

Mental Health Issues Among Deployed Personnel: Longitudinal Assessment of the Resilience of Deployed Sailors and Marines— Follow-up Pilot Survey Study

SUPPORTING STATEMENT

A. JUSTIFICATION

1. Circumstances of Information Collection

The Naval Health Research Center (NHRC) is funding a longitudinal study on mental health issues among deployed Sailors and Marines through RTI International. This longitudinal study will assess the service experiences and well-being of a select group of personnel transitioning from the Service into civilian life, and identify predictors of mental health resilience and changes in mental health, as well as resilience over time.

Through the longitudinal tracking of subjects after their return to civilian life, this will also be the first research effort to examine the prospective value of the Post-Deployment Health Reassessment (PDHRA) Program. Further, with access to the Career History Archival Medical and Personnel System (CHAMPS) database for personnel and medical records, RTI can compare confidential PDHRA responses obtained for research purposes, PDHRA responses obtained for official purposes, and actual health care utilization. This comparison will help to determine the degree of underreporting in this official screening effort. Findings will be used to better inform transition, screening, and Combat Stress Control programs about the mental health needs of active-duty personnel, reservists, and veterans.

Due to the importance of the issues, with Congress asking for information on military/veteran psychological health on an almost weekly basis, and because new methodologies have to be developed to answer these questions, we have launched a unique effort in an area (the transition process) where there is insufficient existing data to fully formulate hypotheses about resilience after military service. An initial pilot study allows us to refine our hypotheses as well as our sampling strategy, while also providing useful information on how our measures behave psychometrically. Once we have refined our measures and methodology, we can proceed to provide more definitive answers to DoD, VA, and Congress.

A baseline pilot survey was administered to active-duty Sailors and Marines in the Transition Assistance Program (TAP) during routine mandated separation counseling. Respondents to the baseline survey will be contacted 6 months after the baseline survey to complete the pilot follow up survey. The subsequent mental well-being of this high-risk cohort will be assessed after the participants have transitioned to civilian life. NHRC proposes tracking these respondents over time for the longitudinal portion of the study. Data from extant historical personnel and medical data will also be combined with survey data to develop models that demonstrate the influence of combat, and a variety of covariates on mental health symptoms, resilience, and substance abuse. RTI estimates that

approximately 3,700 of the 6,000 baseline participants will be eligible for and consent to participate in the 6 month follow-up survey. In order to ensure that these respondents can be located, the questionnaire included name, relocation plans, names and contact information for two friends or relatives who always know where the respondent is living, and the respondent's date of birth and social security number. The follow-up surveys will be sent to respondents through the mail. Respondents will also have the option of completing this survey via the internet, which will closely simulate the hardcopy version of the instrument.

In addition to conducting a psychometric analysis of follow-up survey scales that will allow us to assess the reliability of embedded standardized scales, we are also in the process of obtaining Post-deployment Health Reassessment (PDHRA) data from official Navy and Marine Corps sources to supplement questionnaire data. The process of gaining access and the review of the quality and completeness of the data relative to that being collected for research purposes is an important aspect of the pilot testing of this study. Selected identical questions from the PDHRA and the surveys instruments will be compared and estimates of differences in responses to items in official records versus those obtained for research purposes will be generated. These results may also be used in refining the instrument for the full study.

2. Purpose and Use of Information

The goal of the proposed information collection is to explore the relationship between combat exposure and mental health outcomes among a select group of Sailors and Marines in transition from active duty to civilian life, and to examine the interrelationships between combat exposure, a variety of moderators, and subsequent psychological resilience, mental health symptoms, and substance abuse. Data from the study will be used to begin to examine a number of specific hypotheses regarding the effects of individual risk and protective factors on mental health outcomes: among them, that unit cohesion, stress coping skills, in-service health problems, cognitive ability, and social networks are among the variables that will influence the impact of combat experiences on mental well-being.

The proposed pilot survey supports a Congressionally-funded network of programs overseen by the Defense Center of Excellence for Psychological Health and Traumatic Brain Injury (DCoE). Results will be disseminated to members of DCoE, including staff from the Pentagon, Walter Reed Army Medical Center, the National Naval Medical Center, Uniformed Services University of the Health Sciences in Bethesda, Md., and the Veterans Administration. Via DCoE, results will ultimately be disseminated to Congress. Peer-reviewed articles will also be prepared.

