of War Zone Stress Exposure

Even the earliest research studies of participants in the Vietnam war suggested that actual combat experience and exposure to other war stressors, rather than service in Southeast Asia or the military per se, were the principal factors predicting later adjustment. Additionally, prior studies have found that the more differentiated the measure of combat or war stress used, the more likely such a relationship will be found. Recent work by Laufer and his colleagues (Laufer, R.S., Gallops, M.S., & Frey-Wouters, E., 1984; Yager, T., Laufer, R., & Gallops, M., 1984), for example, demonstrates that: (1) different psychological outcomes are associated with different elements of war stress (for example, combat exposure versus exposure to abusive violence), (2) the impacts of different elements of war trauma are not always parallel or cumulative, and (3) the impacts may differ among subgroups of the veteran population. Hence, a basic assumption underlying the development of instrumentation for NVVRS was that the phenomenon of war trauma is multidimensional. Moreover, with the exception of items necessary to describe adequately the full range of war zone stressors to which female theater veterans were exposed, the basic concepts and measures required to conduct a multidimensional assessment of combat and war zone stress exposure were already represented in the research literature and were adapted for use in the NVVRS. Although in our view the precise dimensions required to specify fully a multidimensional model of Vietnam war trauma or stress must be established empirically, such measures were compiled within eight broad content areas that recent research suggests should be included in such a model:

- General indicators of degree of involvement in combat based on both records and self report, such as Vietnam-era service, stationed in Vietnam, period of service in Vietnam, type of unit, unit location, type of duty, etc.
- Exposure to stresses of serving in Vietnam other than combat
- Number, nature, and duration of services in principal combat roles

- Specific dimensions of combat exposure or involvement, including extent, type, and frequency of exposure to enemy fire, degree of involvement in engaging the enemy, and degree of exposure to injury and death of American soldiers
- Exposure to and participation in the injury or death of Vietnamese civilians or other forms of abusive violence
- Degree of perceived risk, threat, or danger to life and limb
- Extent and nature of positive war zone experiences and
- Aspects of war stress of particular relevance to nurses, medics, and others assigned to work with the dead and dying

It was assumed that a comprehensive assessment of Vietnam war stress must assess each of these broad dimensions to at least some degree, either as empirically distinct in their own right, or as aspects included within a broader summary measure to describe adequately the war experiences of all participants.

In our overall assessment of war zone stress exposure, almost 100 items representing these broad dimensions were subjected to principal components analyses to identify ways of combining specific experiences such that the important underlying dimensions of war zone stress were appropriately represented. These analyses were conducted on weighted correlation matrices, separately for male and female Vietnam theater veterans, using a varimax rotation and scree plots of eigenvalues (cf., Cattell & Vogelman, 1977) to determine the appropriate number of components to be examined. These analyses resulted in the identification of four basic clusters of items for males and six for females, along with a few individual items not clearly aligned with any of these.

For men, correlations of items within each of the clusters were examined separately for blacks, Hispanics, and white/others to see if the patterns of relationships were similar within each of these subgroups. In general, they were, although some of the items showed substantial numbers of low or nonsignificant correlations with other items in their respective clusters for one or more subgroups, primarily due to little or no variation and/or the presumed greater concentration of certain experiences in certain subgroups. Other than those showing scattered and nonsystematic patterns of this sort, four items in particular were problematic for one or more subgroups: (a) "[how often one flew] fixed-

wing aircraft on missions over Vietnam, Laos, and/or Cambodia" (for all, but especially blacks and Hispanics); (b) "how often...part of a river patrol or gunboat crew" (white/others); (c) "how often...part of a land or naval artillery unit which fired on the enemy" (white/others and blacks); and (d) "how often did you find yourself in any other life-threatening situations" (Hispanics). Ultimately, all four of these items were retained, however, because it was felt that, while they may not have been consistently correlated with other measures of combat experience or exposure for all groups, they clearly still captured an important component of the war zone experience for many theater veterans. Similarly, although one item--being a prisoner of war (POW)--failed to load on any cluster (due to its low incidence), it was retained as an individual item. Three other items were dropped, one due to its virtual total redundancy with an item that was retained, and two others (months served and periods of duty in or around Vietnam) because they were too general to have aligned themselves on any particular cluster.

Of the 97 items in the original set, 94 were thus retained for men in the following five groups, including the four original clusters and one individual item:

(1) Exposure to Combat (CBT): 48 items, including receipt of personal combat awards or medals in Vietnam; type of duty in Vietnam (combat, combat support, etc.); exposure to danger and risk of casualty; self-described exposure to combat (light, moderate, heavy); how often in danger of being killed or wounded; how often in relatively unsafe or hostile territory; how often flew helicopter missions over Vietnam, Laos, or Cambodia; how often responsible for taking care of and/or evacuating casualties; how often received small arms fire from the enemy; how often encountered mines and booby traps; how often unit engaged in firefight with the enemy; how often fired weapon at the enemy; how often saw enemy/Americans being killed or wounded; ever wounded or injured in combat; and how often personally killed enemy personnel.

(2) Exposure to Abusive Violence and Related Conflicts (AVC): 24 items, including degree of involvement in torturing, wounding or killing hostages or POWs; involvement in mutilation of bodies of enemy or civilians; witnessed or involved in situation where women, children, or old people were injured or killed by Americans or South Vietnamese soldiers; personally saw or heard

about an American soldier being tortured by the enemy; helping someone who asked to be allowed to die; and knew Americans who were casualties of "friendly fire."[1]

(3) Deprivation (DPR): 12 items, including how often experienced not having shelter from the weather, enough water, adequate food, adequate equipment or supplies; how often physically fatigued or emotionally worn out/exhausted; how unpleasant found bad climate, loss of sleep, insects, disease, and filth.

(4) Loss of Meaning and Control (LMC): 9 items, including how unpleasant found sense of purposelessness, not counting as an individual, feeling out of touch with rest of world, loss of freedom of movement.

(5) Prisoner of War (POW): 1 item measure assessing ever having been a prisoner of war in or around Vietnam.

For women, correlations of items within each cluster were examined only for the total sample. Within clusters, few items showed consistent nonsignificant correlations with others in the same set, so that none were considered for deletion. However, the same three items deleted for males due to their redundancy or nonalignment with any component were also deleted for females, along with seven others. Three of these literally had no variation among female theater veterans (that is, no women reported being part of a land or naval artillery unit, experiencing hand-to-hand combat, or wounding or killing people they weren't sure were enemy) and four others (volunteering for special jobs, such as a medic, special forces, or LRPP; being part of a river patrol or gunboat crew; having personally killed enemy personnel; and "letting buddies down" in a combat situation), also of little apparent relevance or meaning for women veterans in Vietnam, were not related to any of the primary clusters. Two other "rare event" items, although they did not align themselves with any particular cluster, were nevertheless retained as individual items--being a prisoner of war (POW) and having received a combat medal (MDL).

1/ A "purer" measure of abusive violence was also created, excluding such items as "friendly fire" or "saw or heard about Americans tortured by the enemy." This purified measure correlated 0.950 with the more general measure (AVC) which in turn was somewhat more highly correlated with PTSD symptomatology (.583 versus. 509).

From the 87 items retained from the original set, the following eight groups were formed for female Vietnam theater veterans, including the original six clusters and two individual items:

(1) Exposure to Wounded and Dead (EWD): 20 items, including how often took care of people who later died; saw Americans (or enemy) after wounded in combat; responsible for taking care of and/or evacuating casualties; exposed to sight, smell, or sound of dead and dying people; felt personally responsible for life and death decisions; felt emotionally worn out or exhausted; not able to help the wounded and dying as much as you wanted.

(2) Exposure to Enemy Fire (EEF): 27 items, including exposure to danger and risk of casualty; self-described exposure to combat (light, moderate, heavy); how often under enemy fire, in danger of being killed or wounded, in relatively unsafe or hostile territory, received incoming fire from enemy artillery, rockets and/or mortars, received sniper fire and/or sapper attacks, in a vehicle disabled by enemy fire.

(3) Direct Combat Involvement (DCI): 11 items, including how often fired a weapon in a combat situation; how often saw Vietnamese (or other enemy) being killed or wounded; ever kill or thought you killed someone; witnessed or involved in situations where women, children or old people, Vietnamese prisoners or civilians, were injured or killed.

(4) Exposure to Abusive Violence (EAV): 10 items, including personally saw or heard about American soldiers tortured by enemy or bodies of dead Americans mutilated by enemy; degree of involvement in torturing, wounding, or killing civilians, hostages or prisoners of war, mutilation of bodies of enemy or civilians.[2]

(5) Deprivation (DPR): 10 items, including how often experienced not having enough water; adequate food, shelter from the weather; how unpleasant found bad food and climate; insects, disease, and filth; lack of privacy.

(6) Loss of Meaning and Control (LMC): seven items, including how unpleasant found sense of purposelessness; not counting as an individual; feeling out of touch with rest of world.

2/ A "purer" measure of abusive violence analogous to that created for males correlated 0.900 with the more general (EAV) measure, which in turn was somewhat more highly correlated with PTSD symptomatology (0.449 versus 0.328).

(7) Prisoner of War (POW): one item measure assessing ever having been a prisoner of war in or around Vietnam.

(8) Received Combat Medal (MDL): one item assessing receipt of any combat medal for Vietnam service.

Based on the items retained in these clusters, 13 indices were created--five for men and eight for women. Except for the single item measures, these indices were created by taking the mean of the items retained in each cluster (allowing up to half of the items to be missing) multiplying the result by 100, and rounding to the nearest integer. Since most of these items were Likert scales with responses ranging from 1 to 5, the theoretical range of the resulting indices was 100-500 (except for the "abusive violence" measures, on which several items were scored from 0 to 5). The weighted correlations among these indices and their internal consistency reliabilities (coefficient alpha) are presented in Tables C-1 and C-2 for men and women, respectively.

As shown in Tables C-1 and C-2, the reliabilities of the multi-item measures are moderate to high and the correlations among them also moderate to high, suggesting some degree of potential redundancy or overlap. In contrast, the single item measures--Prisoner of War (POW) and Received Combat Medal (MDL)--bear little or no relationship to the other measures, due primarily to their extremely skewed distributions. With the exception of POW for males and MDL for females, however, each of these measures is at least moderately correlated with PTSD symptomatology, as represented by the Mississippi Scale for Combat-Related PTSD (M-PTSD). Due to the manifest content of the Loss of Meaning and Control (LMC) indices, however, it was judged to partly confound exposure to stressors and reactions to such (for example, symptoms of alienation). Thus, in further analyses designed to explore the possibility of deriving a single overall summary measure of war zone stress exposure, it was decided to drop these indices for both males and females.[3] Each of the remaining

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3/ Similar concerns were raised about potential "subjectivity" and confounding for the Deprivation (DRP) index, which was ultimately judged to be less problematic than the LMC measures. Nevertheless, when parallel factor scores were created excluding the DPR measures as well, these "revised" measures were correlated with the original war zone stress factor scores at 0.970 and 0.974 for males and females, respectively.

Table C-1

Five Indices of War Zone Stress Exposure for Male Vietnam Theater Veterans:
Numbers of Items, Internal Consistency Reliabilities, Intercorrelations, and Relationships to PTSD Symptoms

War Zone Stress Index	No. of Items	Reliabilities	Intercorrelations				
			CBT	AVC	DPR	LMC	POW
Exposure to Combat (CBT)	48	.867	1.00				
Exposure to Abusive Violence and Related Conflicts (AVC)	24	.904	.798	1.00			
Deprivation (DPR)	12	.873	.729	.664	1.00		
Loss of Meaning and Control (LMC)	9	.872	.429	.414	.632	1.00	
Prisoner of War (POW)	1	---	.048	.044	.033	-.005	1.00
Mississippi Scale for Combat-Related PTSD (M-PTSD)	35	.937	.466	.583	.518	.462	.006

Table C-2

Eight Indices of War Zone Stress Exposure for Female Vietnam Theater Veterans:
Numbers of Items, Internal Consistency Reliabilities, Intercorrelations, and Relationships to PTSD Symptoms

War Zone Stress Index	No. of Items	Reliabilities	Intercorrelations							
			EWD	EEF	DCI	EAV	DPR	LMC	POW	MDL
Exposure to Wounded and Dead (EWD)	20	.925	1.00							
Exposure to Enemy Fire (EEF)	27	.887	.471	1.00						
Direct Combat Involvement (DCI)	11	.704	.326	.443	1.00					
Exposure to Abusive Violence (EAV)	10	.733	.500	.431	.460	1.00				
Deprivation (DPR)	10	.795	.521	.502	.286	.430	1.00			
Loss of Meaning and Control (LMC)	7	.830	.349	.238	.157	.330	.537	1.00		
Prisoner of War (POW)	1	---	.037	.143	-.042	.030	.144	.031	1.00	
Received Combat Medal (MDL)	1	---	.043	.057	.127	.174	.057	.062	.104	1.00
Mississippi Scale for Combat-Related PTSD (M-PTSD)	35	.924	.311	.349	.359	.449	.434	.414	.203	.081

measures--four for men and seven for women--were subjected to second order principal components analyses to determine whether they could be combined into a single overall measure of exposure to war zone stress. These analyses indicated a single component for males and two for females. However, the eigenvalue for the second component for women was only 1.08 (versus 2.80 for the first), and all measures had loadings of .65 or higher on the first factor, except for POW and MDL, which had even lower loadings on the second factor. Therefore, a general index representing "overall war zone stress" was created as a weighted linear combination (factor score) of these four and seven specific indices for males and females, respectively. Weighted correlations of this overall index with PTSD symptomatology, as represented by the M-PTSD scale, were .575 and .516 for males and females, respectively.

This war zone stress index is a continuous measure, and thereby suitable for correlation and regression analyses, but there is good reason to believe that the relationship between war zone stress and PTSD symptoms (and other psychological problems) may not be wholly a linear one. It is quite plausible, for example, that there is a threshold effect for war zone stress, that is, negative outcomes are likely to occur after this threshold is reached and not increase significantly beyond the threshold. Moreover, for ease of presentation, it is desirable to identify groups of Vietnam theater veterans who are relatively "high" on this measure, versus those who are relatively "low." It is not clear, however, whether the goal of this dichotomization should be to distinguish those "high" from "not high" on war zone stress, or to distinguish those who are clearly "low" from "not low" on war zone stress, as implied by the concept of a "threshold" noted above.

Rather than making this decision arbitrarily, we decided to examine the extent to which different "cutoff" scores on the war zone stress index were able to distinguish those relatively high from those relatively low on the component war zone stress indices from which the factor scores were derived. How well, for example, would a 50-50 split on the war zone stress factor distinguish those high and low on Exposure to Combat (CBT) or Exposure to Wounded and Dead (EWD), two of the principal component indices for males and females, respectively? The results of these comparisons are presented in Tables C-3 and C-4, where the cutoff scores

Table C-3

Means (Weighted), Standard Errors, and Discriminatory Power for the Four War Zone Stress Component Indices for Males Based on Alternative High-Low Cutoff Points on the War Zone Stress Factor Score

War Zone Stress Factor Cutoff (Based on Weighted Distribution)	Unweighted N	War Zone Stress Index: Exposure to Combat Mean (Std. Err.)	Exposure to Combat % < > Mean (H/L)	Exposure to Abusive Violence & Rel. Conflicts Mean (Std. Err.)	Exposure to Abusive Violence & Rel. Conflicts % < > Mean (H/L)	Deprivation Mean (Std. Err.)	Deprivation % < > Mean (H/L)	Prisoner of War Mean (Std. Err.)	Prisoner of War % < > Mean (H/L)
OVERALL	1,191	241 (3.4)	---	154 (2.5)	---	251 (2.8)	---	1.02 (.01)	---
[RANGE]		[104-473]		[76-471]		[100-500]		[1.00-5.00]	
Low (50%)	471	170 (2.5)	100.0	105 (1.4)	100.0	194 (2.4)	99.4	1.00 (.00)	100.0
High (50%)	720	308 (3.3)	99.2	200 (3.3)	97.1	303 (3.1)	98.3	1.03 (.02)	0.8
Low (60%)	586	180 (2.4)	99.9	111 (1.5)	99.8	204 (2.4)	98.7	1.00 (.00)	100.0
High (40%)	605	328 (3.0)	99.6	214 (3.7)	98.1	316 (3.4)	97.9	1.04 (.02)	1.1
Low (67%)	665	189 (2.7)	99.4	116 (1.6)	100.0	211 (2.4)	98.2	1.00 (.00)	100.0
High (33%)	526	340 (2.9)	99.9	227 (4.0)	98.4	326 (3.5)	97.5	1.05 (.03)	1.3
Low (75%)	781	201 (2.9)	99.6	122 (1.7)	99.9	218 (2.4)	98.2	1.01 (.01)	99.8
High (25%)	410	353 (3.1)	100.0	245 (4.4)	99.2	341 (3.8)	98.6	1.04 (.03)	1.1

Table C-4

Means (Weighted), Standard Errors, and Discrimatory Power for the Seven War Zone Stress Component Indices For Females Based on Alternative High-Low Cutoff Points on the War Zone Stress Factor Score

War Zone Stress Factor Cutoff (Based on Weighted Distribution)	Unweighted N	War Zone Stress Index: Exposure To Wounded and Dead Mean (Std. Err.)	% < > Mean (H/L)	Exposure To Enemy Fire Mean (Std. Err.)	% < > Mean (H/L)	Direct Combat Involvement Mean (Std. Err.)	% < > Mean (H/L)	Exposure To Abusive Violence Mean (Std. Err.)	% < > Mean (H/L)	Deprivation Mean (Std. Err.)	% < > Mean (H/L)	Prisoner of War Mean (Std. Err.)	% < > Mean (H/L)	Received Combat Medal Mean (Std. Err.)	% < > Mean (H/L)
OVERALL	432	300 (4.4)	---	177 (2.2)	---	114 (1.4)	---	118 (3.0)	---	254 (2.9)	---	1.03 (.02)	---	1.24 (.05)	---
[RANGE]		[100-480]		[100-337]		[100-327]		[29-320]		[100-440]		[1.00-5.00]		[1.00-6.00]	
Low (33%)	145	212 (5.8)	97.4	142 (1.9)	98.7	102 (0.6)	97.8	76 (2.7)	94.4	205 (3.3)	95.4	1.00 (.00)	100.0	1.09 (.05)	97.8
High (67%)	287	342 (3.9)	98.4	194 (2.5)	92.9	119 (2.1)	45.6	137 (3.8)	82.7	278 (3.2)	91.7	1.04 (.03)	1.0	1.32 (.08)	7.9
Low (40%)	177	227 (5.7)	95.7	147 (1.9)	98.2	102 (0.5)	98.2	80 (2.5)	94.2	208 (3.0)	96.4	1.00 (.00)	100.0	1.07 (.04)	98.2
High (60%)	255	347 (4.2)	95.6	198 (2.6)	91.4	121 (2.3)	49.6	141 (4.2)	85.1	284 (3.3)	96.4	1.05 (.03)	1.2	1.35 (.07)	8.8
Low (50%)	213	240 (5.2)	98.2	151 (2.5)	92.9	103 (0.6)	98.1	82 (2.5)	97.7	217 (3.2)	95.6	1.02 (.02)	99.5	1.08 (.04)	98.0
High (50%)	219	358 (3.9)	95.1	203 (2.8)	93.9	124 (2.6)	46.1	151 (3.7)	91.4	291 (3.7)	95.1	1.04 (.03)	0.9	1.40 (.08)	10.1
Low (60%)	258	252 (4.8)	97.2	155 (2.2)	98.1	103 (0.5)	97.7	88 (2.5)	95.8	225 (3.0)	91.9	1.02 (.02)	99.6	1.09 (.04)	97.7
High (40%)	174	370 (4.1)	95.4	210 (3.2)	95.4	128 (3.2)	42.1	160 (4.2)	94.0	297 (4.2)	94.2	1.05 (.04)	1.2	1.46 (.10)	11.6
Low (67%)	289	262 (4.7)	94.2	158 (2.0)	98.5	104 (0.5)	97.3	92 (2.4)	96.6	230 (2.9)	92.3	1.01 (.01)	99.7	1.12 (.04)	96.9
High (33%)	143	376 (4.5)	95.7	216 (3.5)	98.6	132 (3.7)	38.6	167 (4.7)	88.1	302 (4.8)	90.8	1.08 (.05)	1.4	1.48 (.11)	12.1
Low (75%)	324	271 (4.6)	93.4	162 (2.0)	95.3	105 (0.6)	98.6	96 (2.4)	97.2	235 (2.4)	91.6	1.01 (.01)	99.7	1.15 (.04)	98.4
High (25%)	108	383 (4.9)	95.5	223 (4.1)	95.6	139 (4.5)	31.0	179 (5.5)	90.3	310 (5.7)	91.7	1.07 (.06)	1.9	1.53 (.13)	13.2

examined range from 50 percent high/50 percent low (based on the weighted frequency distributions) to 25 percent high/75 percent low for males, and from 67 percent high/33 percent low to 25 percent high/75 percent low for females. In addition, for each cutoff score an indicator of "discriminatory power" is provided in the form of the percentage of cases classified "low" with an index value below the mean for those classified "high" and the percentage of cases classified "high" with an index value above the mean for those classified "low." As shown in Table C-3, the "power of discrimination" for each of the alternative cutoff points is excellent for all of these measures, except for the highly-skewed POW item. Moreover, the rounded actual means (tabled means divided by 100) are identical for all of these comparisons, except for Exposure to Combat (CBT), where the 75/25 split is somewhat better than the others, indicating a typical response of "rarely" versus "often" for the low and high groups, respectively.

For women, Table C-4 indicates somewhat greater variability among the several cutoff scores, with a comparison of the rounded actual means indicating that the "low threshold" cutoffs (33/67 and 40/60) do slightly better than the others on Exposure to Enemy Fire (EEF), while the 50/50 cutoff does somewhat better at distinguishing cases "low" and "high" on Exposure to Wounded and Dead (EWD). However, the rounded actual means for the former (EEF) indicate a typical response of "never" versus "rarely," while for the latter (EWD) they reflect an average difference of "rarely" versus "often." By contrast, a comparison of the percentages indicating discriminatory power suggests that a cutoff score reflecting 60 percent "low" versus 40 percent "high" might be preferable.

Although these analyses were not nearly as definitive as we had anticipated, they suggested a cutoff score in the 75/25 range for males and the 60/40 range for females. In a further effort to ensure that "highs" would really be "high" and "lows" low, two more direct alternative summary measures of war zone stress exposure were derived, one for males and one for females. For males, a case was defined as "high" if any one of the following cutoff scores was equaled or exceeded:

(1) Exposure to Combat (350, mean between "sometimes" and "often")

(2) Deprivation (350)

(3) Exposure to Abusive Violence and Related Conflicts (250)

(4) Prisoner of War (Yes)

For females, a case was defined as "high" if any one of the following cutoff scores was equaled or exceeded:

(1) Exposure to Wounded and Dead (350)

(2) Deprivation (350)

(3) Exposure to Enemy Fire (250, mean between "rarely" and "sometimes")

(4) Exposure to Abusive Violence (250)

(5) Direct Combat Exposure (200)

(6) POW (Yes)

In each case, those who did not meet any of these criteria were classified as "low."