The military services and the Veterans Administration will be briefed on recommendations from the study regarding possible interventions to promote successful reintegration of military personnel (particularly combat veterans) who are leaving active duty.

3. Use of Information Technology

Before follow up data collection, RTI will send all records for eligible sample members to the U.S. Postal Service for comparison with their national change of address (NCOA) files. Based on results from a prior survey, we expect to be able to update approximately 2.16% of the sample addresses using this service. RTI's tracing operations staff (TOPS) will then attempt to contact the selected individual

or a member of his or her family using the contact information the respondent provided on the baseline survey and/or the contact information the respondent entered into the project website after relocating. As needed, TOPS tracers will use a variety of other procedures in an effort to obtain the sample member's current address. These include (1) checking numerous forms of directory assistance for telephone listings at various addresses; (2) using electronic criss-cross directories to obtain the names and telephone numbers of current residents or neighbors of the sample members' previous addresses and then calling the current residents or neighbors; (3) calling persons with the same unusual surname in small towns or rural areas to see if they are related to or know the sample member; (4) contacting current or last known residential sources such as landlords and/or accessing tax assessors' records of homeownership; and (5) accessing advanced tracing sources. The tracers are experienced in questioning residential and commercial sources to locate or develop additional leads on a subject's whereabouts.

As mentioned previously, an alternative method of completing the 6-month follow-up survey will be a self-administered web version. RTI will expand the capability of the existing project website by including a link to this online version. Up to this point, the website has served as a means of collecting updated participant locating information.

If the participants have not used the website before, they will be asked to login by using the last four (4) digits of their social security number (SSN) and the first two (2) letters of their name in two separate fields. To protect privacy and confidential information, participant data will not be displayed on the screen, and the information requested for login will be masked during entry. To limit the potential for data mis-entry, the login procedure will require that the participants verify this information twice. Like the earlier step, this re-entry step will also be masked.

After logging in, participants will provide a unique username and password of their choosing, in accordance with standard security measures (i.e., the username and password both must be between 6 and 20 characters, containing at least 1 letter and 1 number, and cannot be the same string of characters). This procedure will create individual user accounts.

On subsequent occasions, participants will be able to log in to the website to update contact information or to take the follow-up survey online using this account information.

RTI employs the use of Transport Layer Security (TLS), which is the successor technology to Secure Socket Layer (SSL) for encryption of data across the Internet for its web applications. The data itself will be stored in a Microsoft SQL Server database that utilizes a relational database table structure. There are daily incremental backups of all data files, with full weekly backups.

4. Efforts to Identify Duplication

No studies to this point have been conducted that provide information on the issues NHRC needs to address for this study of resilience among separating Navy and Marine Corps personnel. No other comprehensive information exists specifically on resilience in similar samples. The baseline study has received approval from Dr. Rosenfeld, Navy Survey Approval Manager, Navy Personnel Research, Studies and Technology and a Report Control Symbol under OPNAV 6500-1.

5. Involvement of Small Entities

This project will not have any significant impact on small entities. The information requested has been held to the absolute minimum required for the intended use.

6. Consequences if Information Collected Less Frequently

At the conclusion of the current pilot survey, future waves to be funded separately will employ sampling methodologies and data collection procedures that will allow generalizations to be made to the general transitioning Marine Corps and Navy populations.

7. Consistency With the Guidelines in 5 CFR 1320.5(d)(2)

There are no special circumstances that require the data collection to be conducted in a manner inconsistent with 5 CFR 1320.5 (d)(2).

8. Consultation Outside the Agency

The notice required in 5 CFR 1320.8(d) was published in the Federal Register on September 28, 2007 (72 FR 55189). A copy of the notice is provided. No comments were received.

The following persons were consulted about this project.

Dr. Gerald Larson
Naval Health Research Center

Barbara Lee Figueroa
Office of the Chief of Naval Operations

LT Tanya M Cruz
OJAG, Code 13

Paul Rosenfeld
Navy Survey Approval Manager
Bureau of Navy Personnel

9. Payment to Respondents

Participants will receive \$25.00 incentive gift cards for completing the follow-up survey.