The weighted distributions for these "alternate" measures of war zone stress exposure are 20.7 percent "high" and 79.3 percent "low" for men and 37.8 percent "high"/62.2 percent "low" for women. Given these distributions, it was assumed that a cutoff score on the war zone factor score in the 67/33 or 75/25 range for males and 50/50 or 60/40 range for females would be required to capture those cases classified "high" on these alternate measures. The relationships between these different measures of war zone stress are presented in Table C-5. For males, a cutoff score of 75 percent "low" and 25 percent "high" results in a distribution whereby 92 percent of those classified as "high" on the alternative measure are also classified "high" on the factor-based measure, compared to less than eight percent of those classified as "low." For women, the choice is less straightforward, but the balance achieved by the 60/40 measure appears preferable to a minimization of "false negatives" at the expense of "false positives" when a 50/50 split is used. With a cutoff score of 60 percent "low" and 40 percent "high," 87.5 percent of those classified "low" on the alternate measure and 84.8 percent of those classified "high" are similarly categorized on the war zone factor measure. As a result of these analyses, it was decided that the general measure of war zone stress to be used in the NVVRS would be

Table C-5
Relationships (Weighted) of Alternate Measure of War Zone Stress Exposure to the Primary War Zone Stress Factor Score Using Alternative High-Low Cutoff Scores

War Zone Stress Factor Cutoff Scores	Unweighted N	Alt. War Zone Stress Exposure (Row %) Low-Moderate	High	Total	Alt. War Zone Stress Exposure (Col. %) Low-Moderate	High
MALES:						
War Zone 67						
Low (67%)	677	99.1 (0.5)	0.9 (0.5)	100.0	83.7 (1.6)	3.1 (1.5)
High (33%)	512	39.3 (3.2)	60.7 (3.2)	100.0	16.3 (1.6)	96.9 (1.5)
Total	--	--	--	--	100.0	100.0
War Zone 75						
Low (75%)	783	97.6 (0.7)	2.4 (0.7)	100.0	92.1 (1.2)	8.8 (2.3)
High (25%)	406	24.9 (3.3)	75.1 (3.3)	100.0	7.9 (1.2)	91.2 (2.3)
Total	--	--	--	--	100.0	100.0
Unweighted N	1,189	--	--	--	843	346
FEMALES:						
War Zone 50						
Low (50%)	217	93.9 (1.6)	6.1 (1.6)	100.0	75.8 (2.7)	8.1 (2.1)
High (50%)	215	30.2 (3.2)	69.8 (3.2)	100.0	24.2 (2.7)	91.9 (2.1)
Total	--	--	--	--	100.0	100.0
War Zone 60						
Low (60%)	262	90.5 (1.8)	9.5 (1.8)	100.0	87.5 (2.1)	15.2 (2.8)
High (40%)	170	19.5 (3.1)	80.5 (3.1)	100.0	12.5 (2.1)	84.8 (2.8)
Total	--	--	--	--	100.0	100.0
Unweighted N	432	--	--	--	270	162

the 25 percent "high" cutoff for men and the 40 percent "high" cutoff for women. However, the "alternate" measure was also retained, so that relationships between war zone stress and certain key outcome measures could be examined with both measures, to assure that such relationships are not measure-specific.

In addition, since the derived measure of war zone stress exposure is based solely on self-report measures, it was important to examine this measure in relation to somewhat more objective indicators to independently establish its validity. Thus, relationships between this measure and several indicators abstracted from military records were examined, as shown in Table C-6. The first indicator is based on a recoding of the primary military occupation (MOS) at discharge into those regarded as "tactical" (for example, infantry, armor, artillery, combat engineering) or "nontactical" (cf. Centers for Disease Control Vietnam Experience Study, 1988a). It is important to note that occupations in this category necessarily vary somewhat by branch of service and for officers as opposed to enlisted men. Moreover, because it is an indicator of MOS at discharge (rather than the "primary" or "duty" MOS while in Vietnam) and because of the nature of the Vietnam war, this is at best a crude indicator of potential exposure to war zone stress. Nevertheless, the relationships observed, especially for Army and Marine Corps enlisted men, provide relatively strong support for the validity of the war zone stress measure. Similarly, for women, a distinction between nursing and non-nursing occupations is strongly related to the war zone stress measure. The third indicator represents a slightly more sophisticated recoding of the MOS at discharge for men, recognizing that certain military occupations, though officially "nontactical," carry with them a higher than average risk of exposure to war stress. Thus, in addition to those with a tactical MOS, certain others were coded "high" (for example, medical corpsmen, graves registration personnel) while several others were elevated to "moderate" (for example, radio telephone operators, track mechanics, field wiremen). This revised "MOS by Probability of Exposure" variable bears a strong relationship to the self-report war zone stress measure. Similarly, each of the remaining record indicators is related to war zone stress in a consistent and predictable manner for males: those in the Army and Marine Corps report higher levels of war zone stress, as do those who received a

Table C-6

Relationships of Selected Military Record Indicators and the Self-Report Measure of War Zone Stress Exposure

Indicator	Males			Females		
	Unweighted N	% High Stress Exp.	Std. Error	Unweighted N	% High Stress Exp.	Std. Error
Military Occupation (MOS) at Discharge (By Rank and Service)						
Army Enlisted Tactical	248	52.3	(4.7)	---	----	---
Army Enlisted Nontactical	394	23.7	(2.8)	---	----	---
Army Officer Tactical	16	32.1	(12.4)	---	----	---
Army Officer Nontactical	18	7.5	(7.2)	---	----	---
Air Force Enlisted Tactical	1	----	---	---	----	---
Air Force Enlisted Nontactical	138	11.1	(3.2)	---	----	---
Air Force Officer Tactical	8	----	---	---	----	---
Air Force Officer Nontactical	4	----	---	---	----	---
Marine Enlisted Tactical	104	63.6	(8.3)	---	----	---
Marine Enlisted Nontactical	58	30.5	(8.0)	---	----	---
Marine Officer Tactical	3	----	---	---	----	---
Marine Officer Nontactical	1	----	---	---	----	---
Navy Enlisted Tactical	22	22.9	(10.3)	---	----	---
Navy Enlisted Nontactical	166	8.8	(2.6)	---	----	---
Navy Officer Tactical	3	----	---	---	----	---
Navy Officer Nontactical	7	----	---	---	----	---
Nursing MOS (Females Only)						
Non-Nurse	---	----	---	70	17.1	(4.6)
General Nursing	---	----	---	122	40.4	(4.9)
Nursing Specialist	---	----	---	240	46.0	(3.3)
MOS By Probable Exposure to War Zone Stress (Males)						
Low	619	13.5	(1.7)	---	----	---
Moderate	168	32.9	(4.7)	---	----	---
High	402	49.8	(3.8)	---	----	---

Table C-6 (Continued)

Indicator	Males			Females		
	Unweighted N	% High Stress Exp.	Std. Error	Unweighted N	% High Stress Exp.	Std. Error
Branch of Service at Discharge						
Air Force	151	10.4	(2.9)	58	26.6	(6.3)
Army	673	31.2	(2.4)	300	43.5	(2.9)
Navy or Coast Guard	199	9.9	(2.5)	22	47.5	(10.8)
Marine Corps	191	48.6	(5.8)	3	----	---
Received Combat Medal						
Yes	398	43.0	(3.8)	77	41.4	(5.7)
No	814	19.9	(1.8)	304	40.9	(3.0)
Received Purple Heart						
Yes	205	70.3	(5.7)	2	----	---
No	1007	21.5	(1.6)	379	40.7	(2.6)
Service Connected Physical Disability						
None	951	23.7	(1.7)	352	39.0	(2.7)
Low (0-20%)	158	36.1	(5.7)	31	48.4	(9.1)
High (30-100%)	110	41.0	(6.6)	49	42.2	(7.2)
Year Began 1st Vietnam-Related Tour						
1965 or earlier	161	19.2	(3.8)	19	44.5	(11.6)
1966	167	26.5	(4.3)	40	30.0	(8.1)
1967	269	28.7	(3.8)	68	43.3	(6.1)
1968	244	30.5	(3.9)	94	46.3	(5.2)
1969	177	38.3	(4.8)	82	37.5	(5.5)
1970	121	16.0	(4.1)	78	41.2	(5.7)
1971 or later	68	3.6	(2.6)	51	32.4	(6.7)

combat medal and/or Purple Heart, those receiving a service connected disability from the VA, and those beginning their Vietnam tour during the years of peak combat activity. Since each of these is less relevant to the situation of females serving in Vietnam, the lack of consistent relationships on these variables for women is not surprising.

Finally, Table C-7 shows the proportions of Vietnam theater veterans in each subpopulation who are classified as high or low on the primary and alternate war zone stress dichotomies. On either measure, white/other males serving in the Vietnam theater report significantly lower levels of exposure to war zone stress than either black or Hispanic males, while the latter do not differ significantly from each other. The distributions are presented for all female theater veterans because sample sizes do not allow for comparisons among racial/ethnic subgroups. In particular, since the war zone stress measures for males and females are based on almost entirely different component measures and different cutoff scores based on the weighted distributions within these two samples, comparisons between theater veteran men and women on their relative levels of exposure to war zone stress are clearly inappropriate.

Table C-7

Percent Distribution on Two Dichotomous Measures of War Zone Stress for Vietnam Theater Veterans, by Subgroup

Theater Veterans	Sample Size	War Zone Stressor Exposure		War Zone Stressor Exposure (Alt.)	
		Low-Moderate	High	Low-Moderate	High
1. Males					
a. White/Other	597	77.1	22.9	81.2	18.8
		(1.9)	(1.9)	(1.7)	(1.7)
b. Black	312	62.6	37.4	69.6	30.4
		(3.0)	(3.0)	(2.8)	(2.8)
c. Hispanic	280	67.3	32.7	71.4	28.6
		(3.9)	(3.9)	(3.9)	(3.9)
2. Females	432	60.1	39.9	62.2	37.8
		(2.4)	(2.4)	(2.4)	(2.4)

Contrasts	χ^2	df	p	χ^2	df	p
1a vs. 1b	16.55	1	.000	12.09	1	.001
1a vs. 1c	5.01	1	.025	5.31	1	.021
1b vs. 1c	0.90	1	.342	0.14	1	.721

APPENDIX D

Assessment of Post-Traumatic Stress Disorder in the NVVRS

Appendix D:

Assessment of Post-Traumatic Stress Disorder in the NVVRS

I. PRELIMINARY VALIDATION STUDY

A. Purpose

A preliminary validation study of candidate PTSD measures was included in the NVVRS because, at the time the study was being designed, there was no validity information about any existing PTSD instruments. That is, there had been no research showing that any of these instruments could distinguish true PTSD cases from noncases. Therefore, before launching the NVVRS national survey interview sample component (the National Survey of the Vietnam Generation--NSVG), it was necessary to document the relationship between candidate PTSD instruments and true PTSD caseness.

The preliminary validation study was designed to be the first step in a double-validation strategy for NVVRS PTSD measures. The purpose of the first step was to identify one or more self-report measures of PTSD that could be used as the basis for making PTSD diagnostic decisions in the NSVG. The study was conducted with clinical subjects (that is, people undergoing psychiatric treatment), since, in principle, use of such subjects permits a more pure "gold standard" diagnosis. Demonstration that the instruments could distinguish true PTSD cases from noncases in a clinical setting was a necessary, but not sufficient, condition for establishing the validity of the measures in the community (that is, non-treatment seeking), the context in which these measures were ultimately to be used. The second step in the validation process was the clinical interview subsample component of the NVVRS, which was conducted concurrent with the NSVG and designed to provide information about the ability of the instruments to distinguish PTSD cases from noncases in a community sample. Thus, the question addressed by the preliminary validation study was: can any of a set of self-report PTSD measures adequately distinguish patients

with PTSD from patients with other psychiatric disorders and from nonpatients who have no psychiatric disorder?

B. Study Methods

The design of the preliminary validation study involved administering a package of candidate instruments to groups of subjects whose diagnostic composition was known. The study was designed as a quasi-experiment in which two factors were manipulated: (1) the presence or absence of the diagnosis of PTSD, and (2) the presence or absence of one or more other psychiatric disorders. We selected a two-way design because of the need to be certain that the survey instrumentation was sensitive and specific enough to be able to detect PTSD both when it occurs by itself (that is, with no concurrent diagnoses) and when it occurs in the presence of other psychiatric disorders. That is, the instrument must be capable of differential diagnosis. This design is represented schematically in Exhibit D-1, which defines four distinct diagnostic subgroups: (1) persons who meet the DSM-III-R criteria for PTSD and who meet the criteria for one or more concurrent (Axis I) diagnoses; (2) persons who meet the DSM-III-R criteria for PTSD and who have no other concurrent psychiatric diagnosis; (3) persons who do not meet the DSM-III-R criteria for PTSD but who do have one or more other psychiatric diagnoses; and (4) persons who meet the criteria for no current (Axis I) diagnosis (and never have for PTSD).

An important aspect of the design of any validation study is the procedure by which the criterion is operationalized. In this instance, the criterion is the presence or absence of PTSD, and an elaborate procedure was implemented to "certify" the PTSD diagnosis. Except for the "no diagnosis" group, study subjects were recruited from among the patient populations at participating service facilities at eight sites: (1) Tampa, FL; (2) Boston, MA; (3) Cleveland, OH; (4) Philadelphia, PA; (5) Jackson, MS; (6) Denver, CO; (7) San Francisco, CA; and (8) Portland, OR. A "site" represented a geographical area (for example, Denver, CO), and service agencies participating at the sites included VA Medical Centers, Veterans Outreach Centers, community mental health centers, and

EXHIBIT D-1

NVVRS Preliminary Validation Study Design:

A Quasi-Experiment Involving Two Factors:

		Other Psychiatric Disorder	
		Present	Absent
PTSD	Present		
	Absent		

The four cells of the design are operationally defined as follows:

(1) PTSD present, other Axis I disorder present - Person currently meets the DSM-III-R criteria for PTSD and for one or more other DSM-III Axis I disorders.

(2) PTSD present, other Axis I disorder absent - Person currently meets the DSM-III-R criteria for PTSD but does not currently meet the criteria for any other DSM-III Axis I disorder.

(3) PTSD absent, other Axis I disorder present - Person never met the DSM-III-R criteria for PTSD but does currently meet the criteria for one or more other DSM-III Axis I disorders.

(4) PTSD absent, other Axis I disorder absent - (This group was recruited from the community with the assistance of local veteran organizations, not from patient populations) - person never met the DSM-III-R criteria for PTSD and does not currently meet the criteria for any other DSM-III Axis I disorder.

contract providers (private providers holding contracts with the VA to provide services).

The procedure for recruiting subjects into the study involved "nomination" by staff clinicians at participating agencies of persons from among their caseloads who fit the definitions of the study groups (subjects for the "no disorder" group were recruited through contacts with local veterans organizations). Before being accepted into the study, potential subjects underwent a structured clinical interview with an independent expert clinician who was blind to the chart diagnosis in order to "certify" the diagnosis. The interview was the Structured Clinical Interview for DSM-III-R (SCID), and participating expert clinicians were trained in its use in a three-day session conducted by Drs. Robert Spitzer and Janet Williams, the developers of the SCID.

Cases in which the independent clinical interview diagnosis agreed with the chart diagnosis were accepted into the study. Cases in which the diagnosis differed were subjected to an elaborate "adjudication" procedure and were accepted only if diagnostic agreement could be obtained. The adjudication procedure involved review of treatment records by the interviewing clinician, discussions between interviewing and treating clinicians, and when necessary, a review of all case material by a third clinician. Most disagreements resulted from under-diagnosis on the part of the treating clinician. For example, the chart might reflect the clinician's diagnosis of PTSD, since that was the focus of treatment, but the person might also have formally met the diagnostic criteria for another disorder, such as dysthymic disorder or generalized anxiety disorder. Ultimately, 243 subjects were certified for participation in the study.

Subjects certified for inclusion underwent a five-hour interview by an experienced (nonclinical) survey research interviewer. This interview covered subjects' military experience, history of psychiatric symptoms, history of health and mental health service utilization, and related topics. The interview contained four measures that were aimed at identifying PTSD: (1) a fully structured diagnostic PTSD interview (D-PTSD) developed by the research team in the style of the Diagnostic Interview Schedule (DIS), aimed at assessing the criterion symptoms of PTSD, (2) a checklist of PTSD symptoms, (3) the Mississippi Scale for

Combat-Related PTSD (M-PTSD; Keane, Caddell, & Taylor, 1988) and (4) the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979). Additionally, subjects were asked to complete form AX of the Minnesota Multiphasic Personality Inventory (MMPI), which provided the Fairbank-Keane PTSD scale (Keane, Malloy, & Fairbank, 1984). A total of 225 (93 percent) of the certified subjects completed the survey interview, and 130 (58 percent) also completed the MMPI. The response rate for the MMPI was substantially lower than for the interview itself because it was a "leave behind"--that is, upon completion of the survey interview the interviewer left it with the respondent with instructions to complete it and mail it back in its postpaid envelope. It was decided to handle the MMPI in this fashion to reduce somewhat the burden on respondents.

C. Study Findings

Exhibit D-2 presents selected demographic characteristics for the total study sample and for cases and noncases of PTSD separately. Virtually all subjects were male Vietnam theater veterans; they were mostly white (about 80 percent) and mostly in their late thirties to early forties (mean age about 39). The majority were currently married (about 56 percent) and currently working (about 60 percent). Most enlisted in the armed forces (75 percent) and served in the Army (60 percent) or the Marine Corps (about 25 percent). About half characterized their Vietnam service as "mostly combat," while more than 40 percent described it as "mostly combat support."

Exhibit D-3 shows the classification results for the five candidate measures included in the study, using the final clinical diagnosis as the criterion. The predictive validity of each candidate PTSD measure was assessed in terms of: (1) the percent of subjects correctly classified as having or not having PTSD; (2) the Kappa statistic, a chance-corrected index of the agreement between two assessments; (3) sensitivity, or the percent of true cases classified as positive by the survey measure; and (4) specificity, or the percent of true noncases classified as negative by the survey measure. As indicated, all of the candidate measures performed reasonably well, with the M-PTSD Scale and the D-PTSD providing the best prediction of the certified clinical diagnosis.

Exhibit D-2

Selected Characteristics of NVVRS Validation Pretest Sample, by PTSD Diagnosis

Characteristic	Total Sample (N=210)	PTSD Cases (N=137)	Non-PTSD Subjects (N=73)
Sex			
% Male	98.1	100	94.5
Age			
Male	38.5	37.7	39.8
Race			
% White	81.4	81.0	82.2
% Black	16.2	17.5	13.7
Hispanic Origin			
% Hispanic	4.3	4.4	4.1
Marital Status			
% Married	56.2	55.5	57.5
% Divorced	25.7	26.3	24.7
Employment Status			
% Working	60.9	51.9	77.8
Entrance into Military			
% Drafted	25.1	26.3	22.9
Branches Served In			
% Army	59.1	61.2	55.3
% Navy	9.3	8.6	10.5
% Air Force	8.8	3.6	18.4
% Marines	22.8	26.6	15.8
Rank			
Enlisted	91.4	94.2	86.3
Disciplinary Action			
% Ever	43.1	47.8	34.3
% Article 15	35.7	38.7	30.1
% Court Martial	10.5	11.0	9.6
Number of Tours			
% One	82.4	81.0	84.9
% Two	13.8	14.6	12.3
% More than Two	2.9	2.9	2.7
Duty Status			
% Combat	47.1	54.9	32.9
% Combat Support	43.2	42.1	45.2
% Service Support	9.7	3.0	21.9

Exhibit D-3

Relative Diagnostic Accuracy of PTSD Measures

Measure	Percent Correctly Classified	Kappa	Sensitivity	Specificity
M-PTSD Scale	88.9	.753	94.0	79.7
D-PTSD Scale (sum of positive items)	87.5	.714	95.5	72.6
PTSD Checklist	84.9	.672	88.3	78.9
D-PTSD Scale (using DSM-III-R rules)	83.5	.639	87.2	72.6
MMPI (Fairbank-Keane Scale)	81.5	.605	90.1	68.8
Impact of Event Scale	81.6	.565	91.7	61.8

Legend:

Percent Correctly Classified is the percent of the entire sample (true cases and true noncases) that are correctly classified by the survey measure.

Kappa is a measure of the extent of agreement between two assessments corrected for the effects of chance. (Kappas above .75 are considered to indicate excellent agreement, those between .40 and .75 fair to good agreement, and those below .40 poor agreement.)

Sensitivity is the percent of "true" cases that are classified as cases by the survey measure.

Specificity is the percent of "true" noncases that are classified as noncases by the survey measure.

On the basis of findings from this preliminary validation study, we made certain decisions about instrumentation for the National Survey of the Vietnam Generation. First, we included both the M-PTSD and the D-PTSD in the survey interview. This provided two assessments of PTSD, and allowed PTSD prevalence to be estimated separately for theater veterans, era veterans, and civilian counterparts (the "standard" M-PTSD contains many items that refer specifically to experiences that occurred when the respondent was in the military, and consequently is not suited for use with a civilian population). Second, we included the MMPI as part of the Clinical Interview Subsample component of the NVVRS. This component involved semistructured clinical interviews conducted by experienced mental health professionals with samples of both Vietnam theater and era veterans. The selection of the subsample was based on responses to the survey interview and included persons who appeared, on the basis of their survey responses, to be PTSD cases and persons who appeared to be noncases.

II. NVVRS PTSD DIAGNOSTIC PROCEDURES

This section provides details on the logic and implementation of the procedures for making PTSD diagnostic decisions in the clinical subsample component of the NVVRS. The following parts describe the design of the clinical subsample component, the underlying logic and the results of the composite diagnosis procedure. They also provide comparisons of the composite diagnoses with those that would have resulted from some alternative diagnostic decision rules.

A. Clinical Subsample Design

The NVVRS clinical subsample was designed to collect information that would allow us to improve the accuracy of the study's estimates of PTSD prevalence. The basic idea was to select a subgroup of the NVVRS survey interview sample with whom we would conduct a more thorough, and therefore in principle a more accurate, diagnostic assessment. This more thorough assessment comprised multiple PTSD measures, including a semistructured, diagnostic interview conducted by a mental health professional experienced

in the diagnosis and treatment of PTSD. The findings of this more thorough assessment would be used to "calibrate" survey-based findings.

The implementation of a followup clinical interview in a study in which the initial sample is geographically scattered presents certain logistical problems. In principle, the strongest design might have been to select subjects for followup interviews without regard to their geographical location. However, this would have required sending experienced mental health professionals all over the country to conduct the interviews, greatly expanding the amount of the professional's time that was required to conduct the interview without improving the quality of the interview. This increase in time (and therefore cost) was seen as undesirable. Alternatively, subjects could have been asked to travel to a specific site where all clinical subsample interviews would be conducted, as they did when CDC conducted physical examinations for the Vietnam Experience Study. Instead, a compromise plan was developed, in which the clinical subsample would be drawn from among those survey interview respondents who lived within reasonable commuting distance of 28 specific locations across the country. The locations were selected to maximize the proportion of the Vietnam theater veteran population that would be covered by the subsample, and, in each of the locations, a mental health professional experienced in the diagnosis and treatment of PTSD was recruited to conduct the interviews. More than 40 percent of Vietnam theater veterans met this geographical criterion and were therefore eligible for inclusion in the clinical subsample.

A total of 30 mental health professionals conducted NVVRS clinical interviews. The criteria for selection of clinical interviewers were: (1) doctoral-level training in one of the core mental health professions [24 of those selected were clinical psychologists, five were psychiatrists, and one a doctoral-level nurse], (2) a license to practice in their state, (3) at least five years of clinical practice experience, (4) experience in the diagnosis and treatment of PTSD, and (5) no current affiliation with a Veterans Administration treatment program. All interviewers were trained in the use of the Structured Clinical Interview for DSM-III-R (SCID) by either the developers of the SCID or the NVVRS clinical co-principal investigators, all of whom had extensive past experience in using the SCID. In addition, all clinical interviewers were provided with a detailed

written protocol for conducting the clinical interview component of the study, along with a detailed user's guide for the PTSD module of the SCID. All clinical interviews were conducted blind to the results of the survey interview.

Since a key purpose of the clinical subsample was to distinguish true PTSD cases from true noncases, it was important that the subsample contain adequate numbers of both likely PTSD cases and likely noncases. Therefore, we developed a stratification procedure for selecting the sample, guided by findings from the preliminary validation study. Under this procedure, we selected all eligibles who appeared on the basis of their survey interview responses to be cases of PTSD, and a sample of those who appeared to be noncases. The sample of noncases was further stratified to maximize the likelihood of capturing false negatives (that is, persons who appeared to be noncases on the basis of survey interview information, but who were truly PTSD cases), by oversampling those with high scores on an index of exposure to combat and those reporting high nonspecific psychological distress. We selected a total of 403 Vietnam theater veterans were selected for the clinical subsample under these rules, and interviewed 344 (85.4 percent).

The original NVVRS design called for clinical interviews to be conducted only with Vietnam theater veterans. However, analyses conducted for the NVVRS preliminary report suggested that the false-positive rate (that is, the proportion indicated by the scale to be PTSD cases who are in fact noncases) of the M-PTSD scale, which plays a critical role in formulating population prevalence estimates for era veterans and civilians, might be much higher among era veterans than theater veterans. If this were the case, then any comparison of PTSD prevalence rates among theater and era veterans based on the M-PTSD scale would be confounded by the nonequivalent measurement errors and might provide misleading results. Therefore, it was decided that information about the diagnostic error rates for the M-PTSD scale and other measures among era veterans was critical to the ultimate credibility of the study's findings. Consequently, a clinical subsample of era veterans was selected and fielded. Following rules analogous to those used to select theater veterans, we selected 116 era veterans for the subsample, and interviewed 96 (82.8 percent).

B. Logic and Implementation of the Composite Diagnosis Procedure

1. Statement of the Problem

The clinical subsample was designed to provide multimethod, multisource information that would support careful PTSD diagnostic decisions. Exhibit D-4 summarizes the PTSD indicators that were collected for clinical subsample respondents.

Given this rich data base, the problem was how to use the available information to maximize the accuracy of the PTSD diagnoses for the clinical subsample respondents. First, among the indicators taken individually, the research team had the highest confidence in the diagnosis made by a trained, experienced mental health professional based on a structured, diagnostic interview. However, we also recognized that some chance for error exists in any diagnostic procedure, and since we had the advantage of having multiple PTSD indicators available for clinical subsample respondents, we sought a procedure that could take advantage of convergence among indicators to increase confidence in the ultimate diagnosis. That is, if forced to use only one indicator, we would choose the clinical interviewer's diagnosis; however, we believe that confidence in the ultimate diagnosis is increased when multiple indicators concur in that diagnosis.

When using a multiple-indicator approach, the first step is to review carefully all available PTSD indicators for each respondent. When the various PTSD indicators for a given individual all agree on the diagnosis, then the diagnostic decision is clear. Complications arise, however, when the indicators disagree. When this is the case, some additional diagnostic decision rules are required.

The "problem" that must be resolved for the multiple indicator approach is: how should PTSD diagnostic decisions be made for those subjects for whom there is diagnostic disagreement among the PTSD indicators? To conduct a second clinical interview, or a full clinical review of all existing case material to "adjudicate" discrepant cases, are two among many possible solutions to this problem. However, after careful consideration of both the scientific and pragmatic issues involved, the NVVRS research team selected a method that makes more complete use of the data that were

Exhibit D-4

PTSD indicators available for clinical subsample respondents

Name	Description	Type	Source
M-PTSD	Mississippi Combat-Related PTSD Scale	Booklet self report	Survey interview
MMPI-PTSD	MMPI PTSD Scale (Fairbank-Keane Scale)	Booklet self report	Clinical interview
SCIDX	PTSD diagnosis from the SCID interview	Clinician judgment based on self report	Clinical interview
SXCTCURR	Number of PTSD symptoms reported as having occurred within the past 6 months	Interview self report	Survey interview
SRRS_INT	Intrusion subscale of the Stress Response Rating Scale--assesses the presence of signs/symptoms of intrusive thoughts	Clinician judgment based on observation	Clinical interview
SRRS_AVD	Avoidance subscale of the Stress Response Rating Scale--assesses the presence of signs/symptoms of avoidance	Clinician judgment based on observation	Clinical interview
SRRS_REA	Reactivity subscale of the Stress Response Rating Scale--assesses the presence of signs/symptoms of psychological reactivity	Clinician judgment based on observation	Clinical interview
IES_INT	Intrusion subscale of the Impact of Event Scale--assesses the presence of signs/symptoms of intrusive imagery during R's self-selected worst period	Booklet self-report	Clinical interview
IES_AVD	Avoidance subscale of the Impact of Event Scale--assesses the presence of signs/symptoms of avoidance during R's self-reported worst period	Booklet self-report	Clinical interview
ASSES_SC	Global Assessment Scale--assesses overall level of psychosocial functioning	Clinician judgment based on observation	Clinical interview

already available. This method is called a "composite diagnosis" procedure because it combines information from a variety of sources in the diagnostic decision.

2. Logic of the Composite Diagnosis Procedure

The NVVRS composite diagnosis procedure was founded upon certain assumptions about the PTSD indicators. The most fundamental of these assumptions is that there is some degree of error associated with every indicator--that is, none of the indicators is infallible. Second, although the degree of error associated with each of the indices is not known with certainty, it is possible to divide the indicators into "primary" and "secondary" groups on the basis of the degree of confidence that can be placed in each. We considered the M-PTSD scale, the MMPI PTSD scale, and the clinical interview PTSD diagnosis to be the clinical study's primary indicators.

We granted these indicators "primary" status because we have validity information about them from the NVVRS preliminary validity study and, in the case of the M-PTSD and MMPI PTSD scales, from other sources in the research literature. In addition, we found them to be reliable as well. The internal consistency coefficient (Cronbach's alpha) for the M-PTSD scale in the NVVRS sample was .935, while the split-half reliability for the MMPI PTSD scale, corrected for attenuation, was .944 (raw coefficient=.894). Thus the psychometrically-based indicators showed good internal consistency.

Reliability of the clinical interview (SCID) PTSD diagnoses was assessed in two ways. First, audio tapes of all SCID interviews were reviewed by at least one of the clinical co-principal investigators, and instances in which the reviewer noted either a clerical or clinical error were reviewed by all three. These reviews resulted in changing the SCID PTSD diagnosis for 10 of the 437 subjects (2.3 percent; five diagnoses changed from negative to positive, and five from positive to negative). Second, a formal reliability study of the clinical interview PTSD diagnosis, involving blind rescoring of the interview by a clinical co-principal investigator listening to the audiotape, indicated high reliability of the SCID interview PTSD diagnoses (Kappa=.933; details of

the quality control reviews and reliability study of the SCID PTSD diagnosis are provided in section III of this Appendix).

The composite diagnosis procedure began by considering any subject for whom the three primary indicators were in complete agreement--that is, all three indicated that the person is a current PTSD case or all three indicated that the person is not a current PTSD case--to be "settled" (decided). For the remainder of the subjects, there was some level of discrepancy among the three primary indicators, and additional rules for case determination had to be developed for these cases.

Given that a second clinical examination or a full clinical adjudication on all discrepant cases was not feasible, we reasoned that the "best" way of settling the discrepancies was to devise a method that mirrored as closely as possible the process of clinical decisionmaking. We further reasoned that what a good clinician seeks to do, when faced with discrepant primary diagnostic indicators, is to bring additional information to bear on the diagnostic decision. Therefore, we sought a reliable way of integrating into the decisionmaking process information contained in our secondary PTSD indicators.

Since we were uncomfortable with affording any of the individual secondary indicators equal status with the primary indicators, we sought a way of combining information from the secondary indicators. That is, we sought a method by which information from two or more secondary indicators could be combined to produce diagnostic decisions that were more accurate than decisions based on the individual indicators. We reasoned that clinical decisions about specific cases are based on past experience with "known" cases--that is, by comparing the characteristics of a given case with characteristics of "known" cases seen in the past. Since we had available the best set of PTSD cases and noncases ever assembled--the subset for which our three primary indicators completely agreed--we reasoned that we should use that information to our advantage. We could do this by examining whether the information contained in our secondary indicators could be combined in such a way that it would correctly classify the subset on which the primary indicators completely agreed. That is, we asked whether the information in the secondary indicators would tell us the same thing about the presence or absence of PTSD that the three primary indicators told us when they all agree. If so, we could confidently use

that information to determine case where there was some discrepancy among the three main indicators.

Following this logic and using logistic regression as our method for combining indicators, we found that information from two of our secondary indicators could be combined to produce a diagnostic prediction that agreed with the unanimous diagnosis of the three primary indicators 97.3 percent of the time (90.2 percent sensitivity, 98.9 percent specificity; model multiple R=.882). The two indicators were the score on the SRRS intrusion subscale (a clinical judgment of the presence of symptoms of intrusive imagery, which many clinicians see as the hallmark of PTSD) and the number of current PTSD symptoms reported by the respondent in the survey interview. Because these indicators were both central to the PTSD diagnosis and were collected through different methods, we saw them as evidence of the construct validity of the combination.

We decided to apply this method to all subjects in the clinical subsample, and to treat the diagnosis resulting from this combination as a "fourth" primary indicator. Further, we adopted a decision rule for case determination that considered as diagnostically settled all subjects for whom all four indicators agreed on the diagnosis and all subjects for whom three of the four indicators were in agreement.

The one exception to the "three out of four" rule included cases where the diagnosis from the "combined" indicator differed strongly (operationally defined as probability of caseness less than .25 or greater than .75) from the unanimous diagnosis of the three primary indicators. These subjects were left as "unsettled" at this stage, to assure that they were not being settled prematurely. Also unsettled was the group of subjects for whom the four indicators split evenly (two indicating that the subject was a PTSD case and two indicating that he or she was not a case). We searched for yet another method for making case determinations for these most seriously discrepant subjects.

Since our first combination of secondary indicators "used up" only part of the information from the secondary indicators, we recognized that there was still considerable information about PTSD available that we had not yet been brought to bear in the case determination process. Consequently, we sought a way to make use of this remaining information.

Remembering that the first model was based on an extremely "pure" gold standard (the "complete agreement" PTSD cases and noncases), we recognized that, as a result of application of a second decision rule (that settled the subjects for whom three of four indicators pointed in the same direction), we now had an expanded set of settled cases that could be viewed as a "new" gold standard. This set included the original, complete-agreement cases and the newly settled, three-out-of-four cases. We conceptualized this group as a second-generation gold standard, composed of the purest cases and noncases, plus a group of slightly less "pure" cases and noncases.[1] We sought a method of combining the remaining PTSD information to replicate the case-noncase distinction defined by this second-stage gold standard.

For the subjects that were considered settled at this point (that is, those for whom at least three of the four primary indicators agreed on the diagnosis) we examined whether the remaining secondary PTSD indicators could replicate the diagnostic decisions made by combining the four primary indicators. Again using logistic regression, we found that, by combining information from the indicators that had not yet been used, we could determine a diagnosis that agreed with the "settled" diagnosis 97.6 percent of the time (91.3 percent sensitivity, 98.8 percent specificity; model multiple R=.875). The indicators that contributed to this combination were the IES intrusion subscale, the Global Assessment Scale, indicators from the clinical interview that suggested that the person was a past (not

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1/ If PTSD "caseness" is conceptualized as a continuum of PTSD intensity on which a binary case/noncase distinction is imposed by the psychiatric taxonomy, then our first generation gold standard might be viewed as containing only persons at the extremes of the continuum: pure cases and noncases. Adding to this group a set of persons for whom the case/noncase distinction was somewhat less clearcut may then be seen as adding some persons who fall closer to the middle of the continuum but who are still distinct enough to be clearly differentiated as either cases or noncases with good confidence (very high sensitivity and specificity). While in one sense this may be seen as "diluting" the gold standard, we prefer to think of it as creating a gold standard that more accurately reflects the characteristics of real-world PTSD cases and noncases.

current) PTSD case or a "subclinical" case (had significant symptoms but not the full syndrome), and an indicator of theater vs. era veteran status. The fact that the indicators contributing to the combination again represented a combination of methods and sources of information was seen as evidence of the construct validity of the procedure.

Following our earlier logic, we applied this method to all of the subjects and treated the resulting diagnostic indication as a "fifth" primary indicator. Remembering that the only cases left unsettled at this point were those for which the first four primary indicators were split evenly (two-two), we adopted a rule that accepted as settled (in the direction that three of the five indicators pointed) those subjects for whom this fifth indicator provided a strong indication (operationally defined as before) that the subject either was or was not a PTSD case. This rule left as unsettled those subjects for whom the first four indicators were evenly divided and the fifth was not decisive. In principle, these are the most ambiguous cases, and we decided to make the case determination for these based on a thorough clinical review of all available interview material. Among the 437 clinical subsample respondents there were nine such cases (2.1 percent), and the composite diagnosis for these subjects was the clinician's diagnostic assessment. In addition, six subjects whose diagnostic status could not be settled by the composite diagnosis procedure, because one or more of the PTSD indicators was missing, were also settled via this clinical adjudication procedure. The clinical review was undertaken independently by two of the clinical co-principal investigators, and any discrepancies between these independent assessments were decided on the basis of a case conference of the three clinical co-principal investigators.

The results of this adjudication procedure were quite reassuring, given that these were the most ambiguous cases. First of all, there was complete agreement between both reviewing clinicians on the diagnosis of pre-military PTSD and post-military PTSD, which are more finely grained distinctions that we felt might be important in understanding potentially ambiguous cases. Thus, it is only with respect to PTSD resulting from military experience that the following results apply.

For nine of the 15 cases, the independent diagnosis of the two clinicians agreed perfectly. For the remaining six, there was only one

serious disagreement, where one reviewer made a diagnosis of current PTSD and the other reviewer's diagnosis indicated that the person was not a current case of PTSD. The other five non-agreements involved difficult threshold determinations where the disagreement was between whether the person had the full PTSD syndrome or only a partial (subclinical) syndrome (three cases), or between a partial syndrome and no significant current symptoms (two cases). The clinicians noted informally that the limiting factor in these difficult cases was the absence of dispositive information. Despite this, only one of the 15 cases led to a major disagreement.

C. Results of the Composite Diagnosis Procedure

A first question about the composite diagnosis process might be: how many subjects were settled at the different stages? For theater veterans, 48 percent (166/343) fell in the category of "complete agreement," and were thus immediately settled. An additional 21 percent (72/343) were settled by the "three or four out of four" rule, 26 percent (90/343) by application of the second-stage model, and 4 percent (15/343) by clinical adjudication.

Another perspective on the composite diagnosis procedure is provided in Exhibit D-5, which shows the distribution of diagnostic patterns of the five main indicators and the corresponding composite diagnosis. This shows that, for 57 percent (195 of 343) of theater veteran subjects, all five indicators agreed. For another 30 percent (102/343), four of the five indicators agreed with the composite diagnosis diagnosis, and for 12 percent (40/343) three of five agreed. The remaining six subjects had one of the five main indicators missing, and were settled on the basis of fewer than five indicators.

A third perspective on the composite diagnosis procedure is provided in Exhibits D-6 and D-7, which show the mean scores on a variety of PTSD variables, some of which were used in the composite diagnosis procedure and some of which were not, for PTSD cases (D-6) and noncases (D-7). Means are shown at each of three stages of the composite diagnosis procedure: (1) for the complete-agreement subjects, (2) for those settled by the "three or four of four" rule, and (3) for all subjects. The exhibits show clearly that, although the gap between the mean scores for PTSD cases and noncases narrows somewhat at each stage, the group means remain very different. For

Exhibit D-5

Distribution of 5-indicator patterns and correspondence with composite diagnosis (theater veterans only)

Pattern[1]	Composite PTSD Diagnosis: 0	1	Total Frequency
00000	163	0	163
00.00	16	0	16
00100	13	0	13
10000	13	0	13
10100	10	0	10
0000.	9	0	9
00010	5	0	5
00001	4	0	4
10010	3	0	3
0010.	2	0	2
00011	2	0	2
10.00	2	0	2
00.0.	1	0	1
00.01	1	0	1
0001.	1	0	1
00101	1	0	1
00110	1	0	1
00.1.	1	0	1
1100.	1	0	1
101..	1	0	1
01010	1	1	2
11000	2	1	3
10.10	1	1	2
01011	2	3	5
00111	1	1	2
10011	1	1	2
01.10	0	1	1
01.11	0	1	1
1101.	0	1	1
10101	0	1	1
01101	0	1	1
1011.	0	2	2
11010	0	2	2
11110	0	3	3
10110	0	4	4
11101	0	5	5
11011	0	5	5
11.11	0	6	6
10111	0	6	6
01111	0	7	7
11111	0	32	32
	258	85	343

1-Legend: 1=PTSD case
0=noncase
.=missing

Order of Indicators:
col 1=M-PTSD scale
col 2=SCID
col 3=MMPI PTSD scale
col 4=First stage model
col 5=Second stage model

Exhibit D-6

Mean Profiles for Theater Veteran Best Estimate Noncases on PTSD-Related Variables (Standard Deviations in Parentheses)

Variable	Complete Agreement Noncases (n=128)	Three or Four of Four Noncases (n=196)	Final Noncases (n=258)
M-PTSD scale	58.3 (10.9)	63.8 (14.0)	67.7 (16.6)
MMPI PTSD scale	3.3 (2.8)	5.2 (5.5)	6.3 (6.4)
SRRS intrusion subscale	1.1 (2.7)	1.7 (2.6)	2.7 (4.2)
D-PTSD current Sx	0.4 (0.9)	0.4 (0.8)	0.7 (1.6)
IES intrusion subscale	7.6 (7.9)	10.6 (9.1)	11.8 (9.3)
SRRS reactivity subscale	1.1 (3.0)	1.6 (3.2)	2.3 (4.2)
Global assessment scale	8.4 (0.8)	8.3 (0.9)	8.1 (1.0)
Spouse M-PTSD scale	57.4* (16.8)	59.5** (15.3)	62.0*** (17.3)
PERI demoralization scale	0.73 (0.5)	0.84 (0.5)	0.92 (0.6)
IES avoidance subscale	7.7 (8.8)	11.3 (10.2)	12.8 (10.4)
SRRS avoidance subscale	1.3 (2.6)	2.1 (3.7)	3.0 (5.4)
D-PTSD lifetime Sx	0.4 (0.9)	1.8 (2.6)	2.3 (3.0)
SCID lifetime Sx	1.7 (2.4)	3.8 (4.1)	4.6 (4.7)
SCID current Sx	0.6 (1.1)	1.5 (2.0)	2.0 (2.7)

*n=88
**n=131
***n=166

Exhibit D-7

Mean Profiles for Theater Veteran Best Estimate PTSD Cases on PTSD-Related Variables (Standard Deviations in Parentheses)

Variable	Complete Agreement PTSD Cases (n=38)	Three or Four of Four PTSD Cases (n=54)	Final PTSD Cases (n=85)
M-PTSD scale	114.3 (17.0)	107.8 (18.6)	103.4 (20.2)
MMPI PTSD scale	26.3 (6.9)	23.7 (8.8)	21.5 (9.1)
SRRS intrusion subscale	20.3 (11.2)	18.1 (10.6)	16.4 (10.0)
D-PTSD current Sx	5.9 (4.7)	5.4 (4.2)	4.2 (4.1)
IES intrusion subscale	25.6 (7.3)	24.9 (7.6)	25.0 (7.5)
SRRS reactivity subscale	15.7 (9.2)	15.2 (9.4)	13.2 (9.2)
Global assessment scale	6.0 (1.4)	6.2 (1.4)	6.4 (1.3)
Spouse M-PTSD scale	99.0* (19.3)	89.8** (24.4)	86.8*** (23.6)
PERI demoralization scale	2.12 (0.7)	1.99 (0.7)	1.82 (0.8)
IES avoidance subscale	27.7 (9.6)	27.9 (8.6)	27.1 (8.2)
SRRS avoidance subscale	17.2 (11.3)	16.0 (10.6)	14.4 (10.1)
D-PTSD lifetime Sx	8.7 (4.0)	7.9 (4.0)	7.0 (4.1)
SCID lifetime Sx	14.4 (2.6)	13.1 (4.0)	13.3 (3.7)
SCID current Sx	12.8 (3.1)	10.9 (4.7)	10.4 (4.4)

*n=26
**n=34
***n=56

example, the mean score for the spouse M-PTSD scale (the spouse's report of the veteran's PTSD symptoms) for all composite-diagnosis PTSD cases is 86.8, the mean for all noncases is 62.0 and, for the complete agreement cases, 99.0. This suggests that the PTSD cases and noncases are very different from one another at the aggregate level, both on variables that formed part of the basis of the composite diagnosis and on PTSD variables that are independent of the composite diagnosis process.

D. Comparison of DSM-III-R Clinical and Composite Diagnoses with Alternative Diagnostic Rules

The NVVRS research team recognized that the composite diagnosis procedure represents a departure from standard practice in epidemiologic research. Although we believe that this departure represents an improvement over standard practice, we felt it important to assess the impact of using the composite diagnosis on the study's diagnostic results. To do this, we compared the DSM-III-R clinical (SCID) diagnoses and the composite diagnoses with those resulting from several alternative decision rules. These alternatives included the separate diagnoses of the other two primary indicators, a "best two out of three" rule (that is, the diagnosis is decided in whichever direction at least two of the initial three primary indicators point), and a classification rule that gave preference among the three primary indicators to the diagnosis from the clinical interview (the SCID interview diagnosis was taken as always correct, and subjects for whom the other 2 indicators disagreed with the SCID were left undiagnosed as "possible cases"). This latter rule was referred to as the "SCID dominant" rule.