Although there is evidence to suggest that incentives offered with the questionnaire are the most consistently effective and least biasing incentive among civilian mail survey respondents (Kanuck & Brenson (1975), since transitioning military populations are highly mobile and it is anticipated that many transitioning personnel may not be easily traceable, most respondents to the pilot follow up survey will be offered incentives upon completing the questionnaire. That is, the most cost effective method of incentive will be to have the final page of the paper and pencil questionnaire inform

participants that the gift card will be mailed to the address to which the questionnaire packet was sent. They will be asked to call the project's toll-free number if they would like to provide updated contact information for receiving the gift card. Once RTI confirms receipt of the mail questionnaire, the gift card will be sent to the participant. The final page of the web survey will ask for e-mail and/or a mailing address that the gift card should be sent. Incentives for completion of web surveys will be shipped immediately after questionnaire completion.

A small substudy, however, will randomly select 300 of the baseline respondents to be sent the incentives with the questionnaire rather than after completion. This within-study experiment is being designed to assess the impact of the timing of incentive payment (concurrent with survey invitation vs. post survey completion) and will permit a comparison in response rate between the two groups. Evidence from the medical community suggests that survey response rates may differ with provision of immediate versus delayed (promised) incentives; the provision of an immediate incentive may generate significantly higher response rates (Rosoff, Werner, Clipp, Guill, Bonner, & Demark-Wahnefried, 2005). However, it is unknown whether these findings hold true within the military (or recently-separated military) community, or to what degree.

The subsample of baseline respondents will receive the \$25 gift card incentive along with the mailed invitation to participate in the survey; the remaining baseline respondents will be informed via the survey lead letter that they will receive a \$25 gift card upon receipt of their completed survey (either via mail or web completion).

The decision regarding the sample size of 300 individuals to receive the incentive with the questionnaire rather than after completion was reached based upon a series of power calculations to determine the sample size necessary to detect various decreases in non-response rates (5% vs. 10% difference) at the expected non-response rates of 50%. These calculations were then weighed against available project funds to determine how many incentives could be sent in conjunction with the survey materials, while leaving enough incentive in reserve to send to respondents upon completion of the survey, assuming a 50% response rate. The following sample sizes and differences at various levels of response rates were determined:

- Comparing to a base 50% non-response, a sub-sample of 820 is adequate to find a 5% **decrease** in non-response rate to 45% with 80% power.
- Comparing to a base 50% non-response, a sub-sample of 170 is adequate to find a 10% **decrease** in non-response rate to 40% with 80% power.

Taking available project funds into consideration along with these calculations, it was determined that 300 participants could be sent the \$25 incentive with the questionnaire rather than after completion to test the effect and detect meaningful differences in non-response rates. A power analysis was conducted to determine the smallest observable effect size with this sample. Results using NQuery software showed that a drop of at least 7.7% in non-response rate could be detected with 80% power assuming a one-sided test with a .05 significance level. Specifically, "A two group continuity corrected χ^2 test with a 0.050 one-sided significance level will have 80% power to detect the difference between a Group 1 proportion, π_1 , of 0.423 and a Group 2 proportion, π_2 , of 0.500 (odds ratio of 1.364) (those with and without main mental health outcomes) when the sample sizes are 296 and 3395, respectively (a total sample size of 3690)." If it is found that an increase in response rate with the inclusion of the \$25 incentive with the questionnaire is not offset by an increase in cost due to

undelivered surveys and untraceable potential participants, the incentive will be offered with the questionnaire during the full survey.

10. Assurance of Confidentiality

All staff involved with data collection will be trained on confidentiality and be required to sign confidentiality pledges. Each survey will contain a serial number, or a confidential identifier (in either lithocode or barcode format) that is entered into the survey control quality tracking system for refreshing the respondent database during the distribution process. Through the use of strict data collection and processing protocols, RTI has maintained data confidentiality in hundreds of projects involving human subjects and sensitive topics. Appropriate precautions will be taken at all stages of data storage and handling to prevent disclosure or loss. The following information will be provided to participants in the survey lead letters to explain how the data will be used, stored, and protected:

The questionnaire will take about 30 minutes to complete and you may do so either on the paper-and-pencil version that is enclosed or via a web survey. As a token of our appreciation for your completed questionnaire, you will receive a \$25 VISA gift card. Your answers on this questionnaire will be kept private and will be seen only by civilian researchers. Your name will not be associated with your individual answers and the results of the survey will be reported as group averages only.