Exhibits D-8 and D-9 show the correspondence of each of these alternatives with the DSM-III-R clinical diagnosis (D-8) and the composite diagnosis (D-9) within the clinical subsample (unweighted). Also shown is the theater veteran prevalence estimate (prevalence of PTSD among the 42 percent of the theater veteran population who were eligible for the clinical subsample) that would result from the use of each alternative. These data showed that the correspondence between the various alternatives was quite high: high sensitivities and specificities, and high values for Kappa (chance-corrected agreement). Additionally, Exhibit D-10 shows the correspondence between the clinical (SCID) and composite diagnoses by

Exhibit D-8

Comparison of DSM-III-R Clinical (SCID) Diagnosis with Alternative Diagnostic Rules (Theater Veterans Only)

Alternative		DSM-III-R Clinical PTSD Diagnosis: 0	1	Sensitivity	Specificity	Kappa	Prevalence Estimate[1]
M-PTSD scale	0	222	17	77.3	82.8	.528	20.3
	1	46	58				
Composite	0	252	6	92.0	94.0	.821	14.8
	1	16	69				
MMPI PTSD scale	0	202	19	71.6	82.4	.478	15.7
	1	43	48				
Two out of three	0	221	7	89.6	90.2	.730	15.1
	1	24	60				
SCID dominant	0	240	0				11.9
	?	28	7				(4.9)
	1	0	66				

1--Estimated PTSD prevalence in the clinical subsample eligible population.

Exhibit D-9

Comparison of Composite Diagnosis with Alternative Diagnostic Rules
(Theater Veterans Only)

Alternative		Composite PTSD Diagnosis: 0	1	Sensitivity	Specificity	Kappa	Prevalence Estimate[1]
M-PTSD scale	0	224	15	82.4	86.8	.644	20.3
	1	34	70				
DSM-III-R clinical (SCID)	0	252	16	81.2	97.6	.821	13.8
	1	6	69				
MMPI PTSD scale	0	207	14	81.6	87.7	.649	15.7
	1	29	62				
Two out of three	0	222	6	92.1	94.1	.832	15.1
	1	14	70				
SCID dominant	0	238	2				11.9
	?	17	18				(4.9)
	1	3	63				

1--Estimated PTSD prevalence in the clinical subsample eligible population.

Exhibit D-10

Correspondence Between SCID and Composite PTSD Diagnoses, by Demographic Subgroup

Demographic Subgroup	SCID Diagnosis	Composite Diagnosis 0	Composite Diagnosis 1	Kappa
White/other male	0	80	1	.932
	1	1	17	
Black male	0	51	5	.802
	1	1	18	
Hispanic male	0	49	7	.801
	1	1	28	
Female	0	72	3	.627
	1	3	6	

demographic subgroup. Correspondence was excellent for white/other, black, and Hispanic males (Kappa's over .800), and good for females (Kappa=.627).

Except for the estimate based on the M-PTSD, Exhibits D-8 and D-9 indicate that there was also good agreement among the prevalence estimates resulting from the various diagnostic methods. The M-PTSD estimate was inflated because of its nonspecificity--that is, the M-PTSD scale had a relatively high false-positive rate relative to either the DSM-III-R clinical diagnosis or the composite diagnosis. [The sensitivity and specificity of psychometric scales used in diagnostic assessment are always a function of the cut-off score used. The cut-off for caseness on the M-PTSD scale--people scoring 89 or above were considered to be cases--was established using data from the NVVRS preliminary validation study. However, this cut-off was established with the goal of reducing the likelihood that true cases of PTSD were "missed," because the M-PTSD scale was used as a screening device in selecting subjects for the clinical subsample. As a result, reduced specificity was traded for increased

sensitivity, to tighten the net and "capture" true PTSD cases for the clinical subsample.]

Based on the good correspondence among the alternative diagnostic measures and our belief that the composite diagnosis came closest to the "truth," because it used information from multiple measures, the NVVRS research team decided to report PTSD prevalence estimates based on the composite diagnosis. However, prevalence estimates based on the projected clinical DSM-III-R diagnosis were also tabulated (see Appendix E, Exhibit E-3). This tabulation showed that conclusions about between group differences based on the clinical DSM-III-R diagnosis were identical to those resulting from use of the composite diagnosis, and that the largest absolute difference in study group prevalence estimates resulting from the two methods was 1.2 percent (7.3 versus 8.5 for female theater veterans). Additionally, the correlation between the clinical and composite diagnoses averaged more than .90 in the veteran study groups (male and female theater and era veterans).

III. RELIABILITY OF CLINICAL INTERVIEW PTSD DIAGNOSES

Because of the central importance of the SCID diagnosis in the final composite PTSD diagnosis procedure, we felt that it was very important to establish that the SCID PTSD diagnosis had good interjudge agreement and that the final SCID PTSD diagnosis should be subjected to a rigorous quality control check before we accepted the interviewing clinician's diagnosis. This section describes these quality control procedures and then describes the formal interrater reliability study.

A. Quality Control Procedures

The three clinical co-principal investigators, with the help of two additional expert clinicians in PTSD (Drs. Kathryn DeWitt and David Grady), reviewed virtually all of the 440 cases interviewed in the clinical subsample portion of the NVVRS. This included cases with and without available or audible audiotapes of the SCID interview. To accomplish this task, we developed a SCID PTSD Module Summary Review Sheet to record, item

by item, any question or comment raised by the quality reviewer. In addition, the quality reviewer made an independent diagnosis of PTSD, based on the information scrutinized in the review. Although this diagnosis was not blind to the one made by the original interviewing clinician, it was independent of that diagnosis, since the reviewing clinician was making independent decisions about every symptom covered in the SCID PTSD module.

The clinician reviewed each case by listening to the audiotape with the SCID booklet in hand, beginning with the introductory section. When the formal part of the alcohol abuse module began, the reviewer skipped to the PTSD module and carefully reviewed the interviewer's notes and individual item scorings, looking for clerical, as well as possible or probable clinical, errors. With the cases for which the audiotape was not available, the clinician used whatever marginal notes were written and checked to see that the summary criteria corresponded to the individual symptom decisions. For the vast majority of the cases, the clinical review yielded a decision that no change in the diagnosis was required. As described previously, only 10 of the cases were deemed to require a change. For these 10 cases, all three of the clinical co-principal investigators agreed that there was a diagnostic error and that the information in the SCID PTSD module was sufficiently clear to support a change. The net result of this process was that five respondents were changed from current PTSD positive to negative, and five were changed from negative to positive.

B. Blind Interrater Reliability Study

In addition to the procedures described above regarding quality review, we considered a variety of options for the assessment of the interrater reliability of the SCID PTSD diagnosis. The ideal approach would have been to send a second expert clinician to the respondent to conduct a second SCID interview, blind to the outcome of the first interview. However, this was not feasible, due to time and resource constraints. However, one feature of this approach, that the reviewing clinician be blind to and uncontaminated by knowledge of the interviewing clinician's ratings, was seen as a crucial feature to a sound interrater reliability study of the diagnosis of PTSD from the SCID.

The procedure that we adopted was to have the three clinical co-principal investigators each review 10 theater veteran SCID interviews from a pool of 30, randomly selected so that 15 were current PTSD positive and 15 were current PTSD negative (based on the diagnosis assigned after the quality review, and excluding the 15 cases that required clinical adjudication for final diagnostic determination). The cases were selected and assigned with two additional constraints: (1) the audiotape must have been audible and complete from the beginning of the SCID interview through completion of the PTSD module, and (2) the reviewing co-principal investigator must not have been involved in the quality review of that case.

The procedure that the clinical co-principal investigators followed was to listen to the audiotape and to complete a blank SCID booklet as the recorded interview unfolded, blind to the original interviewer's scoring. All of the information in the interview was used to make judgments about symptoms, even if mention was made in other modules, as this was the procedure followed by the original interviewer. At the conclusion of the review, each reviewer made a diagnosis for both lifetime and current PTSD, though the reliability study focused only on the current PTSD diagnosis. The degree of agreement between the blind reviewer's diagnosis and the other diagnoses, based on the original interviewer (edited or unedited), was assessed by the Kappa coefficient, an index of interrater agreement that corrects for chance.

The results of the blind interrater reliability study are reassuring and impressive. The Kappa coefficient between the blind reviewer's diagnosis and the diagnosis of the original interviewer as edited by the quality review is .933. This is an excellent level of agreement. The coefficient for the agreement between the unedited interviewer diagnosis and the blind review is slightly lower, .867, reflecting the fact that the PTSD diagnosis of one of the cases included in the 30 was modified by the quality review process. Also calculated was the Kappa coefficient between the blind review diagnosis and the composite diagnosis. That coefficient is .802.

Thus, these results indicated that blind review by a second clinician of the audiotape of a SCID interview typically results in the same current PTSD diagnosis as the original. It appeared that the SCID PTSD module,

when administered as it was in the NVVRS and re-scored blindly in the fashion described above, is a highly reliable method for making the diagnosis of PTSD and yields results that are consistently reproducible.

IV. ADJUSTMENTS FOR NSVG PTSD CROSSTABULATIONS

To produce crosstabulations of PTSD with all other NSVG outcome variables, it was necessary to use the M-PTSD scale as the basis for the PTSD diagnosis, since it was the best PTSD measure available for all survey interview respondents. However, given the findings of the clinical subsample described above, it was imperative to "adjust" the crosstabulations to account for the diagnostic bias in the M-PTSD scale. Adjustments were made for each M-PTSD by outcome variable crosstabulation, and were based on the differences between the distributions of M-PTSD and the composite diagnosis in the clinical subsample. The number of persons who were misclassified according to M-PTSD, when assuming the composite diagnosis to be the truth, was estimated using the clinical subsample data. These estimates were then used to compute difference adjustments that were applied to the distribution of M-PTSD on the entire survey sample. The row percentages, their standard errors, and the statistical contrasts in the accompanying tables, in which PTSD is a row variable, were based on these adjusted estimates.

For male theater veterans, the M-PTSD distributions were adjusted independently for each category of each outcome variable. The adjustment factor for a given outcome category was the estimated number of persons misclassified by M-PTSD, expressed as a proportion of the estimated number of persons in that outcome category. When the adjustment was applied to the survey sample estimates of persons by M-PTSD, the column totals for the outcome variable remained unchanged.

The adjustment factors for the jth outcome category were computed as follows:

$$R(\text{M-PTSD=negative}) = \frac{b_{1j} - a_{1j}}{n_j}$$

$$R(\text{M-PTSD=positive}) = \frac{b_{2j} - a_{2j}}{n_j} = -R(\text{M-PTSD=negative})$$

where b_{ij} = weighted number of clinical subsample persons with COMPOSITE=i and outcome variable=j

a_{ij} = weighted number of clinical subsample persons with M-PTSD=i and outcome variable=j

$$i = \begin{cases} 1 & \text{for negative diagnosis} \\ 2 & \text{for positive diagnosis} \end{cases}$$

The factor was applied to the appropriate column total of the survey sample table, and the estimated number of persons added to, or subtracted from, the cell estimate. The row percentages presented in the tabulations for PTSD positive and negative were then computed from these adjusted cell counts. This adjustment procedure is illustrated in Exhibit D-11 for a specific outcome variable--current drug use.

The sample size for M-PTSD positive female theater veterans was insufficient to support column-specific adjustments. Therefore, a marginal adjustment was applied to the survey sample tables using the estimated number of females misclassified in the clinical subsample, ignoring the outcome variable distribution. This adjustment resulted in the M-PTSD negative estimate being reduced and the M-PTSD positive estimate increased, both by approximately 0.7 percent.

For both males and females, the standard errors of the adjusted row percentages were also adjusted, to account for the shift in location of the percentage estimates. If p_j and p_j^* denote the unadjusted and adjusted row percentage estimates for the jth outcome category for a given row in the table, and s_j denotes the design-consistent estimate of the standard error of p_j, then an approximate standard error for p_j^* is given by:

Exhibit D-11

Example of M-PTSD Adjustment Procedure

Clinical Subsample (Males)

M-PTSD	Current Drug Use: NO	Current Drug Use: YES
Negative	957,020	96,291
	90.9%	9.1%
Positive	189,945	77,322
	71.1%	28.9%
	1,146,966	173,613

Composite	Current Drug Use: NO	Current Drug Use: YES
Negative	1,000,899	125,613
	88.9%	11.2%
Positive	146,067	48,000
	75.3%	24.7%
	1,146,966	173,613

Survey Sample (Males)

M-PTSD	Current Drug Use: NO	Current Drug Use: YES
Negative	2,194,294	236,527
	90.3%	9.7%
Positive	468,467	180,063
	72.2%	27.8%
	2,662,762	416,590

Adjusted M-PTSD	Current Drug Use: NO	Current Drug Use: YES
Negative	2,296,162	306,888
	88.2%	11.8%
Positive	366,600	109,702
	77.0%	23.0%
	2,662,762	416,590

Example: M-PTSD Negative, No Drug Use

2,194,294 + [(1,000,899 - 957,020)/1,146,966] * 2,662,762

= 2,296,162

$$se\ (p_j^*) = \sqrt{\frac{p_j^*(1-p_j^*)}{p_j(1-p_j)}} \cdot s_j$$

Similarly, if p_j and p_k denote two percentage estimates in the same row, then an approximate covariance between the two is given by:

$$cov\ (p_j^*, p_k^*) = \frac{p_j^* p_k^*}{p_j p_k} \cdot cov\ (p_j, p_k)$$

In computing contrast statistics for the adjusted row percentages, the variance-covariance matrix of the unadjusted estimates was calculated according to these two formulas. This procedure resulted in an approximate test statistic for differences in the adjusted distributions that was satisfactory in most cases. It was possible, however, to apply an adjustment to a row percentage estimate that was zero, and thereby create a nonzero (positive) adjusted estimate. In such cases, the standard error of the adjusted estimate remained zero and the associated variances and covariances used to compute the test statistics were underestimated. When this occurred, the simple random sampling variance, $p(1-p)/n$, was used as an approximation and the test statistics recomputed accordingly, except for the tables in Chapter X (family interview findings). This problem was so extensive in one segment of these tables, due to the fact that only five females were positive with respect to M-PTSD, that no attempt was made to compute approximate standard errors when zero cells were adjusted to positive. Valid inference based on the reported percentage distributions for females with positive M-PTSD in these tables cannot be made. The estimates based on this small number of cases are presented for information purposes only.

In a few cases, the adjustment procedure used to generate percentage crosstabulations with PTSD diagnosis yielded estimates that were relatively severe. This phenomenon was a result of applying different adjustment rates to each category of the outcome variable. If these rates differed substantially, then they, in combination with the category specific sample sizes, could result in an adjustment to the distribution of the dependent variable that was too extreme. In all cases, some adjustment was warranted, to correct for significant differences in the distribution of M-PTSD and the composite estimate that were detected in the clinical subsample. In the few cases where the adjustments were too extreme, the "true" values would fall between the unadjusted and adjusted estimates.

A specific, and probably the most extreme, example of this phenomenon occurred in the adjustment for the composite variable "lifetime prevalence of any NSVG/DIS disorder" (Table VI-19). For male theater veterans with positive PTSD diagnosis, the unadjusted row percentage estimates were 24.3 percent and 75.7 percent for no and yes, respectively, and the adjusted estimates 1.1 percent and 98.9 percent. In this case, the adjustment procedure was probably too extreme, and the true estimates probably fall between these two bounds, that is, the estimated percent of persons ever experiencing any NSVG/DIS disorder lies between 75.7 percent and 98.9 percent.

APPENDIX E

NVVRS Prevalence Estimate Methodology and Comparison with Vietnam Experience Study Estimates

APPENDIX E

NVVRS Prevalence Estimate Methodology and Comparison with Vietnam Experience Study Estimates

The formulation of estimates of PTSD prevalence was a central part of the planning of the NVVRS analyses. The research team conceptualized four general classes of methods for making the population prevalence estimates could be made. These classes are described in the following sections.

I. ESTIMATES BASED ON THE M-PTSD SCALE

The first class of estimation methods is the simplest, as these estimates are based solely on the M-PTSD scale. Of the survey interview measures the M-PTSD scale had the best correspondence with the DSM-III-R clinical and composite diagnoses and is therefore the "best" survey-interview-based measure. This method assigns a caseness cut-off to the M-PTSD scale, which is available for the entire survey interview sample, and estimates the proportion of persons in the groups of interest who are at or above the cut-off. The strength of this approach is that it is straightforward, minimizes the potential impact of sampling error, relative to other alternatives, and provides estimates for which calculation of the standard error is nonproblematic.

II. "ADJUSTED" M-PTSD ESTIMATES

The major drawback of the unadjusted M-PTSD estimates is that our clinical subsample findings show that there is error in the PTSD diagnoses that were made solely on the basis of the M-PTSD scale. If either the DSM-III-R clinical diagnosis or the composite diagnosis is taken as the gold standard, the false-positive rate associated with the caseness cut-off (determined in the preliminary validation study) is higher than the false-negative rate, potentially resulting in artificially high prevalence

estimates. Additionally, the error rates are not constant across groups, thereby confounding cross-group comparisons (for example, the false-positive rate for era veteran males is more than twice that for theater veteran males).

These problems led us directly to our second class of estimation methods in which the M-PTSD scale estimates are adjusted for bias. We know about the bias in the M-PTSD from the correspondence between it and the composite diagnosis within the clinical subsample. From the correspondence between the M-PTSD and the composite diagnosis in the clinical subsample, we can estimate false-positive and false-negative rates for the Vietnam theater veteran population through use of statistical adjustment procedures. We can then use these rates to "adjust" estimates derived from the M-PTSD scale.

A complication arises from the fact that the clinical subsample is selected from a nonrandom, though identifiable, subset of the total population--those living within a reasonable commuting distance of the 28 SMSAs in which we conducted clinical interviews. Since the total population may differ from this subpopulation on any number of important characteristics, the correspondence table should be adjusted for those differences. Given that such adjustments could be made, the estimated population false-positive and false-negative rates could then be used to adjust the raw PTSD prevalence rates based on the M-PTSD rates by subtracting out the false positives and adding back the false negatives to derive an estimate of the "true" prevalence.

To estimate the population false-positive and false-negative rates, we fit prediction models to the corresponding rates in the clinical subsample, using only variables that were available for the full survey sample as predictors. Stepwise logistic regression procedures were used to select model variables that satisfied two criteria: (1) their distributions for the portion of the survey sample that was eligible for the clinical subsample differed from their distributions for the portion that was not, and (2) they were significantly associated with the probability of being a false-positive or false-negative case. Separate logistic regression models were fit to each probability. The estimated prediction equation for false-positives was applied to those respondents in the full survey sample who had a positive M-PTSD, and a predicted probability of being a false-

positive case was computed for each respondent. Similarly, the prediction equation for false-negatives was applied to those sample members who had a negative M-PTSD, and a predicted probability of being a false-negative case was computed. We produced weighted averages of these predicted probabilities for the survey population of theater veterans and the various subgroups of interest. These averages represent consistent estimates of the false-positive and false-negative rates for the population. Although we feel that this "adjusted" M-PTSD estimate is more accurate than the "raw" M-PTSD, calculation of the resulting standard error is problematic and was not carried out. However, it is clear that the standard error of the adjusted estimate is larger than that of the corresponding raw estimate.

III. "DIRECT" ESTIMATES FROM THE CLINICAL SUBSAMPLE

The third class of estimation methods comprises "direct" estimates. We have a composite PTSD diagnosis for every respondent in the clinical subsample. Therefore, if we apply the appropriate clinical subsample and survey sample weights to the clinical subsample findings, we can produce a direct estimate of the prevalence of PTSD in the population that was eligible for the clinical subsample (the roughly 42% of theater veterans living within reasonable commuting distance of our 28 clinical interviewers). Although this method provides a direct estimate of the composite diagnosis at the individual level, it is an estimate only for a subpopulation, and therefore may differ in the distribution of many important characteristics from the population of interest. However, these "direct" estimates provide a basis for comparison with the other estimates.

IV. "PROJECTED" CLINICAL SUBSAMPLE ESTIMATES

Finally, a fourth class of estimates can be derived through a somewhat different conceptualization of the problem. In this approach, the problem is formulated as: how can the composite diagnosis and the clinical DSM-III-R diagnosis, which are available only for clinical subsample

respondents, be extended to the full survey interview sample? This method develops prediction models for these diagnoses, using as predictors only information that is available for all survey interview respondents. The parameters of these models are estimated from the clinical subsample. The models are then applied to the full survey interview sample to predict probabilities of caseness for every survey interview respondent, as in the prediction of false-positive and false-negative rates. Variables are selected with stepwise procedures from the pool of variables whose distributions differ across sample members eligible and not eligible for the clinical subsample, and that were significantly associated with the composite or DSM-III-R clinical diagnoses, respectively.

We used logistic regression models that contained variables satisfying both of the above criteria to fit preliminary models within the clinical subsample. In fitting these models, we used data for theater veterans only. We then took several steps to improve these models. First, we examined the set of potential predictors of positive diagnosis, regardless of whether they were associated with clinical subsample eligibility, and determined a "best" set, using stepwise linear regression to assess multiple correlations with the outcome. We added each variable in this best set to the preliminary logistic model separately, and determined whether the predictive power of the model improved. Since the primary purpose of this modeling was to project clinical subsample estimates to the full survey sample, we gave priority to the variables on which the two samples differed when selecting variables for the final model. For the composite diagnosis model, there were two instances in which a strong predictor replaced a weaker predictor of PTSD that differed across samples. In both cases, the justification was a substantial increase in the model R with the replacement of the variables. The two variables that dropped out of the preliminary model were number of chronic health problems and alcohol use. These were replaced by number of lifetime D-PTSD symptoms and number of readjustment problems. In addition, a variable indicating that the person experienced a probable or definite traumatic event was added. For the DSM-III-R clinical diagnosis model, no variables in the preliminary model were replaced, and a dummy variable indicating report during the survey interview of a probable or definite traumatic event was added.

As a second refinement to the preliminary models, we identified three variables identifying key reporting subgroups. These were sex, race, and ethnicity. Main effects for these variables and their interactions with other variables in the model were added, and significant terms were retained. This step added an interaction between Hispanic ethnicity and M-PTSD scale to both the composite diagnosis and the DSM-III-R diagnosis models.

To provide predicted prevalence estimates for era veterans and civilians in the survey sample, we also fit logistic models within the clinical subsample that included both theater and era veterans. The strategy was to fit the final models developed for theater veterans, described above, but to add a main effect for era veteran status. The sample size for era veterans was too small to support fitting any interactions with this effect and the other predictors. For the clinical DSM-III-R diagnosis, the structure of the model remained the same, but the coefficients differed somewhat, since they were estimated with theater and era cases. For the composite diagnosis model, it was necessary to remove the variable, number of readjustment problems, from the model, since it was not available for civilians in the survey sample. Therefore, we fit three separate models. One used theater veterans only, the second used theater and era cases and included an era veteran main effect, and the third used theater and era cases, included an era veteran main effect, and excluded the number of readjustment problems. These three models apply to theater veterans, era veterans, and civilian counterparts, respectively. We verified that, for both composite and clinical DSM-III-R diagnoses, the prediction equations for era veterans and civilians produced predicted prevalences among theater veterans similar to those produced by the final models fit only to theater veterans.