Directions for marking your answer choices on the enclosed hardcopy survey are given on the cover page. Please read the instructions carefully. When you have finished, seal the questionnaire in the enclosed pre-paid envelope and place it in a U.S. Postal System mailbox. If you prefer to complete the web survey option, please complete the survey by visiting the following web site: [http://\[REDACTED\]](http://[REDACTED]). You will need an ID and password in order to log in to this website. If you log on to the website but do not finish the survey, you can use your ID and password to log back in and complete the survey.

Your unique ID and password are: ID: [REDACTED] Password: [REDACTED]

Just like the initial survey, taking part in this follow-up is voluntary. You do not have to participate even if you previously said you would be willing to be contacted for the follow-up. You may stop participating in this study at any time without any problems. If you choose not to participate, there will be no penalty to you and you will not lose any benefit to which you are otherwise entitled. Your responses will be protected via the latest Internet technology and your password and user ID will not be stored with your responses. If you agree to participate, we ask you to answer all of the questions as honestly as you can; but you do not have to answer any questions that you do not want to answer. If you do not want to answer a specific question, please skip it and go on to the next question. If someone comes into the room while you are taking the survey and you wish to keep your responses from being seen, there is a logout button on each screen which allows you to exit the survey temporarily. If you click on this button the survey will close and terminate the session. You can return to the system and log back in to continue the survey where you left off. If you complete the web survey, it will indicate that you are still a voluntary participant.

Since security is a consideration when developing Web applications for confidential data collection efforts, a two-tiered security approach will be used for accessing the application and transmitting the data. The first layer of security, Secure Socket Layer (SSL), will ensure that only encrypted data flow over the Internet. As the second layer of security, an ID and password will be required for a survey respondent to enter the application.

Address information from the paper and pencil questionnaire will be keyed by SC Data in a separate file and transferred to RTI on a weekly basis via email in a password-protected, encrypted file.

Once the data are received at RTI, they will be handled with the same high-level security as other data in our possession. Both the questionnaire and the survey data will be stored in a Microsoft SQL Server database utilizing a relational table structure.

The data will be stored on a secure server located at RTI accessible only to the statisticians and analysts assigned to this project. All IP addresses for analysts are registered with SSRI and secure passwords are required before any data are sent in an encrypted form. Other individuals not associated with the project will not be able to access the data without permission from the Principal Investigator. Data will not be released to any individual or organization outside the research team. Data will be archived for five years following the completion of the grant before deletion of all files.

11. Questions of a Sensitive Nature

This survey contains questions of sensitive nature, including information on risk and protective factors. Predictor variables to be incorporated in the modeling procedures are:

Deployment Stressors. Measures of deployment stressors will include *traumatic combat-related exposures* as indicated by scores on the CES, which assesses exposure to stereotypical warfare experiences such as firing a weapon, being fired on (by enemy or friendly fire), witnessing injury and death, and going on special missions and patrols that involve such experiences. Other deployment-related variables will include *unit cohesion*, as indicated by the Griffith Cohesion Scales (Griffith, 2002); *deployment status*, measured by 3 items inquiring about the number of days during the past 12 months the respondent had been away from his/her permanent duty station, the number of times deployed in past 3 years, and time since last deployment; and *service in a combat and/or peace-keeping mission* measured as yes or no to having served in one or more of a list of operational locations (e.g., Persian Gulf; Iraq).

Life Events. The 17-item Post-Deployment Stressors Scale from the DRRI assesses exposure to stressful life events after deployment, including both generally stressful events that are unrelated to the deployment, such as vehicular accidents, physical assaults, and death or serious illness of a relative, and events that may be related to efforts at reintegration (especially for National Guard and Reserves), such as job interruption, difficulties in re-establishing family and community roles, legal or financial difficulties, and divorce.

Stress. Participants will be asked whether they were currently experiencing stress, emotional problems, problems related to the use of alcohol, or family problems and, if so, whether the level of these problems was mild, moderate, or severe; participants will then be asked whether they were interested in receiving help for these problems. Subjects will also be asked about their use of professional mental health services in the past month or the past year and about perceived barriers to mental health treatment, particularly stigmatization as a result of receiving such treatment (Britt, 2000).

Coping behaviors. Respondents will be asked to identify the types of strategies that they used to cope when they “feel pressured, stressed, depressed, or anxious.” The list of response categories included items that tap approach and problem-oriented strategies (e.g., “think of plan to solve problem”; exercise or play sports); emotion-focused strategies, such as seeking social support (“talk to friend or

family member”); and avoidance strategies (e.g., “have a drink,” “smoke marijuana or use other illegal drugs,” “think about hurting yourself or killing yourself”).

Receipt of Mental Health Services in the past 6 months, will be measured with three items including the sources of any such services, reasons they sought help, and whether they had been prescribed medication for depression, anxiety, or sleeping problems by a doctor or other health professional in the past 6 months.

Perceived Need For Mental Health Services in the past 6 months (for those meeting criteria for mental health outcomes) will be measured by a yes or no item: at any time in the past 6 months, and whether the respondent felt a need for counseling or therapy from a mental health professional (either military or civilian).

12. Estimates of Annualized Hour Burden

The average annual response burden is estimated at 3,700 hours and a total cost burden of \$66,600 (see **Table 1**).

As part of the study, we will contact all participants from the baseline study. Approximately 15% of Military personnel are women, so we estimate this will be the proportion of women completing the survey; the remaining 85% will be male respondents. The annualized hour burden reported in **Table 1** was computed as follows.

- According to the developer, an adult will spend about 60 minutes to answer questions in the follow up survey.
- The most recent average national wage provided by the Bureau of Labor Statistics is \$18 per hour.¹

Table 1. Estimated Annualized Respondent Burden

Form	Number of Participants	Number of Responses per Participant	Hours per Response	Total Response Burden (Hours)	Average Hourly Wage in Dollars	Total Average Wage Burden in Dollars
Follow-up survey	3700	1	1	3700	\$18	\$66,600

13. Estimates of Annualized Cost Burden to Respondents

There are no direct costs to participants other than their time to participate in the study.

14. Estimates of Annualized Cost to the Government

The cost estimate for the completion of this project will be about \$468,000 over 12 months.

¹ U.S. Department of Labor, Bureau of Labor Statistics, 2006. Available at: <http://data.bls.gov/cgi-bin/surveymost>. Accessed August 28, 2007)

The cost to the federal government for this effort includes personnel time and contract costs. NHRC personnel hours expended for the project are approximately 2,325 hours when referenced to a base rate of \$40/hour. This results in an estimated \$93,000 in personnel time incurred by the government. The total annualized cost to the government (including contracts) for this data collection effort is approximately \$468,000.

15. Changes in Burden

This is a new project so no changes need to be reflected.

16. Time Schedule, Publication and Analysis Plans

Schedule: Table 2 provides the estimated time schedule for completion of this project.

Table 2. Study Schedule

Task	Start	Finish
1. Finalize questionnaire	9/1/07	10/12/07 (complete)
2. Obtain RTI IRB approval (follow-up)	10/1/07	11/30/07 (complete)
3. Obtain OMB clearance (follow-up)	9/3/07	6/30/08
4. Obtain NHRC IRB approval (follow-up)	7/1/08	7/31/08
5. Develop website for web-based questionnaire	10/29/07	11/16/07 (complete)
6. Finalize 6 month data specifications for data entry	10/29/07	11/16/07 (complete)
7. Identify follow-up sample	1/8/08	1/22/08 (complete)
8. Prepare follow-up materials (paper and electronic)	1/8/08	8/29/08
9. Conduct field data collection (paper and electronic)	9/1/2008	2/27/2009
10. Conduct data analysis	3/2/2009	6/30/2009
11. Compile final report, briefing slides, and manuscripts for journal publication	5/1/2009	9/30/2009

17. Display of Expiration Date

The OMB expiration date will be displayed on the data collection instrument.

18. Exceptions to Certification Statement

There are no exceptions to the certification statement.

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Respondent Universe and Sampling Methods

A convenience sample obtained from among enlisted Sailors and Marines attending Transition Assistance Program (TAP) workshops at select Navy and Marine bases were invited to participate in the current research. Thirteen non-randomly selected installations (seven Navy, six Marine Corps) participated in the study. Program Managers of the Navy and Marine Corps TAPs within the Commander, Navy Installations Command (CNIC), and Manpower and Reserve Affairs (MRM) were

consulted and provided lists of installations that process the greatest numbers of personnel through their TAP classes and included a mix of missions (air stations, naval stations, etc.). Using these lists, the project team selected locations that would maximize the cost efficiency of data collection. Participants were or will be preparing to discharge from the Navy or Marine Corps. Pre-separation counseling—including assistance with issues such as financial planning—and the TAP workshop which focuses on career skills development, job search techniques and information on Veteran's benefits, are mandatory for all Marines returning to civilian life who have served a minimum of 90 days in the Service. Pre-separation counseling in the Navy is conducted at individual units and is mandatory; TAP workshops are not mandatory but are attended by 89% of transitioning sailors (GAO report).