The prediction equations were applied to each respondent in the full sample to compute predicted composite and clinical DSM-III-R diagnoses. Weighted averages of these predicted probabilities of caseness were then produced for the survey population and subgroups of interest. The prevalence estimates resulting from this modeling effort are called "projected" because they represent the statistical projection of clinical subsample findings to the full veteran population.

Although PTSD diagnosis is a dichotomous variable, the logistic regression calibration models produce a conditional expected value for each respondent which can be interpreted as the probability of a positive diagnosis, given the characteristics of the respondent as measured in the survey sample. The standard errors of the current PTSD prevalence estimates presented in Table IV-1 (Volume II) are based on this continuous measure. To assess the added variability that would have resulted from predicting PTSD diagnosis (yes-no) at the individual level, variances for the projected composite diagnosis were also computed based on a dichotomous variable (like PTSD diagnosis) generated from random Bernoulli trials with the parameter p equal to the predicted probability of a positive PTSD diagnosis for each respondent. These standard errors were obtained by averaging over 10 replications of this procedure. The standard errors of study group PTSD estimates for the predicted probability and dichotomous diagnosis variables as shown in Exhibit E-1.

V. ESTIMATION RESULTS

Exhibit E-2 shows the prevalence estimates for Vietnam theater veteran subgroups that result from these various methods. As shown, the raw M-PTSD estimates are virtually always outliers, relative to the estimates from the other five methods, which generally show good convergence. This convergence of estimates across diagnostic methods is comforting, and represents strong evidence for the credibility of the prevalence estimates. Exhibit E-3 shows the logistic model through which the composite diagnosis was extended to the full NVVRS study sample. Parameters were estimated from the clinical subsample.

Exhibit E-4 shows the projected prevalence estimates for male and female theater and era veterans, based on the composite and the clinical DSM-III-R diagnoses. These findings demonstrate that prevalence estimates produced by the composite and clinical diagnosis methods for these veteran groups are very similar. Also, the very high correlations (typically greater than .90) also indicate very high correspondence between the results from the two diagnostic methods.

Exhibit E-1

Comparison of Standard Errors for Estimated Current PTSD Prevalence
Computed as a Probability of Caseness Versus a Dichotomous Diagnosis

Study Group	Men			Women		
	Sample Size	Standard Error of Predicted Probability (%)	Standard Error of Dichotomous Diagnosis (%)	Sample Size	Standard Error of Predicted Probability (%)	Standard Error of Dichotomous Diagnosis (%)
Theater veterans	1173	1.1	1.3	424	1.1	1.4
by WZS Exposure:						
High	399	2.8	3.4	167	2.3	2.9
Low/Moderate	765	0.9	1.3	257	0.8	1.0
by SCPD						
SCPD total	233	3.2	3.5	79	3.3	3.9
High	92	4.3	4.6	48	4.1	4.9
Low	141	4.2	4.8	31	5.5	6.2
No	940	1.1	1.4	345	1.1	1.4
by Substance Abuse						
Positive	504	2.0	2.6	42	5.3	5.9
Negative	663	1.1	1.3	378	1.0	1.3
Era Veterans	404	1.4	1.8	296	1.0	2.5
Std. to Theater	404	0.7	1.0	296	0.6	0.7
Std. to HWZ Theater	404	0.7	1.1	296	0.7	0.8
Std. to Low/Moderate W2 Theater	404	0.7	1.0	296	0.7	1.4
Civilian Counterparts						
Std. to Theater	435	0.4	0.6	210	0.1	0.2
Std. to HWZ Theater	435	0.4	0.7	210	0.1	0.2

Exhibit E-2

NVVRS PTSD Prevalence Estimates from Alternative Methods
for Vietnam Theater Veteran Subgroups
(standard errors in parentheses)

Theater Veteran Subgroup	Estimation Method: "Raw" M-PTSD	"Adjusted" M-PTSD	Direct DSM-III-R	Direct Composite	Projected DSM-III-R	Projected Composite
Males	20.9	16.5	13.9	14.8	14.1	15.2
	(1.6)		(2.4)	(2.4)	(0.9)	(1.3)
Black	31.9	22.8	18.3	21.7	18.2	20.6
	(2.8)		(4.3)	(4.7)	(1.7)	(2.3)
Hispanic	23.2	30.2	22.9	29.8	27.2	27.9
	(3.0)		(5.1)	(6.3)	(2.3)	(3.4)
White/ other	19.3	14.8	12.4	12.4	12.7	13.7
	(1.8)		(2.9)	(2.9)	(1.0)	(1.6)
Hi stress exposure	49.0	40.7	43.4	44.5	33.5	35.8
	(3.7)		(7.4)	(7.4)	(2.5)	(3.4)
Lo/mod exposure	11.6	8.5	5.8	6.6	7.6	8.5
	(1.5)		(2.0)	(2.1)	(0.7)	(1.3)
Females	8.9	8.4	7.9	6.8	7.3	8.5
	(1.4)		(2.8)	(3.4)	(0.8)	(1.4)
Hi stress exposure	19.2	17.4	6.8	8.1	13.6	17.5
	(3.1)		(2.4)	(3.7)	(1.8)	(2.9)
Lo/mod exposure	2.2	2.6	8.6	6.1	3.1	2.5
	(0.9)		(3.9)	(3.1)	(0.6)	(1.0)

Legend: "Raw" M-PTSD = survey interview based M-PTSD estimates
"Adjusted" M-PTSD = raw M-PTSD estimates corrected with estimates of false-positive and negative rates
Direct DSM-III-R = clinician-assessed rate in clinical subsample eligible subpopulation
Direct Composite = composite diagnosis rate in clinical subsample eligible subpopulation
Projected DSM-III-R = predicted clinician-assessed rate in full population
Projected Composite = predicted composite diagnosis rate in full population

Exhibit E-3

Composite PTSD Diagnosis Projection Model Parameters

Dependent Variable = Composite Diagnosis
Model R^2 = 0.737[1]
Likelihood Ratio Chi-Square = 173.2 DF = 9 P-value = 0.000

Logistic Regression Coefficients[2]

Variable	Beta	Standard Error	P-value
Intercept	-14.376	2.279	
M-PTSD scale (continuous)	0.127	0.022	0.000
Current Region--Northeast[3]	- 1.338	0.639	0.036
Current Region--North Central[3]	-2.369	0.922	0.010
Current Region--South[3]	-1.395	0.488	0.004
Hispanic	6.557	2.564	0.011
Hispanic by M-PTSD Interaction	-0.069	0.028	0.016
No. of DPTSD Symptoms Ever Experienced	-0.126	0.062	0.043
No. of Readjustment Problems[4]	0.348	0.132	0.009
Highest Traumatic Event--Probable Definite	2.341	1.103	0.034

1/Model R^2 is the proportion of log-likelihood explained by the model.

2/Parameters were estimated based on clinical subsample findings, and model was then applied to full survey sample.

3/Region effects are differences from the omitted or reference category, West.

4/No. of readjustment problems is expressed as the number of problems ever experienced minus those experienced now.

Exhibit E-4

Comparison and Correlation of Prevalence Estimates Based on Composite and Clinical DSM-III-R Diagnoses, for Veteran Subgroups (Standard Errors in Parentheses)

Study Group	Current PTSD Prevalence Based on DSM-III-R Clinical Diagnosis	Current PTSD Prevalence Based on Composite Diagnosis	Correlation Coefficient
Theater Veterans			
Male	14.1 (0.9)	15.2 (1.3)	.931
Female	7.3 (0.8)	8.5 (1.4)	.890
Era Veterans (standardized)			
Male	3.2 (0.7)	2.5 (1.0)	.960
Female	0.8 (0.3)	1.1 (0.7)	.954

VI. COMPARISON WITH VIETNAM EXPERIENCE STUDY ESTIMATES

Prior to the initiation of the NVVRS, no previous research supported the derivation of population-based, diagnostic estimates of the prevalence of PTSD among Vietnam veterans. In part, this was due to the absence of any official diagnostic criteria of PTSD prior to the publication of the third edition of the Diagnostic and Statistical Manual (DSM-III) by the American Psychiatric Association in 1980. As a result, studies published prior to 1980 were forced to employ more general conceptions of the symptoms of this disorder.

Immediately after the appearance of the DSM-III criteria, the only instruments available to researchers for assessing the criteria were understandably lacking in polish and precision. Thus, even though some

early estimates of the prevalence of problems with stress, adjustment, and mental health among Vietnam veterans were available and were based on expert opinion and clinical samples (e.g. Mantell & Pilisuk, 1975; Schindler, 1980; Walker, 1981; Walker & Cavenar, 1982; Wilson, 1980), the relationship of these projections to the prevalence of PTSD as defined by the official nomenclature could still not be assessed. Similarly, estimates developed by three major surveys conducted during this period, that involved broader and more representative samples of Vietnam veterans (Card, 1983; Egendorf, Kadushin, Laufer, Rothbart, & Sloan, 1981; Fischer Boyle, Bucuvales, & Shulman, 1980), were hampered by an inability to link measures of "mental or emotional problems" or "stress" to the diagnostic category PTSD.

One of the first advances in this domain was the development of a questionnaire module to assess PTSD for the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981), a highly structured survey interview instrument that was designed explicitly for use by lay interviewers (i.e., nonclinicians). The DIS was originally developed by Washington University in St. Louis, under the auspices of the National Institute of Mental Health, for use in a landmark study of the mental health of community and institutionalized populations in the United States--the five-site Epidemiologic Catchment Area (ECA) project.

The DIS comprises multiple modules, each designed to detect the presence of a specific psychiatric disorder according to one of several diagnostic systems, including DSM-III. The PTSD module was developed only after the ECA studies were underway and was used only during the second wave of interviewing (one year after the first). Slightly different versions of this module were used by the St. Louis and the North Carolina ECA sites; the Los Angeles ECA site employed a version that differed considerably from those used at the St. Louis and North Carolina sites. Moreover, because it was added at a later date, the PTSD module was not validated with the other DIS modules.

Although no estimates of the prevalence of PTSD based on data from either the North Carolina or Los Angeles ECA sites have yet been published, Helzer and his colleagues (Helzer, Robins, & McEvoy, 1988) recently reported an estimate derived from data obtained from the 64 Vietnam veterans in their St. Louis ECA sample. They indicated a lifetime ("ever

had") prevalence rate for combat-related PTSD in Vietnam veterans of 6.3 percent and a 1 percent lifetime rate for any PTSD in the total population. Because of the small size and geographically limited nature of their sample, the estimates cannot be taken as either general or reliable estimates of the prevalence of PTSD in the population of Vietnam veterans.

Prior to completion of the NVVRS, the Centers for Disease Control (CDC, 1988b) published findings that are not subject to the same sample-based restrictions. The CDC Vietnam Experience Study (VES) is by far the largest, most sophisticated study prior to the NVVRS to report on the mental health status of Vietnam veterans. A random subsample of 2,490 Vietnam veterans was selected from a larger sample of 7,924 who had entered the U.S. Army between 1965 and 1971. Using a slightly modified version of of the PTSD module of Version III-A of the DIS, the CDC research team estimated that approximately 15 percent of these veterans had experienced combat-related PTSD at some time during or after their military service, but that the prevalence of the disorder during the one month immediately prior to the assessment was 2.2 percent. This 2.2 estimate, based on the VES, stands in stark contrast to the estimate of 15.2 percent for current prevalence of PTSD derived from the NVVRS and reported in Chapter IV.

Because both of these estimates are based on studies involving large samples of Vietnam veterans, both studies used a quite similar sampling scheme, and both studies were conducted according to high scientific standards. Therefore, a discrepancy in the estimates of this magnitude is cause for considerable concern. Such a difference requires thoughtful and careful consideration, and it is of great importance to understand the reasons underlying this difference. In the remainder of this section, we describe in some detail several activities undertaken by the NVVRS research team in an effort to account for this difference and to understand how it may have occurred.

A. Differences in Samples

The sample for the CDC Vietnam Experience Study sample was randomly selected from the military personnel records of male U.S. Army veterans who served during the Vietnam era. To increase comparability between those who served in Vietnam and those who served elsewhere, the sample was restricted

to those who (1) entered military service for the first time between January 1965 and December 1971; (2) served only one term of enlistment; (3) had at least 16 weeks of active service; (4) earned a military occupational specialty other than "trainee" or "duty soldier;" and (5) had a pay grade no higher than E-5 (sergeant) when discharged from active duty.

As noted in Chapter I and described in detail in Appendix B, the NVVRS sample was also drawn from military records, but was drawn to represent all veterans who served on active duty during the Vietnam era, excluding only those still on active duty. Since the methodology used to draw these two samples was quite similar and the population represented by the VES sample is a logical subset of the NVVRS target population, it was possible to isolate this subsample in the NVVRS data set. We did this by using the CDC sample selection criteria described above to identify "VES eligibles." To ensure that this procedure accurately represented the VES target population, these criteria were assessed independently on both the military records and interview (self-report) data for each NVVRS respondent. Any discrepancies that were identified between these two sources of data were examined and resolved by examination of all available data.

This procedure resulted in the identification of 484 male Vietnam theater veterans meeting the CDC VES criteria, representing an estimated 35.9 percent (weighted) of the total male Vietnam theater veteran population interviewed in the NVVRS. Given the nature and relative proportion of this subsample, there existed a strong potential for substantial differences in demographic and/or psychosocial characteristics between the VES-matched subsample and the total NVVRS sample of male theater veterans. However, other than some obvious differences involving factors related directly to the selection criteria (for example, dates of entry to active duty, dates of separation, months of active duty, pay grade at discharge) surprisingly few differences were found between this subsample and the total NVVRS sample of male theater veterans. Compared the total NVVRS male theater veteran sample, the NVVRS matched-VES subsample was much younger, much more likely to have been drafted, somewhat more likely to live in the North Central States (less in the West), and less likely to have entered the military from a medium-sized city. No significant differences were evident, however, for characteristics such as race, ethnicity, education, AFQT scores, or receipt of an Article 15.

Consistent with these "demographic" characteristics, the proportion of men in the matched-VES subsample who scored above the designated diagnostic cutoff on the NVVRS M-PTSD measure was 23.0 percent; this proportion for the total NVVRS male theater veteran sample was 20.9 percent.

When the NVVRS criteria and methods for deriving a diagnosis of PTSD were applied to the matched-VES subsample, the estimated current prevalence rate was 15.6 percent. This rate is remarkably similar to the estimate for the full population of male Vietnam theater veterans in Chapter IV (15.2 percent). Thus, the difference observed between current prevalence estimates from the CDC Vietnam Experience Study and the NVVRS does not appear to be due to differences between the populations sampled, even though the two populations were quite different on some potentially relevant characteristics.

B. Differences in Instrumentation and Methodology

Given the absence of observed differences between the CDC and NVVRS samples, differences between the measures and methods used to diagnose PTSD in the two studies appear to be the most likely source of the discrepancy between the rates of current prevalence of PTSD derived by the two studies.

As described in Appendix D, the NVVRS employed a multiple methods approach to the assessment of symptoms of PTSD. The derivation of diagnoses was based on DSM-III-R criteria. These criteria are currently used by the Veterans Administration and are the standard criteria used across the country by mental health clinicians to diagnose this disorder). By contrast, the CDC study employed a slightly revised version of the DIS Version III-A PTSD Module and established diagnoses of PTSD based on the no-longer-current criteria elaborated in DSM-III.

The NVVRS approach is clearly both more comprehensive and more complex than that used by the CDC. It is based on the convergence of a set of survey and clinical measures of established validity, with the added refinement of clinical review and adjudication of the most diagnostically ambiguous cases (that is, cases where the multiple measures diverge). The CDC methodology is based on a single survey interview instrument for which the capacity to distinguish true cases of PTSD from noncases has still not been established.

It is important to note, however, that, because the DIS has been widely regarded as the "state of the art" for the assessment of psychiatric disorder in community-based epidemiological research, the NVVRS study team felt it vital to include a version of the DIS in the survey. As a consequence, the DIS, including a modified PTSD module, was a significant component of the NVVRS instrumentation.

However, the choice of the particular DIS PTSD module was not straightforward, for several reasons. For example, there were several versions in existence at the time the NVVRS instrumentation was being selected, although none had been validated. In addition, the diagnostic criteria for PTSD were in transition from DSM-III to DSM-III-R. The research team grappled with this choice by consulting with a nationally-recognized panel of expert clinicians. Together, they developed detailed guidelines for a new module for the diagnostic assessment of PTSD, with a style and format consistent with other DIS modules. This new "DIS-type" measure was able to assess symptoms of PTSD Using either DSM-III and DSM-III-R criteria. It also addressed concerns raised by these experts about versions of the PTSD module of the DIS in use at that time, including the St. Louis and North Carolina versions. The resulting "DIS-type" PTSD measure was included as one of several measures in the NVVRS preliminary validation study described in Appendix D. As shown in Appendix D (Exhibit D-3), in the "treatment-seeking" sample (the Vet Center and VA Medical Center patients) used for the validation study, this modified and revised PTSD module performed sufficiently well in distinguishing cases from noncases to be carried forward to the main NSVG study. The module attained a sensitivity of 87.2, a specificity of 72.6, and a Kappa of .639 with the certified clinical diagnosis.

1. PTSD Prevalence Estimates Based on the NVVRS DIS-Type Instrument

Using the modified DIS-type instrument and the associated scoring algorithms developed and evaluated in the preliminary validation study, we derived several estimates of the prevalence of PTSD from the full NSVG sample. First, because of the transition of the official nomenclature from DSM-III to DSM-III-R during the study period, estimates were computed using both sets of criteria. Second, because the majority of published studies

from the ECA project on the prevalence of psychiatric disorders other than PTSD employed a six-month cut-off for current prevalence, estimates of current prevalence of PTSD were computed using a six month reference period. Expert clinicians involved in the NVVRS felt that using a six-month, as opposed to one-month, time frame more effectively captured the clinical phenomenology of the waxing and waning of intrusive and avoidant symptoms in relation to current stressors. For purposes of comparison with other studies, including the St. Louis ECA and CDC VES, however, we also calculated separate one-month estimates using both the DSM-III and the DSM-III-R criteria. Finally, we distinguished between PTSD related to any trauma and PTSD that was related solely to combat.

These estimates are presented in parts I and II of Exhibit E-5 along with those from the CDC Vietnam Experience Study. From this exhibit it is evident that the NVVRS estimates obtained with the DIS-type instrument and the DSM-III criteria are very similar to those reported by the CDC. The lifetime prevalence rate is 14.9 percent, and the current one-month prevalence rate is 3.9 percent. Though the current prevalence rate is almost twice the rate reported in the CDC VES, it is far closer to 2.2 than it is to the NVVRS current prevalence rate of 15.2 percent that was estimated with using the projected composite diagnosis.

An increase in the interval defining the disorder from one to six months increased the prevalence rate estimate by 50 percent, from 3.9 to 6.0 percent. Both the application of the DSM-III, criteria as well as the restriction to combat-related PTSD, resulted in a decrease of the current estimate to as low as 3.3 percent, though the general pattern remained: use of the DIS-type measure developed for the NVVRS resulted in estimates of current PTSD prevalence substantially consistent with those reported by the CDC and closer to those of the CDC than to those that obtained using the full instrumentation and diagnostic methodology of the NVVRS.

2. Estimates of PTSD Prevalence Based on Matching NVVRS DIS-Type Instrumentation and Procedures to those used by the CDC

In addition to the difference between the CDC VES and NVVRS samples described above, the instrumentation used in the two studies differed in important ways. The DIS-type instrument and the scoring algorithm used in

Exhibit E-5

CDC DIS PTSD Prevalence Estimates
and Analogous NVVRS DIS-Type Estimates[1]

I. ORIGINAL CDC DATA	
A. Current (one month)	2.2
B. Lifetime	14.7
II. NVVRS DIS DATA	
A. DSM-III Criteria	
1. Current (one month)	3.9
2. Current (six month)	6.0
3. Lifetime	14.9
B. DSM-III-R Criteria	
1. Current (one month)	3.5
2. Current (six month)	4.7
3. Lifetime	12.0
C. Specific Combat Related Only	
1. DSM-III Criteria	
(a) Current (one month)	3.7
(b) Current (six month)	5.4
(c) Lifetime	12.4
2. DSM-III-R Criteria	
(a) Current (one month)	3.3
(b) Current (six month)	4.2
(c) Lifetime	9.6
III. NVVRS DATA CDC SCORING ALGORITHM (DSM-III Criteria and Specific Combat Related Only)	
A. All NVVRS Theater Veterans	
a. Current (one month)	2.2
b. Lifetime	8.0
B. CDC Matched Subsample	
a. Current (one month)	1.5
b. Lifetime	8.8

[1]The NVVRS DIS-Type estimates are not those used by, and are not equivalent to, the NVVRS prevalence estimates of PTSD provided in Chapter IV.

the NVVRS were materially different from those used in CDC. Given this consideration, we felt it necessary to further explore similarities and differences in the estimates of PTSD prevalence derived from these studies. As a result, the research team used the NVVRS study data to simulate as closely as possible the instrumentation and scoring procedures used by the CDC VES. The estimates derived from these simulations included some that were restricted to the NVVRS matched-VES subsample described previously.

The NVVRS DIS-type PTSD measure employed multiple items for the various DSM-III and DSM-III-R subcriteria, whereas the CDC measure had no more than one item for each diagnostic subcriterion. Consequently, it was possible to construct a "CDC-matched" DIS-based measure. To do so, the single, best-matching NVVRS item was selected for each CDC criterion item. Substantively, the match was very close, with the only really poor "fit" occurring on subcriterion D6--intensification of symptoms in situations reminiscent of the traumatic event. The CDC item asked directly whether the respondent had experienced this phenomenon. The NVVRS DIS-type measure approached measurement of this criterion differently. Respondents were asked if anxiety symptoms that they had reported earlier in the interview had ever occurred because they had been reminded of a traumatic event.

Other criteria had less-than-identical matches. The NVVRS item "disturbing memories" was used to match the CDC item "remember horrible things." "Found it difficult to feel close to other people" in the NVVRS survey was used as a match for the CDC item "less ability to care about others". An NVVRS item inquired about "difficulty falling asleep" while the CDC inquired about "trouble sleeping (falling asleep, staying asleep, not able to sleep)." Finally the CDC item "ashamed of being alive" was assessed in the NVVRS by asking if respondents "felt guilt."

In addition to matching items, the scoring algorithm and decision rules for making the diagnosis of PTSD used by the CDC was simulated very closely for the NVVRS data. It was possible to replicate this procedure reasonably well. Both the CDC and NVVRS simulation of these procedures (1) used DSM-III criteria; (2) did not use any DSM-III diagnostic exclusion criteria; (3) did not require the respondent to meet any test of severity for either individual items or the total disorder; (4) included only a combat-related traumatic event; and (5) used the one-month cut-off for establishing current prevalence.

There were two major differences between the CDC procedures and the NVVRS simulation. First, the NVVRS DIS-type survey instrument required that symptoms be linked to the traumatic event only if the symptoms were intrusive (the "B" criterion of the DSM-III), whereas the CDC procedure required that all criterion items be linked. Second, the CDC procedure asked respondents only if they had ever had each symptom. The NVVRS DIS-type instrument not only asked if respondents had ever had a criterion symptom, but also asked whether it had been present for a week or more. In the NVVRS simulation, these two differences would tend to have opposite effects (that is, one would tend to produce higher rates; the other, lower rates). Though the simulation was not perfect, it was reasonably similar to the CDC procedure.

The results of the simulation, including a restriction to the matched-VES subsample, are presented in the last panel of Exhibit E-4 (Part III). When we applied the simulation procedures to the full NVVRS sample of male Vietnam theater veterans, we obtained a one-month current prevalence estimate for PTSD of 2.2 percent, identical to the CDC's own estimate (Part IA of the same exhibit). In contrast, we obtained a lifetime prevalence estimate of 8.0 percent, which is considerably lower than the commensurate CDC estimate. When we applied the simulation procedure to the NVVRS matched-VES subsample only, the subsample directly comparable to the VES sample, the lifetime prevalence estimate increased only slightly, to 8.8 percent, while the one-month current prevalence estimate decreased slightly, to 1.5 percent.

These results demonstrate that, when a CDC-matched instrument and scoring procedure are utilized with NVVRS data, the estimates of current prevalence are statistically indistinguishable from those published by the CDC Vietnam Experience Study, although the simulated lifetime prevalence estimates are substantially lower than the CDC's. Moreover, consistent with our discussion of the similarities of the samples, estimates derived from the CDC population, which is ostensibly quite atypical, do not differ much from those derived from the total population of men serving in the Vietnam theater of operations.

3. Validity of the NVVRS Estimates Based on DIS-Type Instrumentation

The findings of the analyses that used the simulation procedures indicate that the estimates of current prevalence of PTSD from the NVVRS, using a DIS-type PTSD module, result in figures substantially closer to those reported by the CDC than to those derived from the other NVVRS measures. In combination with the consistently observed absence of differences between the matched-VES subsample and the full NVVRS sample of male theater veterans, these observations suggest that the dramatic differences between the estimates of current prevalence of PTSD derived by the CDC and the NVVRS are predominantly, if not exclusively, due to differences in instrumentation, rather than in samples. The differences in the DIS-like measures and algorithms used in the two studies are substantial enough, however, to prevent this from being stated with full certainty.

Given these differences, the single remaining important question is the extent to which these divergent estimates are based on equally valid criteria and methods. The preliminary validation study conducted prior to the NSVG had shown that the NVVRS DIS-type PTSD module performed relatively well in distinguishing cases of current PTSD from noncases in treatment-seeking veterans. The measure performed sufficiently well to be included in the national survey. However, the national survey component of the NVVRS assessed PTSD in a community sample, rather than a treatment-seeking sample, and the research literature suggests that relationships between diagnostic measures and "true" diagnoses (that is, the validity of such measures) tend to decline somewhat in moving from treatment-seeking to general (community) populations. Thus, the NVVRS research team felt that it was important to field a clinical follow-up subsample component that would allow a further examination of the validity of its measures in the general (non-treatment-seeking) population of veterans.

As described in Appendix D, each of the PTSD measures used in the NVVRS was examined in relation to two standards of "caseness" derived from the clinical subsample. All members of the subsample were interviewed by an expert clinician. In contrast to the relationships observed in the preliminary validation study, diagnoses generated by the NVVRS DIS-type measure did not do well in distinguishing cases from noncases in our

clinical follow-up subsample. In contrast to its sensitivity of 87.2, specificity of 72.6, and Kappa of .639 in the validation study, this measure exhibited a sensitivity of only 21.5, specificity of 97.9 and Kappa of .256 when compared with the clinical interviewer's diagnosis. (Comparable concordance estimates with the composite PTSD diagnosis were 22.7, 99.5, and .285, respectively.) Thus, while this measure was quite successful in correctly identifying noncases, it was able to identify only 22-23 percent of the cases of PTSD as diagnosed either by the expert clinician or by multiple indicators, a level of sensitivity to PTSD caseness that is far below acceptable levels. In comparison to the other measures presented in Exhibits D-8 and D-9, the sensitivity and Kappa (that is, measure of agreement between two measures adjusted for chance) for this measure were far worse. For example, the M-PTSD, the other survey-based measure carried forward from the validation study, exhibited a sensitivity of 77.3, specificity of 82.8 and Kappa of .528 in relation to the DSM-III-R clinical diagnosis, and 82.4, 86.8, and .644, respectively, in relation to the composite PTSD diagnosis.

We also computed similar measures of concordance for the diagnoses that were generated by the instrumentation and by the algorithms that were used to simulate the CDC methodology but using the NVVRS DIS-type measure, with even more sobering results. While this simulated measure correctly identified all of the true noncases (that is, specificity of 100.0) as noncases, it identified as cases less than 12 percent of the cases identified by the composite PTSD diagnosis, for a Kappa of only .160 (estimates using the DSM-III-R clinical diagnosis are virtually identical). Although the poorer performance of this measure may result in part from the fact that the composite diagnosis is calibrated against DSM-III-R rather than DSM-III criteria, this effect should be relatively minor. In fact, because the DSM-III-R criteria are somewhat more stringent than those of DSM-III, it might be expected that the CDC-simulated diagnosis would tend to have a somewhat lower specificity and a higher sensitivity than the NVVRS DIS-type measure that is based on DSM-III-R criteria.

One potential explanation of the difference between these estimates is that the CDC prevalence estimate is lower than the NVVRS estimate because the CDC instrumentation detected only the most severe cases. If this were true, then it would follow that the difference between the prevalence

estimates could be viewed as a function of where one chooses to draw the PTSD caseness line.

One way of determining whether this is the case is to examine the relative sensitivity of the CDC simulation diagnosis in detecting less severe and more severe cases. Because of the multiple-measure approach used in the NVVRS, is is possible to operationalize PTSD "severity". To do this, we used the Mississippi Combat-Related PTSD (M-PTSD) scale, the best-validated of our psychometric measures. Conveniently, past research has shown that a cut-off of 106 on the M-PTSD scale discriminates hospitalized PTSD patients from other psychiatric inpatients. Thus, those cases that score over this cut-off are clearly severe. Additionally, analyses of NVVRS data indicate that using the 106 cut-off for caseness results in 100% specificity against either the clinical diagnosis or the composite diagnosis--that is, there are no false-positives associated with this cut-off score.

To examine the severity hypothesis, we examined a three-way split of the composite diagnosis PTSD positives into these groups: the "less severe" (M-PTSD scale scores up to 105), who represented just over half (55 percent) of the PTSD positives; the "more severe", with scores of 106-119, who represented about one quarter of the PTSD positives; and the "most severe", with scores of 120 or higher, who represented the "top" quarter of the PTSD positives. In the "less severe" category, the CDC simulation identified as PTSD positive only one of 42 cases, for a sensitivity of 2.4 percent. In the "more severe" category (M-PTSD scores 106-119), the CDC simulation identified as PTSD positive only three of 17 cases (sensitivity=17.6 percent); and, in the "most severe" category, only five of 17 (sensitivity=29.4 percent). Thus, even among the most severe quarter of the PTSD cases, the CDC simulation identifies only 3 of 10 as cases.

As an additional piece of evidence, mean M-PTSD scale scores were computed for the cases identified by the CDC simulation as positive and negative, by level of severity. These means were as follows:

	CDC Simulation Diagnosis	
PTSD Severity	Negative	Positive
Less severe	91.2 (n=41)	*** (n=1)
More severe	111.3 (n=14)	113.3 (n=3)
Most severe	128.6 (n=12)	144.4 (n=5)

These data indicated that, in the "more severe" category (people scoring over the 106 cut-off for inpatient treatment but under 120), the mean for the CDC simulation positives and negatives was about the same. In the "most severe" category, however, the mean for the CDC positives was higher than the mean for the negatives.

Taken together, the set of findings related to severity seemed to be telling us that: (1) overall, the CDC simulation diagnosis does not do a very good job of identifying PTSD in a community sample--that is, it lacks sensitivity; (2) the ability of the CDC simulation to diagnose PTSD is modestly related to PTSD severity, in that the more severe the PTSD, the more likely it will be detected by the CDC simulation; and (3) even among very severe cases, the CDC simulation diagnosis misses the majority of cases. Thus, although the CDC simulation diagnosis does better at identifying more severe PTSD than less severe, even among the most severe cases, the method does not detect a majority of true PTSD cases.

C. Conclusions

Analysis of the various factors that could account for the differences in prevalence rates between the CDC and NVVRS studies suggests that the difference is primarily the result of differences in the measures used to assess PTSD. Diagnoses derived from all of the DIS-type algorithms produce lower prevalence estimates than the composite NVVRS estimate of 15 percent. The low sensitivity exhibited by the DIS-type diagnoses suggests that the lower estimates derived from these DIS-type measures are a result of a

tendency to miss "true" cases of the disorder and thereby underestimate true prevalence. Prevalence estimates developed from the NVVRS DSM-III-R clinical and composite methods on the VES-matched sample are both 15 percent; for the VES-matched sample using the M-PTSD measure, the prevalence estimate is 23 percent. These estimates are substantially the same as those obtained on the total NVVRS sample of male theater veterans. This suggests that the study population characteristics and interviewing procedures probably do not account for the overall differences observed in PTSD prevalence. Although the evidence is not complete, it is quite compelling, and it implies that the low estimates derived from the CDC Vietnam Experience Study result primarily from their reliance on an instrument that is not sufficiently sensitive to detect true PTSD cases in a community population.

APPENDIX F

NVVRS Background/Predisposition Adjustment

Appendix F
NVVRS Background/Predisposition Adjustment

The research literature concerning the prevalence of PTSD among Vietnam veterans has often been concerned with the issue of predisposition. The general issue is whether some characteristics of the individual that predate the occurrence of a traumatic event and the onset of PTSD symptoms might "account for" (explain) the higher rates of PTSD and other disorders observed in trauma survivors. In relationship to Vietnam veterans, the question is often posed: to what degree are the variations in combat-related PTSD symptoms due to exposure to combat or other war zone stressors, and to what degree are they due to "predisposing" factors (characteristics that the combatants brought with them to the war)?

Foy, Carroll, & Donahoe (1987) recently reviewed 12 studies that examined etiological factors in combat-related PTSD in Vietnam veterans. An examination of that review and of several studies that have been published since reveals that most studies (e.g., Egendorf, Kadushin, Laufer, Rothbard, & Sloan, 1981; Foy & Card, 1987, Foy, et al., 1987; Foy, Siprelle, Rueger, & Carroll, 1984; Frye & Stockton, 1982; Gallers, Foy, & Donahoe, 1985; Penk et al., 1981; Worthington, 1977) have found that combat exposure in Vietnam is the primary etiologic variable related to PTSD, and that premilitary variables are more weakly associated or not at all associated with PTSD. Among the potential predisposing factors controlled for in one or another of these studies were family stability, minority status, premilitary psychosocial adjustment, family environment, war attitudes, emotional stability, age of entry into service, high school grades and school participation, alcohol and drug problems, and age of time of service.

However, in a smaller set of studies (Worthington, 1977; Nace, O'Brien, Mintz, Ream, & Meyers, 1978) premilitary factors such as age at entry, education, problems with authority, and premilitary psychosocial adjustment, were found to be more strongly linked with combat related PTSD and other postmilitary mental health problems than combat. Thus, findings to date concerning the role of background factors in the development of PTSD have been mixed.

The number of potential predisposing variables covered in any of these particular studies was small and most did not attempt to operationalize a logically exhaustive set of the various types of factors that may be important to consider.

Although the set of background characteristics analyzed in the NVVRS does not exhaustively cover every possible factor which that might be hypothesized to predispose one to develop PTSD, the study did cover a wider range of variables than previous studies have considered, and many that have not been previously analyzed. Exhibit F-1 shows the set of potential predisposing factors analyzed in the NVVRS and summarizes their characteristics. Exhibit F-2 shows the R-square (proposition of variance accounted for) and the significant coefficients for the models for each of the current PTSD contrasts.

To examine the extent to which these potential predisposing factors might account for observed study group differences, a series of analyses was conducted. First, the bivariate relationships between the list of potential predisposing factors and the current prevalence of PTSD were examined. Any variables found not to be related to PTSD would be deleted from further consideration. However, virtually none of the potential predisposing variables were found to be not related to PTSD, though the correlations were typically quite low (around .10).

Next, the relationships between the potential predisposing factors and each of the study group contrasts were assessed. Variables found not to be related to a specific contrast (e.g., male theater veterans versus male era veterans) were dropped from further consideration for analysis of that contrast.

The potential predisposing factors found to be related to each specific contrast were then entered into a stepwise linear regression procedure with probability of current PTSD caseness as the dependent variable. The independent variables were the binary contrast variable (e.g., male theater versus male era veterans) and the set of potential predisposing variables found to be related to that contrast. In this method, the regression coefficient (beta) for the binary contrast variable is interpretable as the difference in current PTSD prevalence rate between the two study groups being contrasted, adjusted for the potential predisposing factors that remain in the model at the final step (i.e., those that are significantly

Exhibit F-1

VVRS Potential Predisposing Factors

Variable Name	Variable Description
I. Childhood and Family Background Factors	
A. Demographics	
1. Age	Computed from year of birth
2. Race	Recoded to White, Black, and Other
3. Hispanic Origin	Mexican American, Puerto Rican, Other Hispanic origin, not Hispanic
4. Region Where Grew Up	Recoded to 5 regions: Northeast, North Central, South, West, and Foreign
5. Rural/Urban Background	Type of area lived in when growing up; rural or country, small town, small city or suburb and large city
6. Religious Background	Recoded to Baptist/ Fundamentalist, other Protestant, Catholic, other
7. Language Other Than English Spoken in Home	Yes/No
B. Family Socioeconomic Status	
1. Father's Education	Less than 7 years, between 7 and 12 years, finished high school, and some schooling past high school
2. Mother's Education	Less than 7 years, between 7 and 12 years, finished high school, and some schooling past high school
3. Socioeconomic Status of Father's Occupation	Score based on parent's occupation
4. Number of Months Father Unemployed	Actual number of months (0-120)
5. Perceived Economic Well-Being of Family of Origin	Perception of how well off while growing up; well to do, average, or rather poor
6. Parent's Ever Had Hard Time Making Ends Meet	No, rarely, sometimes or often
C. Family Social Environment	
1. Father's Military History	(Other than Vietnam) never served in the military, experienced combat, or wounded or killed

Exhibit F-1 (continued)

Variable Name	Variable Description
2. Mother's Military History	Other than Vietnam) never served or served in military
3. Residential Instability	Number of moves before age 16; moves involving a change in school weighted as more important
4. Early Childhood Disruption	Family disruption before 16: intact or parents divorced or separated, parent(s) died, parents never married or other disruption
5. Age at Family Disruption	Age when family had first disruption, less than 1 year old, 1-5 years old or age 6 or older
6. Childhood Family Structure	Natural parents; mother or father with stepparent or relative; mother or father alone; guardian or foster parents, orphanage or other
7. Presence of Mother/Father Figures While Growing Up	Father and mother; father and mother figure or mother and father figure; father and mother figure; one parent; one family figure; no man or woman responsible
8. Relationship With Father	Index reflecting overall quality of relationship with father: showed affection, did things together, wanted to be like, confided in, felt close to, helped you
9. Relationship With Mother	Index reflecting overall quality of relationship with mother: showed affection, did things together, wanted to be like, confided in, felt close to, helped you
10. Frequency Parents Expressed Affection	How often: never, rarely, sometimes or often
11. Ever Saw Parents Hit Each Other	Yes/No
Number of Family/Household Members With:	
12. With Serious Illness	Actual number (0-3)
13. Crippled or Handicapped	Actual number (0-3)
14. With Drinking Problem	Actual number (0-4)
15. Used Hard Drugs	Actual number (0-2)
16. With Any Substance Abuse Problem	Actual number (0-4)
17. With Any Mental Health Problem	Actual number (0-2)
18. Used Outpatient Mental Health Service	Actual number (0-3)

Exhibit F-1 (continued)

Variable Name	Variable Description
19. Used Inpatient Mental Health Service	Actual number (0-2)
20. Arrested or Charged With Crime	Actual number (0-3)
21. Served Jail Sentence	Actual number (0-2)
22. Physically Abused as a Child	How often; never, fairly often, sometimes, or hardly ever
D. Biopsychosocial Factors	
1. Substance Abuse by First Degree Relative(s) While Growing Up	Yes/No
2. Mental Disorder in First Degree Relative(s) While Growing Up	Yes/No
3. ADM Problem in First Degree Relative after Age 16	Yes/No
4 Mental Health Service Utilization By First Degree Relative(s)	Yes/No
E. Childhood Behavior Problems	
1. Number of Problem Behaviors in Childhood	Index composed of problems before age 18 with school, police, and family: bad grades, truancy, suspension, starting fights and fighting, running away, hurting someone intentionally, setting fires, telling lies, stealing, and being arrested
2. Dropped Out Before Completing High School	Yes/No
3. Marriage Prior to Age 18	Yes/No
4. Marital Disruption Prior to Age 18	Yes/No
5. Parent Prior to Age 18	Yes/No
F. Childhood Health and Mental Health Status	
1. Number of Chronic Health Conditions Prior to Age 18	Count of medical conditions occurring before age 18 (0-41) Actual number (0-20)
2. Number of Probable Traumatic Events Prior to Age 18	Actual number (0-4)
NSVG/DIS Disorders Prior to Age 18:	
3. Affective Disorder	Yes/No
4. Antisocial Personality Disorder	Yes/No
5. Anxiety Disorder	Yes/No
6. Drug Abuse or Dependence	Yes/No
7. Alcohol Abuse or Dependence	Yes/No

Exhibit F-1 (continued)

Variable Name	Variable Description
II. Premilitary Factors	
A. Role Status at Entry to Military	
1. Age at Date of Entry	Calculated from year of birth and year entered military
2. Educational Attainment	Some high school or less; high school graduate; some college; or college graduate
3. Employment Status	Working, unemployed; going to school; or retired, keeping house
4. Marital Status	Married, single divorced/ separated or widowed
5. Number of Marriages	Actual number (0-2)
6. Number of Marital Disruptions	Actual number (0-2)
7. Parent Prior to Entry	Yes/No
B. Health And Mental Health Status Prior to Entry to Military	
1. Number of Chronic Health Conditions	Count of medical problems between age 18 and time of entry to military (0-41); actual number (0-8)
2. Affective Disorder	Yes/No
3. Anxiety Disorder	Yes/No
4. Drug Abuse or Dependence	Yes/No
5. Alcohol Abuse or Dependence	Yes/No
6. Number of Probable Traumatic Events Prior to Entry to Military	Actual number (0-5)
III. Military Factors	
A. General -- Non-Vietnam	
1. Active Duty Prior to Vietnam Era	Yes/No
2. Served Overseas Other Than Vietnam	Yes/No
3. Non-Vietnam Combat Duty	Yes/No
4. Nature of Non-Vietnam Duty Overseas	None, non-combat or combat duty
5. Degree of Non-Vietnam Combat Exposure	
B. Pre-Vietnam Role Status	
1. Age at Date of Entry to Vietnam	Categorical variable created: 17-19 years, 20, 21, 22-24, or 25-51 years of age
2. Educational Attainment at Entry to Vietnam	Some high school or less; high school graduate; some college; or college graduate
3. Number of Marriages at Entry to Vietnam	Actual number (0-3)

Exhibit F-1 (continued)

Variable Name	Variable Description
4. Number of Marital Disruptions at Entry to Vietnam	Actual number (0-2)
5. Parent Prior to Entry to Vietnam	Yes/No
C. Pre-Vietnam Health and Mental Health Status	
1. Number of Chronic Health Conditions Prior to Entry to Vietnam	Actual Number (0-9)
NSVG/DIS Disorder Prior to Entry to Vietnam:	
2. Affective Disorder	Yes/No
3. Anxiety Disorder	Yes/No
4. Drug Abuse and Dependence	Yes/No
5. Alcohol Abuse and Dependence	Yes/No
6. Number of Probable Traumatic Events Prior to Entry to Vietnam	Actual number (0-6)
6. Number of Probable Traumatic Event	Actual number (0-6)

Exhibit F-2

Predisposition adjustment modeling results

ALL MALES

Contrast	R-Square	Beta	Variable Description
Theater vs. Era	.219	.290	Intercept
		.121	Group contrast parameter
		.017	Problem Behaviors in Childhood
		-.002	Age at Time of Interview
		.323	Anxiety Disorder II bf Entering Military - Yes
		-.007	Age Entered Military
Theater High War Zone Stress Exposure vs. Era	.384	.293	Intercept
		.288	Group contrast parameter
		.192	Anti-social Personality before Age 18 - Yes1
		.380	Anxiety Disorder I before Age 18 - Yes
		.218	Physically Abused as a Child - Very Often
		.317	Drug Abuse before Entering Military - Yes
		-.078	Active Service Prior to Entry to Vietnam - Yes
		.281	Orphan
		.263	Months Father/substitute Unemployed Not Ascertained
Theater vs. Civilian	.293	.361	Intercept
		.104	Group contrast parameter
		.194	Physically Abused as a Child - Very Often
		.173	Anti-social Personality before Age 18 - Yes1
		.047	Physically Abused as a Child - Sometimes
		.042	No.Probably Traumatic Evts Before Age 18
		.132	Father's Military Hist (other than Viet) - Not Ascertained
		.045	Substance Abuse by 1st Degree Relative - Yes
		-.021	Relationship with Mother(figure)
		.077	Geographical Instability - Not Ascertained
		-.001	Age at Time of Interview
		-.089	Hard time Making Ends Meet - Never
		-.068	Hard time Making Ends Meet - Sometimes
		-.086	Hard time Making Ends Meet - Rarely
		.055	Hispanic Origin-Yes, Puerto Rican
		-.029	Father's Education - Finished H.S.
		-.138	Hard time Making Ends Meet - Not Ascertained
		-.057	Geographical Origin - North Central
		-.045	Geographical Origin - South
		.292	Racial Background-American Indian/Alaskan Native
		-.044	Geographical Origin - Northeast
		-.054	Racial Background-Asian

ALL MALES

Contrast	R-Square	Beta	Variable Description
Theater High War	.514	.351	Intercept
Zone Stress Exposure		.268	Group contrast parameter
vs. Civilian		.347	Racial Background-American Indian/Alaskan Native
		-.088	Geographical Origin - North Central
		.077	Perceived Economic Well-being - About Average
		-.203	Hard time Making Ends Meet - Never
		-.251	Hard time Making Ends Meet - Rarely
		-.165	Hard time Making Ends Meet - Sometimes
		.119	Father's Military Hist (other than Viet) - Wounded/Killed
		.007	Geographical Instability
		.205	Physically Abused as a Child - Very Often
		.485	Mental Disorder in 1st Degree Relative - Not Ascertained
		.076	Alc/Drg/Mntl Prob in 1st dg Rel > age 16 - Yes
		.175	Anti-social Personality before Age 18 - Yes1
		.400	Anxiety Disorder I before Age 18 - Yes
		.341	Orphan

Exhibit F-2 (continued)