The baseline survey was administered from September 2007 to December 2007. A total of 6772 individuals attended one of the introductory survey sessions conducted during 100 classes at 15 installations, and were invited to take the survey. A final sample of 3746 returned a filled out the survey, yielding a response rate of 55%. A total of 3724 individuals consented to be contacted for the follow-up survey.

Non-response analyses were not included in the analysis plan for the baseline survey and have not been conducted to date, due to the lack of information available regarding non-responders, information which would be needed to conduct any non-response analyses. That is to say, neither personnel rosters nor attendance records are maintained for Transition Assistance Program (TAP) classes, through which the baseline survey was conducted, so no information is available regarding attendees who did not participate in the survey. However, upon full-scale implementation we will work with DoD to determine the optimal method for obtaining the information necessary to conduct non-response analyses and pursuing these analyses to discern any differences among responders and non-responders to the full-scale survey.

We also plan to address non-response issues for the follow-up survey, as discussed in the paragraph below. We plan to use the findings from such studies in the planning and execution of the full-scale study, and should any meaningful differences arise in the non-response analyses of the follow-up pilot survey emerge we will work with DoD to address these issues in the design and implementation of the full-scale study. Due to the minimal number of respondents who consented to participate in the baseline survey but did not also consent to participate in the follow-up survey (22 respondents), analyses of consenters vs. non-consenters have insufficient sample sizes (and therefore statistical power) to produce meaningful results, and therefore have not been conducted.

We anticipate a 50% response rate to the follow up survey. Although some evidence suggests that telephone calls to non-respondents can be effective at increasing response rates, these calls are extremely costly and are not being utilized due to budgetary considerations as outlined by the client. Thus, it is impractical to test for the effectiveness of this methodology under the current budget restrictions. Should these budget parameters change under current or future project work, then the testing of telephone follow-ups to increase response rates should be considered. However, since we have baseline survey responses for all individuals contacted for follow-up, we have a wealth of information to use for nonresponse analysis and adjustment. We will use two measures to provide an evaluation of the extent of the potential nonresponse bias, the relative bias and Cohen's effect size.

These measures will be used to compare distributions on key characteristics and outcomes. Weights can be developed to adjust for any nonresponse bias that may result from sample attrition.

2. Information Collection Procedures

As part of the Wave 1 baseline portion of the study, data were collected via group administration of a self-completed paper and pencil questionnaire. Wave 2, consisting of the follow-up component of the study, will involve administering the survey to all the consenting Wave 1 respondents. The follow-up surveys will be sent to respondents through the mail; respondents will also have the option of completing the Wave 2 survey via the Web.

Before fielding Wave 2, RTI will verify the appropriate mailing address for all individuals. First, we will examine the quality of the home address and unit address information. Before data collection, RTI will send all records for eligible sample members to the U.S. Postal Service for comparison with their national change of address (NCOA) files. Based on results from a prior survey, we expect to be able to update approximately 2.16% of the sample addresses using this service. RTI's tracing operations staff will then attempt to contact the selected individual or a member of his or her family using the contact information the respondent provided on the Wave 1 survey and/or the contact information the respondent entered into the project Web site after relocating.

3. Methods to Maximize Response Rates

Budgetary constraints limit the number of experimental conditions available to test methods of increasing response rates and reducing potential bias, however a number of well-established methods of maximizing survey participation and generalizability will be implemented. For example, A first questionnaire packet will be sent to the sample members. Within approximately 1 week of mailing the first questionnaire packet, we will mail a "Thank you/reminder" letter to all of the sample members. This mailing will thank respondents for returning their completed questionnaires and prompt participation from nonrespondents. It will also remind nonrespondents of the online survey URL and their personal login ID. Those who complete the questionnaire will receive a \$25 gift card (see above exception for substudy).

We will send the second mailing to all eligible sample members who have not submitted a completed questionnaire either by mail or by the Web. Based on response rates received from other mail surveys, we estimate this will be about 50% of the original sample. The second mailing will consist of a more urgently worded cover letter stressing the importance of the study, a replacement questionnaire, and a return postage-paid envelope. The cover letter will again provide a login ID and password for respondents to use with the Web survey. This mailing will be timed to occur when the daily rate of returns indicates that this next mailing is needed.