WHITE MALES

Contrast	R-Square	Beta	Variable Description
Theater vs. Era	.077	.148	Intercept
		.113	Group contrast parameter
		-.035	Father's Education - Finished H.S.
Theater High War Zone Stress Exposure vs. Era	.373	.288	Intercept
		.271	Group contrast parameter
		.213	Anti-social Personality before Age 18 - Yes1
		.361	Anxiety Disorder I before Age 18 - Yes
		.073	No. of Family Members w/Drinking Prob
		-.092	Education Upon Entry to Military - Some College
		.393	No Mother Figure
		-.070	Active Service Prior to Entry to Vietnam - Yes
Theater vs. Civilian	.277	.392	Intercept
		.090	Group contrast parameter
		-.103	Hard time Making Ends Meet - Never
		-.086	Hard time Making Ends Meet - Sometimes
		-.108	Hard time Making Ends Meet - Rarely
		-.002	Age at Time of Interview
		-.026	Father's Education - Finished H.S.
		-.154	Hard time Making Ends Meet - Not Ascertained
		-.215	Orphan
		.101	Mother's Education - Not Ascertained
		.171	Anti-social Personality before Age 18 - Yes1
		.037	No. Family Memb w/Substance Abuse Prob
		-.031	Relationship with Mother(figure)
		.212	Physically Abused as a Child - Very Often
		-.034	Father's Military Hist (other than Viet) - In Combat
Theater High War Zone Stress Exposure vs. Civilian	.480	.395	Intercept
		.237	Group contrast parameter
		.108	Perceived Economic Well-being - About Average
		-.303	Hard time Making Ends Meet - Never
		-.358	Hard time Making Ends Meet - Rarely
		-.272	Hard time Making Ends Meet - Sometimes
		.113	Alc/Drg/Mntl Prob in 1st dg Rel > age 18 - Yes
		.212	Anti-social Personality before Age 18 - Yes1
		.358	Anxiety Disorder I before Age 18 - Yes
		.441	No Mother Figure

BLACK MALES

Contrast	R-Square	Beta	Variable Description
Theater vs. Era	.147	.875	Intercept
		.148	Group contrast parameter
		-.070	Non-Vietnam Duty Overseas - Non-Combat Duty
		-.023	Age Entered Military
		.892	Orphan
Theater High War Zone Stress Exposure vs. Era	.352	.798	Intercept
		.313	Group contrast parameter
		.228	Anxiety Disorder II bf Entering Military - Yes
		.145	Anti-social Personality before Age 18 - Yes1
		-.121	Active Service Prior to Entry to Vietnam - Yes
		.353	Degree of Non-Vietnam Combat Exposure-Not Ascertained
		-.023	Age Entered Military
Theater vs. Civilian	.238	.183	Intercept
		.181	Group contrast parameter
		.378	Anxiety Disorder I before Age 18 - Yes
		.177	Alcohol Abuse before Age 18 - Yes
		.198	Physically Abused as a Child - Hardly Ever
		-.072	Family Disruption - Parent(s) Died
Theater High War Zone Stress Exposure vs. Civilian	.522	.182	Intercept
		.285	Group contrast parameter
		.105	Geographical Origin - Northeast
		.399	Father's Military Hist (other than Viet) - Not Ascertained
		.418	Age at Family Disruption - Not Ascertained
		.175	No. of Family Members Crippled/Handic
		.280	Physically Abused as a Child - Fairly Often
		.295	Physically Abused as a Child - Very Often
		.028	Problem Behaviors in Childhood
		.429	Anxiety Disorder I before Age 18 - Yes

HISPANIC MALES

Contrast	R-Square	Beta	Variable Description
Theater vs. Era	.350	.257	Intercept
		.243	Group contrast parameter
		.017	Problem Behaviors in Childhood
		-.108	Geographical Origin - North Central
		-.080	Non-Vietnam Duty Overseas - Non-Combat Duty
		-.188	Religious Background - Other Protestant
		.184	Religious Background - Other
Theater High War Zone Stress Exposure vs. Era	.524	.467	Intercept
		.445	Group contrast parameter
		.378	Orphan
		-.155	Geographical Origin - North Central
		.005	Geographical Instability
Theater vs. Civilian	.348	.288	Intercept
		.199	Group contrast parameter
		-.133	Geographical Origin - North Central
		-.093	Mother's Education - Finished H.S.
		-.087	Mother's Education - Between 7-12 Years
		-.074	Geographical Origin - South
		.338	Father's Education - Not Ascertained
		-.088	Geographical Origin - Foreign
		.020	Problem Behaviors in Childhood
		-.105	No. Family Members Arrested & Charged
Theater High War Zone Stress Exposure vs. Civilian	.604	.388	Intercept
		.398	Group contrast parameter
		-.197	Geographical Origin - North Central
		-.210	No. Family Members served Jail Sentence
		.550	Physically Abused as a Child - Fairly Often
		.099	Alc/Drg/Mntl Prob in 1st dg Rel > age 18 - Yes
		.024	Problem Behaviors in Childhood
		.384	Orphan

ALL FEMALES

Contrast	R-Square	Beta	Variable Description
Theater vs. Era	.131	.164	Intercept
		.079	Group contrast parameter
		.720	Presence of Mother/Father Figures - No Man/Woman Responsible
		-.028	Relationship with Mother(figure)
		.034	Language other than English Spoken - No
		-.024	Rural/Urban Background - Rural or Country
		.013	No.Chrnc Hlth Cond. Prior to Military
Theater High War Zone Stress Exposure vs. Era	.243	.120	Intercept
		.164	Group contrast parameter
		.761	Orphan
		.061	Language other than English Spoken - No
		.644	Geographical Instability - Not Ascertained
Theater vs. Civilian	.148	1.568	Intercept
		.081	Group contrast parameter
		-.001	Age at Time of Interview
		-.029	Father's Military Hist (other than Viet) - Served Military
		.014	Problem Behaviors in Childhood
		.087	No.Probably Traumatic Evts Before Age 18
		-.724	Anti-social Personality before Age 18 - Yes
Theater High War Zone Stress Exposure vs. Civilian	.235	.141	Intercept
		.164	Group contrast parameter
		.186	Father's Military Hist (other than Viet) - Wounded/Killed
		.044	Alc/Drg/Mntl Prob in 1st dg Rel > age 18 - Yes
		.488	Orphan
		.595	Geographical Instability - Not Ascertained

Exhibit F-2 (continued)

THEATER VETERANS

Contrast	R-Square	Beta	Variable Description
Theater Males	.219	.175	Intercept
White vs. Black		-.062	Group contrast parameter
		-.156	Hard time Making Ends Meet - Never
		-.152	Hard time Making Ends Meet - Rarely
		-.112	Hard time Making Ends Meet - Sometimes
		-.200	Hard time Making Ends Meet - Not Ascertained
		.251	Father's Military Hist (other than Viet) - Not Ascertained
		.210	Physically Abused as a Child - Very Often
		.019	Problem Behaviors in Childhood
		-.075	Active Service Prior to Entry to Vietnam - Yes
		.439	Affective Disorder bf Going to Vietnam - Yes
		.056	Age Entered Vietnam - 19 or Younger
Theater Males	.261	.234	Intercept
White vs. Hispanic		-.078	Group contrast parameter
		-.066	Geographical Origin - Northeast
		-.082	Geographical Origin - North Central
		-.083	Geographical Origin - South
		-.039	Father's Education - Finished H.S.
		.569	Mother's Education - Not Ascertained
		-.138	Hard time Making Ends Meet - Never
		-.131	Hard time Making Ends Meet - Rarely
		-.092	Hard time Making Ends Meet - Sometimes
		.265	No. of Family Members used Hard Drugs
		.210	Physically Abused as a Child - Very Often
		.017	Problem Behaviors in Childhood
		-.065	Active Service Prior to Entry to Vietnam - Yes
		.408	Affective Disorder bf Going to Vietnam - Yes
		.061	Age Entered Vietnam - 19 or Younger
		-.228	Fatsel - Not Ascertained

THEATER VETERANS

Contrast	R-Square	Beta	Variable Description
Theater Males	.255	.862	Intercept
Black vs. Hispanic		-.024	Group contrast parameter
		-.010	Age at Time of Interview
		-.090	Geographical Origin - North Central
		.055	Mother's Education - Less than 7 Years
		-.492	Perceived Economic Well-being - Not Ascertained
		-.084	Father's Military Hist (other than Viet) - Served Military
		.273	Father's Military Hist (other than Viet) - Not Ascertained
		-.123	Family Disruption - Parent(s) Died
		.150	Physically Abused as a Child - Sometimes
		.022	Problem Behaviors in Childhood
		-.880	Drug Abuse before Age 18 - Yes
		.795	Drug Abuse before Entering Military - Yes
		-.113	Non-Vietnam Duty Overseas - Non-Combat Duty
		-.118	Age Entered Vietnam - 21
		-.083	Age Entered Vietnam - 22-24
		.090	No Father Figure

THEATER VETERANS

Contrast	R-Square	Beta	Variable Description
Theater Males	.401	.265	Intercept
High vs. Low/Mod		.184	Group contrast parameter
War Zone Stress Exposure		.335	Racial Background-American Indian/Alaskan Native
		-.173	Perceived Economic Well-being - Not Ascertained
		-.132	Hard time Making Ends Meet - Never
		-.135	Hard time Making Ends Meet - Rarely
		-.091	Hard time Making Ends Meet - Sometimes
		.199	Physically Abused as a Child - Very Often
		.419	Parent Prior to Age 18 - Not Ascertained
		.207	Anti-social Personality before Age 18 - Yes1
		-1.221	Drug Abuse before Entering Military - Not Ascertained
		-.005	Age Entered Vietnam
		.284	Anxiety Disorder II bf Going to Vietnam - Yes
		.095	Drug Abuse before Going to Vietnam - Yes
		1.001	Drug Abuse before Going to Vietnam - Not Ascertained
		-.355	Age Entered Vietnam - Not Ascertained
Theater Males	.275	.196	Intercept
Positive vs. Negative		.049	Group contrast parameter
Substance Abuse		.105	Hispanic Origin-Yes, Mexican American
		.122	Hispanic Origin-Yes, Puerto Rican
		-.149	Hard time Making Ends Meet - Never
		-.138	Hard time Making Ends Meet - Rarely
		-.114	Hard time Making Ends Meet - Sometimes
		-.183	Hard time Making Ends Meet - Not Ascertained
		.068	Substance Abuse by 1st Degree Relative - Yes
		.013	Problem Behaviors in Childhood
		.068	No.Probably Traumatic Evts Before Milit
		-.003	Age Entered Vietnam
		.072	Age Entered Vietnam - 19 or Younger
		.047	Age Entered Vietnam - 20
		.320	Anxiety Disorder II bf Going to Vietnam - Yes
		.138	Geographical Instability - Not Ascertained

Exhibit F-2 (continued)

THEATER VETERANS

Contrast	R-Square	Beta	Variable Description
Theater Males	.328	.477	Intercept
SCPD vs. No SCPD		.068	Group contrast parameter
		.090	Hispanic Origin-Yes, Mexican American
		.094	Hispanic Origin-Yes, Puerto Rican
		-.086	Geographical Origin - Northeast
		-.099	Geographical Origin - North Central
		-.083	Geographical Origin - South
		-.150	Hard time Making Ends Meet - Never
		-.152	Hard time Making Ends Meet - Rarely
		-.108	Hard time Making Ends Meet - Sometimes
		.228	Physically Abused as a Child - Very Often
		.220	Anti-social Personality before Age 18 - Yes1
		-.010	Age Entered Vietnam
		-.500	Age Entered Vietnam - Not Ascertained
		.392	Parent Prior to Entry to Vietnam - Not Ascertained
		.307	Anxiety Disorder II bf Going to Vietnam - Yes
		.053	No.Probably Traumatic Evts Before Viet
Theater Males	.288	.354	Intercept
High SCPD vs. No SCPD		.093	Group contrast parameter
		.102	Hispanic Origin-Yes, Mexican American
		.080	Hispanic Origin-Yes, Puerto Rican
		-.080	Geographical Origin - Northeast
		-.103	Geographical Origin - North Central
		-.082	Geographical Origin - South
		-.051	Hard time Making Ends Meet - Rarely
		.265	Physically Abused as a Child - Very Often
		.227	Anti-social Personality before Age 18 - Yes1
		-.009	Age Entered Vietnam
		-.512	Age Entered Vietnam - Not Ascertained
		.434	Parent Prior to Entry to Vietnam - Not Ascertained
		.320	Anxiety Disorder II bf Going to Vietnam - Yes
		.191	Alcohol Abuse before Going to Vietnam - Not Ascertained
		.053	No.Probably Traumatic Evts Before Vietnam

THEATER VETERANS

Contrast	R-Square	Beta	Variable Description
Theater Females	.189	.022	Intercept
High vs. Low/Mod		.132	Group contrast parameter
War Zone Stress Exposure		.170	No. Family Memb w/Substance Abuse Prob
		-.180	Substance Abuse by 1st Degree Relative - Yes
		.239	Affective Disorder bf Going to Vietnam - Yes
		.723	Orphan
Theater Females	.181	.232	Intercept
Positive vs. Negative		.210	Group contrast parameter
Substance Abuse		-.042	Relationship with Mother(figure)
		-.051	Father's Education - Less than 7 Years
		.398	Hard time Making Ends Meet - Not Ascertained
		.646	Orphan
Theater Females	.102	.191	Intercept
SCPD vs. No SCPD		.071	Group contrast parameter
		-.007	Age at Time of Interview
		.049	Language other than English Spoken - No
		-.113	Presence of Mother/Father Figures - One Family Figure
		.854	Presence of Mother/Father Figures - No Man/Woman Responsible
		.005	Age Entered Military
		.054	Education Upon Entry to Vietnam - Some College
		.044	No.Probably Traumatic Evts Before Viet
Theater Females	.059	.248	Intercept
High SCPD vs. No SCPD		.078	Group contrast parameter
		-.005	Age at Time of Interview
		.038	Language other than English Spoken - No
		-.118	Presence of Mother/Father Figures - One Family Figure
		.065	Education Upon Entry to Vietnam - Some College

Exhibit F-2 (continued)

related to the probability of PTSD caseness when all others are controlled for). These contrasts that take account of the potential predisposing factors are referred to in table IV-1 as "adjusted" contrasts.

The hierarchical ordering of these regression analyses was done purposefully. The effects of potential predisposing factors were assessed first, and war zone some stress factors were then added to the best predisposition models, thereby allowing variation attributable to the joint action of predisposing factors and war zone stress to be attributed to the predisposing factors. In other words, the final modeling step examines the contribution of war zone stressor exposure to current PTSD prevalence after controlling for predisposition. As a result, the parameter estimates of the final models may be biased, and may overstate the "true" relationship between predisposing factors and PTSD and understate the true relationship between war zone stress exposure and PTSD. The greater the multicollinearity between potential predisposing factors and war zone stress exposure, the greater this bias would be.

This hierarchical analysis strategy was adopted for these analyses so that the maximum potential role of predisposition could be assessed. The results showed clearly that war zone stressor exposure is significantly related to PTSD among theater veterans even after the effect of potential predisposing factors has been controlled (that is, when the variance in PTSD due uniquely to predisposing factors and the variance shared by predisposing factors and war zone stressor exposure is attributed to predisposition). Precise delineation of the independent contributions of these and other factors in the etiology of PTSD (using techniques such as path analysis) is outside the scope of the Congressional mandate, and is thus a task for subsequent analysis. However, examination of the correlations among a selected subset of potential predisposing factors and the war zone stressor exposure factors, shown in Exhibit F-3, suggests that the effects of potential predisposing factors and war zone stress exposure are relatively independent.

Exhibit F-3

Correlations Among Selected Potential Predisposing Factors and War Zone Stress Exposure Indices (Male Theater Veterans)

	Global (continuous)	Global (dichotomous)	Abusive Violence and Other Conflicts	General Combat	Deprivation
FTHREDUC	-.050	-.038	-.031	-.047	-.059
FOHTMEM	.099	.075	.096	.060	.111
DROPOUT	.123	.107	.120	.120	.094
PBBEHVCH	.194	.109	.241	.127	.154
ABUSCHLD	.183	.120	.210	.135	.148
FHMEMARET	.091	.083	.085	.079	.078
FHMMHPBS	.070	.042	.069	.049	.069
FHMSUBAB	.120	.091	.128	.093	.097
MHDRFDR	.067	.034	.066	.044	.067
PRNTSHIT	.060	.053	.066	.033	.062
ASPB18	.201	.123	.233	.148	.161
AFECTB18	.050	.019	.057	.030	.051
ANXDSII18	.124	.112	.109	.090	.101

Legend:
- FTHREDUC = Father's educational attainment
- FOHTMEM = Family veteran grew up in had hard time making ends meet
- DROPOUT = Veteran did not complete high school
- PBBEHVCH = Childhood problem behaviors index
- ABUSCHLD = Veteran was abused during childhood
- FHMEMARET = Member of family/household arrested while veteran was growing up
- FHMMHPBS = Member of family/household had mental health problems while veteran was growing up
- FHMSUBAB = Member of family/household was substance abuser while veteran was growing up
- MHDRFDR = Mental disorder among first degree relative while veteran was growing up
- PRNTSHIT = Veteran saw parents hit each other while growing up
- ASPB18 = Veteran had antisocial personality disorder before age 18
- AFECTB18 = Veteran had an affective disorder before age 18
- ANXDSII18 = Veteran had an anxiety disorder (excluding PTSD) before age 18

APPENDIX G

The Validity of the Diagnostic Interview Schedule (DIS) and a Comparison of NSVG DIS Data with DIS Data from Other Studies

APPENDIX G

The Validity of the Diagnostic Interview Schedule (DIS) and a Comparison of NSVG DIS Data with DIS Data from Other Studies

Appendix G first provides a brief discussion of the DIS and studies of its validity. Comparisons are then made between NSVG DIS data and DIS data from other nationwide studies of community residents and Vietnam veterans. The appendix concludes with a summary and integration of the most important findings.

A. The Diagnostic Interview Schedule

As discussed in Chapter VI, the instrument used to assess the prevalence of specific mental disorders in the NSVG is the National Institute of Mental Health (NIMH) Diagnostic Interview Schedule (DIS) (Robins, Helzer, Croughan, & Ratcliff, 1981). The DIS is a standardized psychiatric interview designed to be used by lay interviewers in community survey settings. The DIS gathers data on symptoms that are appropriate for the diagnosis of a large range of major mental disorders and can be scored according to the criteria of the third edition of the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-III). The instrument was first used in the NIMH-sponsored Epidemiologic Catchment Area (ECA) collaborative research program (Eaton & Kessler, 1985; Regier et al., 1984), which surveyed the mental health status of populations at five sites (New Haven, Baltimore, St. Louis, the Piedmont area of North Carolina and Los Angeles). The ECA studies established benchmark community prevalence estimates of psychiatric disorder against which prevalence estimates in other studies could be compared.

The DIS has a number of separate modules, each used for diagnosing a different psychiatric disorder. A subset of these modules was used in the NSVG to assess nine psychiatric disorders that are subsumed under the four diagnostic categories of affective disorders, anxiety disorders, substance abuse disorders, and personality disorders. To avoid further lengthening

the NSVG interview, not all of the diagnostic modules of the DIS were included in the NSVG instrumentation. The DIS modules omitted were those modules used to assess disorders that were expected to be rare in the population of Vietnam veterans (for example, the schizophrenic disorders), and which are less important in understanding the post-war readjustment problems of veterans (for example, simple phobias). The disorders covered in the following discussions are major depressive episode; manic episode; dysthymia; panic disorder; obsessive compulsive disorder; generalized anxiety disorder; alcohol abuse and dependence, drug abuse and dependence, and antisocial personality disorder. The disorders covered by the DIS and included in NSVG are described in Chapter VI.

In the NSVG, the data from the DIS were scored by a computer diagnostic algorithm originally written at the St. Louis ECA site. This diagnostic algorithm yields both "lifetime" and "current" diagnoses for each of the specific psychiatric disorders. A "lifetime" diagnosis for a disorder is one in which the DSM-III criteria for that disorder were met at some point in the respondent's life. (It should be noted that while "lifetime" diagnoses are meant to assess the prevalence of psychiatric disorder, there is reason to believe that lifetime diagnosis are not as reliable as "current" diagnosis, due to problems such as recall.) DSM-III exclusion criteria can also be operationalized by the scoring program, but the data reported here, as in the ECA, do not use these exclusion criteria.

The DIS is constructed to probe for the severity of symptoms before they are counted toward a diagnosis. For most symptoms reported, respondents are asked if they have reported it to a doctor or other health professional, whether they have taken medication for it or whether it has interfered with their life. One of these severity criteria has to be met before a symptom is counted toward the diagnosis. A few symptoms which are considered to be severe by definition (e.g., a suicide attempt) are exempt from this assessment of severity. When appropriate, the DIS also probes to determine whether a symptom may be the result of medication, alcohol or drugs, or the consequence of a serious injury or illness, and only counts toward the diagnosis those symptoms for which the etiology is unlikely to be medical disorder or substance effect.

Exhibit G-1

Previously Reported Kappas for Agreement of the NIMH DIS and Various Comparative Interviews

Source	Population	Criterion	MDep	Manic	Phobia	Agor	ObCom	Panic	Drug	Alc	ASP
Hesselbrock 82	Alcohol Patients	Clincal- Curr.	.72						.66	1.0	
		SADS-L Life	.74						.72	1.0	.79
Robins 82	Psych. Patients	Psych. DIS	.63	.66		.67	.60	.40	.77	.80	.63
		Chart Dx.	.18				.10	.22		.34	
Wittchen 85	Former Patients	Psych. Interv.	.84		.91		.90	.45	.84		
	Gen. Pop.		.78		.88		.88	.30	.84		
Burnam 83	Psych. Patients	Psych.DSM-III Cklst	.38		.37	.37	.18	.17	.58	.60	.29
		2nd Lay DIS	.58		.49	.43	.48	.42		.76	.79
Hendricks 83	Psych. Patients	Chart Diagnosis	1.00							.50	
Anthony 85	General Gen. Pop.	Psych.CR	.25	.09	.24		.05	-.02	.08	.35	
Helzer 85	General Gen. Pop.	Psych. DSM-III Cklst	.41	.32	.31	.46	.12	.42	.59	.63	.52
		Psych. DIS	.50	.21	.34	.49	.24	.34	.52	.68	.56
Canino 87	Oupatients	Psych. DIS	.61	.43	.57	.59	.59	.61		.79	
		Clin. Dx.	.26	.37	.53	.52	.23	.49		.73	
Griffin 87	Drug Pts.	Clin. Dx.	.40						.89	.57	.24
Elder 87	Psychiat. Patients	Chart Dx. Cur.	.35			.22	.39	.00	-.01	.13	-.02
		Life	.32			.14	.39	-.01	.23	.25	.07

A number of studies have explored the degree to which the DIS results correspond with those from various clinical interviewing procedures. Exhibit G-1 summarizes the results of these investigations in terms of kappas for the agreement of the DIS with various criteria. The kappas produced by the first of these studies (Robins, Helzer, Ratcliff, & Seyfried, 1982) were encouraging, generally ranging from .60 to .80. The only exception was the .40 for panic disorder. The criterion for these studies was a second administration of the DIS by trained clinicians. The Wittchen, Semler, & Van Zerssen, (1982) and Hesselbrock, Stabenau, Hesselbrock, Mirkin, & Meyer (1982) studies, which used different psychiatric interview techniques, were similarly encouraging, except, again, for panic disorder. However, some later comparison studies have not been as positive. The Burnam, Karno, Hough, Escobar, & Forsythe study of the Spanish language version of the DIS (1983) and Helzer et al. (1985) study had clinicians (staff at a community mental health center in the former and psychiatrists in the latter) use a DSM-III symptom checklist to guide criterion interviewers. In the Burnam et al. study, kappas ranged from .29 to .60 with the exception of panic (.17) and obsessive compulsive disorder (.18) disorders. The Anthony (1985) study produced even more negative results, with kappas ranging from -.02 to .35. In this study, a clinical reappraisal of all DIS positives and a sample of DIS negatives from the Baltimore ECA study used an interview instrument that was based on the PSE, but revised to obtain DSM-III diagnoses.

After examining most of the studies reported above, Burke (1986) concluded that the DIS works reasonably well for alcohol disorders and major depression, but that it may have significant difficulty in assessing the presence of panic disorder. Robins (1985) suggests that, for many reasons, the research published to date does not begin to resolve the question of the validity of the DIS. It is unfortunate that, at present, the level of agreement between psychiatric diagnoses that result from different methods is not as high as would be be desired, and that there is no true "gold standard" for assessing the validity of the various procedures. However, the DIS is essentially the only survey instrument currently available that assesses a wide variety of psychiatric disorders

and, based on its widespread use, is clearly the instrument of choice for community-based studies in psychiatric epidemiology. In addition, since the evidence suggests that DIS-based diagnoses for most disorders are reliable, comparisons of DIS-based prevalence estimates of psychiatric disorder across studies appears to be useful.

B. A Comparison of NSVG DIS data with Data from Other Studies

Exhibit G-2 provides prevalence estimates and, when available, their standard errors, which allows for rough statistical comparisons between data from the NSVG Diagnostic Interview Schedule (DIS) and DIS data from other relevant studies. This exhibit shows data for three NSVG samples, ECA total community samples, an ECA subsample of veterans (Vietnam theater and era combined) and samples of era and theater veterans from the Centers for Disease Control's Vietnam Experience Study (VES).

ECA community estimates were based on randomly drawn household samples of about 3,000 respondents per site for each of the ECA's first three sites, (Baltimore, St. Louis, and New Haven) (Robins et al., 1984; Myers et al., 1984). The rates are sex specific, but not age specific, since age categories in the published ECA data did not match those of the NSVG samples. The exhibit gives both the lowest and highest rates across the three sites. Comparisons between rates in the ECA community samples and those NSVG era veteran and civilian samples provide the reader with some basis for assessing the validity of the NSVG DIS results. However, considerable caution must be exercised when interpreting the importance of any differences between these studies because the NSVG samples, both veterans and civilians, differed in important ways from the general community samples that were used in the ECA. Age was one important difference. The ECA samples included individuals of all ages and in the proportions that they were found in community populations. Most of the NSVG sample members were in their forties (or older). Since prevalence rates for many disorders vary with age, these age differences between the two samples could have had a significant impact on current prevalence rates. Since more distant events tend to be recalled with less accuracy than more recent events, lifetime rates probably were affected also.

Exhibit G-2

Comparative Prevalence Rates for Specific Psychiatric Disorders

	NSVG Theater	Standardized NSVG Era	Unstandardized NSVG Era	Standardized NSVG Civilians	ECA Community Low	ECA Community High	ECA Theater and Era	VES Theater	VES Era
I. Affective Disorder									
Males									
Lifetime Depressive Episode	5.1 (0.9)	4.0 (1.3)	3.7 (1.4)	1.5 (0.9)	2.3 (0.4)	4.4 (0.4)	2.7 (0.6)	12.5	8.0
Lifetime Manic Episode	0.8 (0.3)	0.0	0.0	0.0	0.8 (0.3)	1.1 (0.4)	0.9 (0.4)	2.1	0.9
Lifetime Dysthymia	4.2 (0.7)	2.8 (1.1)	2.6 (1.0)	1.2 (0.8)	1.2 (0.3)	2.6 (0.5)	1.8 (0.6)	6.6	3.4
Current Depressive Episode	2.8 (0.6)	0.5 (0.4)	0.3 (0.3)	0.4 (0.3)	1.3	2.2	1.3 (0.5)	4.5	2.3
Current Manic Episode	0.7 (0.3)	0.0	0.0	0.0	0.4	0.8	0.9 (0.4)	*	*
Females									
Lifetime Depressive Episode	12.4 (1.6)	6.1 (1.7)	7.5 (3.0)	5.3 (1.7)	4.9 (0.5)	8.7 (0.8)	*	*	*
Lifetime Manic Episode	1.2 (0.5)	0.4 (0.4)	0.1 (0.1)	0.0	0.5 (0.2)	1.3 (0.3)	*	*	*
Lifetime Dysthymia	4.9 (1.1)	2.1 (0.9)	4.9 (2.3)	2.6 (1.1)	2.9 (0.4)	5.4 (0.7)	*	*	*
Current Depressive Episode	4.3 (1.0)	1.4 (0.7)	5.5 (2.8)	0.8 (0.6)	3.0	4.6	*	*	*
Current Manic Episode	0.5 (0.3)	0.0	0.0	0.0	0.4	0.9	*	*	*
II. Anxiety Disorder									
Males									
Lifetime Panic Disorder	1.8 (0.5)	1.2 (0.7)	1.9 (1.3)	2.1 (1.2)	0.6 (0.2)	1.2 (0.3)	0.8 (0.3)	3.4	1.5
Lifetime Obsessive-Compulsive Disorder	1.8 (0.5)	1.2 (0.7)	1.7 (1.2)	0.3 (0.3)	1.1 (0.3)	2.6 (0.6)	1.8 (0.6)	1.7	1.1
Lifetime Generalized Anxiety Disorder	14.1 (1.3)	10.1 (1.9)	10.1 (2.3)	9.9 (2.0)	*	*	*	23.5	17.2
Current Panic Disorder	0.9 (0.3)	0.6 (0.4)	0.6 (0.4)	0.4 (0.4)	0.3	0.8	0.1 (0.1)	*	*
Current Obsessive-Compulsive Disorder	1.5 (0.4)	0.0	0.0	0.0	0.9	1.9	0.9 (0.4)	*	*
Current Generalized Anxiety Disorder	4.5 (0.8)	3.2 (1.1)	3.5 (1.5)	2.9 (1.2)	*	*	*	4.9	3.2

*Estimate not available

	NSVG Theater	Standardized NSVG Area	Unstandardized NSVG Area	NSVG Standardized Canadas	ECA Community Low	ECA Community High	ECA Theater and Area	VES Theater	VES Area
Females									
Lifetime Panic Disorder	3.0 (0.9)	3.1 (1.2)	1.9 (1.0)	0.9 (0.7)	1.6 (0.3)	2.1 (0.4)	*	*	*
Lifetime Obsessive-Compulsive Disorder	1.5 (0.6)	0.8 (0.6)	0.3 (0.2)	1.3 (0.9)	2.6 (0.5)	3.3 (0.5)	*	*	*
Lifetime Generalized Anxiety Disorder	16.6 (1.9)	17.1 (3.5)	23.1 (6.2)	22.4 (4.6)	*	*	*	*	*
Current Panic Disorder	1.7 (0.8)	1.5 (0.9)	1.7 (1.0)	0.8 (0.7)	0.9	1.2	*	*	*
Current Obsessive-Compulsive Disorder	1.0 (0.5)	0.8 (0.6)	0.3 (0.2)	0.0	1.7	2.2	*	*	*
Current Generalized Anxiety Disorder	4.2 (1.0)	3.4 (1.3)	6.9 (2.6)	3.5 (1.5)	*	*	*	*	*
III. Substance Abuse and Antisocial Personality Disorder									
Males									
Lifetime Alcohol Abuse & Dependence	39.2 (1.9)	37.9 (3.1)	39.2 (3.7)	25.2 (3.5)	19.1 (1.1)	28.9 (1.8)	30.6 (2.0)	50.6	41.8
Lifetime Drug Abuse & Dependence	5.7 (0.9)	5.3 (1.4)	7.0 (2.2)	3.1 (1.2)	6.5 (0.7)	7.4 (0.9)	11.5 (1.3)	14.7	13.0
Lifetime Antisocial Personality Disorder	9.5 (1.2)	9.4 (1.8)	12.6 (2.8)	4.0 (1.4)	3.9 (0.6)	4.9 (0.7)	8.0 (1.2)	23.0	21.1
Current Alcohol Abuse & Dependence	11.2 (1.2)	9.2 (1.8)	8.4 (1.9)	7.0 (2.4)	8.2	10.4	11.6 (1.1)	13.7	9.2
Current Drug Abuse & Dependence	1.8 (0.5)	1.0 (0.7)	1.5 (1.2)	0.8 (0.7)	2.5	3.0	3.7 (0.8)	0.4	0.5
Current Antisocial Personality Disorder	2.0 (0.5)	1.1 (0.7)	1.5 (1.1)	0.0	0.8	2.1	2.3 (0.6)	*	*
Females									
Lifetime Alcohol Abuse & Dependence	9.1 (1.4)	4.9 (1.4)	7.8 (3.0)	1.8 (0.8)	4.2 (0.4)	4.8 (0.5)	*	*	*
Lifetime Drug Abuse & Dependence	1.0 (0.5)	0.7 (0.5)	0.4 (0.3)	1.1 (0.8)	3.8 (0.6)	5.1 (0.6)	*	*	*
Lifetime Antisocial Personality Disorder	0.3 (0.3)	0.5 (0.3)	3.0 (2.0)	0.0	0.5 (0.2)	1.2 (0.3)	*	*	*
Current Alcohol Abuse & Dependence	2.4 (0.7)	1.1 (0.7)	3.1 (2.0)	0.7 (0.5)	1.0	1.9	*	*	*
Current Drug Abuse & Dependence	0.0	0.0	0.0	0.6 (0.6)	1.2	1.6	*	*	*
Current Antisocial Personality Disorder	0.0	0.0	0.0	0.0	0.1	0.5	*	*	*

*Estimate not available.

There were other demographic differences between the NSVG samples and ECA community samples, such as the fact that the ECA data came from only five sites and the NSVG data were derived from a national sample. Demographic differences between studies were most striking for the female samples, because the NSVG female samples were predominantly comprised of nurses. This would imply that NSVG female sample members were more highly educated and perhaps came from more highly educated or successful families than would women even of similar ages, normally found in general community populations. Many NSVG women were never married professional women. All of these differences could impact on mental health outcomes. Recent research (e.g. Blazer et al., 1985) indicated that age is not the only demographic characteristic that may affect the prevalence rates of psychiatric disorder.

ECA rates for veterans came from a recent analysis of the DIS data for all male respondents in the ECA program who reported that they had served in the military, and included data from all five ECA sites (Norquist, Hough, Golding, & Escobar, 1988). The analysis reported in the Norquist et al. study examined differences in rates of psychiatric disorder by era of military service. The data for Vietnam veterans were for 679 individuals who reported that they had served during the Vietnam era. No information was available on which individuals actually served in Vietnam, so the data for the two groups (theater and era) are combined. Since we estimated that 38% of those serving during the Vietnam era actually served in Vietnam, one might expect the rates for this group to be between those for NSVG theater and era veterans, but closer to those for era veterans. However, since the ECA veteran sample was not a nationally representative sample of veterans of the Vietnam era, as the NSVG list samples were, rates for ECA veterans would not necessarily be the same as those for the NSVG veterans. Another difference was the type of samples used: list versus household samples. In household samples, such as those used in the ECA, individuals with certain types of disorders, such as antisocial personality disorder and alcohol abuse, may be somewhat underrepresented, compared to their frequency in list samples. Another difference is that the ECA veteran sample was not a truly national sample. Data for the ECA were gathered in five sites in the

United States, while data for the NSVG were gathered in cities, in towns, and in the countryside throughout the nation. Thus, demographic restrictions on the ECA samples also could have impacted on the observed prevalence estimates.

The Centers for Disease Control (CDC) Vietnam Experience Study collected data from 2490 Vietnam theater and 1972 Vietnam era veterans (Centers for Disease Control Vietnam Experience Study, 1988a; Centers for Disease Control Vietnam Experience Study, 1988b). Like the NSVG, the VES randomly sampled individuals who served in the military during the Vietnam era. However, the VES sample included only a subset of those serving during that period. Restrictions included sex (male), branch of service (Army), rank (E1-E5), length of service, etc. Again, these differences between the samples might have affected prevalence rates, at least for some disorders. Some analyses were performed on a subset of the NSVG theater veteran respondents who were matched to the VES theater veteran respondents on demographic and military service characteristics. This matching process is described in Appendix E. Prevalence rates for this "CDC-matched sample" are described here when rates for this subsample are more similar than the overall NSVG rates to those for the VES theater veteran respondents.

Another factor in the VES study which might affect prevalence rates is one mentioned in the report of their study. The report indicates that the CDC made some modifications in the DIS, and the potential impact of these modifications would be difficult to determine. Finally, it should also be noted that the VES reports of current prevalence are for the last month rather than the last six months. In contrast, "current" is defined as last six months in all of the other data cited, including the NSVG. NSVG data for era veterans is provided in both standardized and unstandardized form. NSVG civilian counterpart data is only available standardized. As described in the introduction to Volume II, we performed statistical tests for differences between theater veterans and both era veterans and civilians using standardized data to control for differences between the groups in race/ethnicity (men), occupation (women) and age (both sexes). Unstandardized data for era veterans is provided because both the VES era veteran data and the ECA veteran data is unstandardized. While data for

NSVG era veterans, unstandardized, should provide an unbiased estimate of the rates of psychiatric disorder for era veterans, it is important to note that the statistical precision of these unstandardized estimates is somewhat lower than if an "unmatched" sample had been drawn.

1. The Affective Disorders: Depressive Episode, Manic Episode, and Dysthymia

a. NSVG and ECA Community Population Comparisons. NSVG era veterans and civilians appeared to be within the range of the ECA community samples for lifetime depression and dysthymia and, for females, for lifetime manic episode. For current depression, and for other comparisons for lifetime and current manic episode, NSVG era veterans and civilians appeared to be somewhat low as compared to ECA community populations, but probably not significantly so. As discussed in Chapter VI, manic episode is such a rare occurrence that the NSVG sample size was not sufficient to assure accurate estimates for this disorder. Lower rates of current depression could result from several factors. One is unusual age distribution of the NSVG samples. Since rates of depression tend to go down in midlife, the lack of younger individuals in the NSVG could produce lower rates for the NSVG group. Other demographic differences, described above, could also have an impact on these rates. Rates for lifetime depression and dysthymia among NSVG theater veterans (men and women) also appeared to be higher than the rates for ECA samples.

b. NSVG and ECA Theater and Era Veteran Comparisons. Rates of lifetime depression and dysthymia among ECA theater and era veterans tended to be in the low range of the ECA community rates and were somewhat lower than the rates for NSVG theater and era veterans. However, taking into account the standard errors for these estimates, it appears that the rate differences between the NSVG and ECA veteran samples would not reach statistical significance. Rates of current depression for the ECA veterans were within the ECA community range, and were between those for the NSVG theater and era veterans. Rates for manic episode in the ECA veteran

sample were similar to those in the ECA community sample and to those for NSVG theater veterans.

c. NSVG and VES Comparisons. The most striking findings observed were for depression and dysthymia. While NSVG rates for theater veterans were somewhat higher than those for ECA veterans and community populations, rates of depression (for both theater and era veterans) and dysthymia (for theater veterans) were much higher in the VES than those for either the ECA or the NSVG. For VES theater veterans, this is true for both lifetime and current depression, despite the fact that the VES used a one-month cutoff for "current," while the NSVG and the ECA used a six-month cutoff. Rates for manic episode for theater veterans also appeared higher for the VES than for any other group or sample examined. The reason for this are not clear. The NSVG VES subsample rates were not much different than those for the total NSVG theater sample. This difference may possibly result from modifications to the DIS.

2. The Anxiety Disorders: Panic Disorder, Obsessive-Compulsive Disorder and Generalized Anxiety Disorder

a. NSVG and ECA Community Population Comparisons. Data from the ECA were not available on generalized anxiety disorder (GAD). For males, prevalence rates for NSVG era veterans and civilians were similar to rates for community populations for current panic disorder and lifetime obsessive compulsive disorder. For lifetime panic disorder, rates were slightly elevated for all male NSVG groups as compared to the ECA samples, but not significantly so. There were no men with current obsessive compulsive disorder in the NSVG community sample, but again, because of the rarity of the disorder, this is not considered to be significant. The rate of current obsessive compulsive disorder for male theater veterans is similar to that for males in the ECA community population.

Rates of both lifetime and current panic disorder among women were similar for NSVG civilians and ECA community residents. Rates for this disorder among women veterans, theater and era (unstandardized), were slightly higher than ECA rates but these rates had large standard errors,

so that the differences did not appear to be statistically significant. For all female NSVG samples, rates for obsessive compulsive disorder, lifetime and current, appeared low as compared to community ECA samples, and no NSVG civilians received a current diagnosis for this disorder. However, it was not clear whether these differences were significant. One possible reason is that the female samples are primarily nurses and, for the reasons described previously, this may impact on these rates. Differences for current disorder may also result, in part, from the fact that rates of obsessive compulsive disorder are higher in the lower age groups, and the NSVG female samples contained few women under 35.

b. NSVG and ECA Theater and Era Veteran Comparisons. The prevalence rates for ECA theater and era veterans were similar for obsessive compulsive disorder and for panic disorder to the rates for community males in the ECA. These rates are similar to the NSVG for obsessive compulsive disorder, but somewhat lower than NSVG rates for panic disorder, although apparently not significantly so.

c. NSVG and VES Comparisons. VES rates of lifetime obsessive compulsive disorder were similar to both those for the ECA and the NSVG, and the VES rates for current GAD were similar to those in the NSVG. (GAD data was not available for the ECA samples.) Rates for lifetime panic disorder among VES theater veterans and lifetime GAD rates for both theater and era veterans were higher than those for the NSVG, and the lifetime panic disorder rates for VES theater were also higher than those for the ECA sample. (VES rates for current panic and obsessive compulsive disorder were not available for comparison.) Again, the reasons for these differences are unknown.

3. Substance Abuse Disorders and Antisocial Personality Disorder (ASP)

a. NSVG and ECA Community Population Comparisons. For lifetime alcohol abuse and dependence (both sexes) and for lifetime ASP (males only) lifetime rates for both NSVG theater and era veterans were higher than

those for ECA community populations, while the rates for NSVG civilian populations resembled those of the ECA community populations. Current rates for these disorders were more similar across these studies, however. The NSVG female samples appeared to be lower than ECA female community samples for ASP, but this is not surprising in light of the select nature of the NSVG female samples.

Perhaps surprisingly, NSVG veterans had rates of drug abuse and dependence that were quite similar to the ECA community samples, and NSVG civilians had rates of the drug disorders that appeared to be lower than community samples. As discussed in Chapter VI, low reported rates for the drug disorders among NSVG samples may result from several factors, including a change in the sociocultural climate since the time of the ECA, an "aging out" of drug use in the middle years, and poorer (or selective) recall of earlier drug use due to the increased time since military service.

b. NSVG and ECA Theater and Era Veteran Comparisons. Rates for the substance abuse disorders among ECA theater and era veterans were more similar to those of the total ECA samples than to the NSVG samples, although rates among ECA veterans for alcohol abuse were slightly higher than those for the ECA sample overall. For antisocial personality disorder, rates for ECA veterans were closer to NSVG rates than to those of the ECA total samples, supporting the finding above and in Chapter VI of substantially higher rates of ASP among veterans.

c. NSVG and VES Comparisons. Lifetime rates of both of the substance abuse disorders and antisocial personality disorder in the VES were substantially higher than those for veterans in the NSVG. Current drug abuse rates were lower than those for the NSVG. For both drug abuse (lifetime and current) and antisocial personality disorder, using a VES matched subsample of NSVG theater veterans makes the rates between the studies more similar, but the elevation in these rates of lifetime disorder in the NSVG subsample still does not reach the magnitude of elevations observed in the VES. It is interesting that rates for current drug use

among veterans in both the NSVG and the VES are lower than rates for ECA veterans. Again, this may be related to lower drug use in middle age as well as a fear of admitting to drug use in the current national climate, which is strongly anti-drug use. As with the disorders discussed previously, current alcohol abuse and dependence in the VES was also more similar to the NSVG than the lifetime rates.

4. Summary

There were some major differences between the NSVG and the ECA in prevalence rates for the specific psychiatric disorders. Major elevations in rates in the NSVG samples as compared to the ECA community samples were found among theater veterans for lifetime depression, lifetime alcohol abuse, dysthymia and antisocial personality disorder. Elevated rates for the alcohol disorders and antisocial personality disorder appeared to exist among era veterans as well. The elevation in rates for antisocial personality disorder, and possibly some of the elevation in rates for the alcohol disorders, may result from a selection bias for those entering the military. The elevation in rates for depression and dysthymia for theater veterans were also found when comparisons were made to NSVG civilian counterparts, and so appear to reflect real differences between Vietnam theater veterans and civilians in the community.

Surprisingly, NSVG veterans had rates of drug abuse and dependence that were similar to the ECA community samples, and NSVG civilians had rates of the drug disorders that appeared to be lower than the community samples. As discussed in Chapter VI, low reported rates for the drug disorders among NSVG samples may result from several factors, including a change in the sociocultural climate from the time of the ECA, an "aging out" of drug use in the middle years and poorer recall of earlier drug use due to the increased time since Vietnam or military service. All women veteran samples appeared to have low rates of obsessive compulsive disorder as compared to the ECA community samples. We hypothesized that this may result from the demographic differences between the NSVG female samples and general community samples.

There were also some major differences between the NSVG and VES in prevalence rates for the various psychiatric disorders. For most of the psychiatric disorders under discussion, lifetime prevalence rates in the VES were much higher than those for the NSVG samples or for the ECA community samples. Among both VES theater and era veterans, lifetime rates of depression, manic episode, generalized anxiety disorder, drug abuse and dependence, and antisocial personality disorder were much higher than either the ECA community or NSVG veteran samples. For VES theater veterans, lifetime panic disorder and dysthymia also appeared to be higher than in the other samples. Except for depression, current rates for the disorders under discussion tended to be more similar than lifetime rates for the NSVG and the VES. In fact, reports of current drug abuse and dependence were even lower in the VES than in the NSVG.

The reason for these elevations in lifetime rates in the VES is not clear. Since the prevalence rates in the VES sample appear closer to the NSVG high war zone group than they do to the NSVG total theater group, we might hypothesize that sample differences between the VES and NSVG account for these results. However, when an NSVG subsample of theater veterans was created which matched the characteristics of VES theater veterans, we found that the rates for this subsample were not as elevated as the rates for the VES, although lifetime rates for antisocial personality disorder and drug abuse and dependence did increase. Our only other hypothesis is that these rate differences may result from modifications to the DIS made by the CDC study team.

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