Within approximately 1 week of mailing the second questionnaire packet, we will mail a "Thank you/reminder" letter to all of the sample members who were sent the second questionnaire mailing. Again, those who completed questionnaires will be given a \$25 gift card. It will also prompt participation from nonrespondents and remind respondent's of the online survey URL and their personal login ID.

Those who (1) have completed the survey, (2) are ineligible, (3) are non-locatable (no good address is available, or all addresses found are non-deliverable) and (4) have requested not to be contacted again, will be eliminated from subsequent contacts.

A Web option will be offered for the convenience of those subjects who have Internet access. For this option, we will develop program specifications for the Web-based survey that closely simulates the hardcopy version of the instrument which will be concurrently mailed to the sample. Because this survey will be self-administered, it will implement extensive range checks, verification screens, and cross-item consistency checks to ensure that the data collected are of the highest quality possible.

4. Data Analysis

Baseline analysis included tests for associations between service branches or other sub-groups and outcomes of interest. These were tested using chi-square tests. Estimates of means and proportions that were considered unreliable based on small sample sizes ($n < 30$) were suppressed and noted by “+” in the tables. Dichotomous mental health outcomes were modeled using a logistic regression for binary outcomes to test for associations with various demographics, service variables, risk and protective factors. Similarly, the resilience outcome was modeled with a logistic regression using a cumulative logit model (which in this log scale is also a proportional odds model). This model permitted the incorporation of the ordered nature of the three-level outcome (see attached report).

Analysis for the follow-up questionnaires will include some modified duplication of baseline statistics, providing raw means and percentages for selected variables by sub-groups of interest, such as service branch, gender, and combat exposure. Variables of interest are a host of variables related to resilience, mental and physical health variables, as well as some employment-related variables. For purposes of this pilot study, DoD will not be making any statistical inferences to a specific target population. Thus, **no standard errors or confidence intervals will be given in the followup pilot study tables. We will only give estimates (and perhaps standard deviations, that provide point estimates for our select sample and indicate the degree of variability in the estimates).** A careful non-response analysis comparing baseline respondents to nonrespondents of the followup data collection will be conducted to determine correlates of non-response in this sample and thus possible sources of bias due to sample attrition.

A longitudinal analysis will also be conducted to explore various risk and protective factors that may moderate the effects of combat exposure on the trajectories of resilience and other mental health variables among former troops following a return to civilian life. The longitudinal analysis will be informed by a number of specific hypotheses regarding the effects of individual risk and protective factors on mental health outcomes. For example, it is hypothesized that trauma exposure will be significantly correlated with psychological health during the 6-month period following military separation, but that it is possible to identify risk and protective factors (controlling for sociodemographic variables) and identify interventions to improve psychological health and social reintegration of combat veterans. Further, it is hypothesized that psychological resilience, adaptive stress coping behaviors, social supports, unit cohesion, cognitive ability, general physical functioning, and abstinence from substance abuses will have a protective moderating effect on the development of mental health outcomes after separation from military service. The hypotheses for selected variables are described below.

- **Predictors**—We hypothesize that :
 - high combat trauma will be a significant risk factor for poor mental health.
 - the interaction term between combat trauma and unit cohesion will also predict mental health status.
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- **Moderators**—We also hypothesize the following:
 - Risk Factors
 - Previous life trauma will increase risk for post-service mental health symptoms.
 - In-service mental health outcomes will increase risk for post-service mental health symptoms.
 - Self-reported mental health concerns on the PDHRA will increase risk for post-service mental health symptoms.
 - Protective Factors
 - Positive coping skills and health behaviors will decrease risk for post-service mental health symptoms and increase resilience.
 - Peer networks that include former veterans will decrease risk for post-service mental health symptoms and increase resilience.
 - Occupational stability and job satisfaction will decrease risk for post-service mental health symptoms and increase resilience.
 - Marital stability and satisfaction will decrease risk for post-service mental health symptoms and increase resilience.
 - High cognitive ability will decrease risk for post-service mental health symptoms and increase resilience.

Exhibit 3 presents the major study domains, the databases from which they will be drawn, and the design features for their analysis. Measures for selected main outcome and predictor variables being considered are briefly described below.

Exhibit 3. Major Study Domains and Design Features

Historical Predictors (CHAMPS + PDHRA data)	Baseline and Follow-Up Survey Predictors (Survey + PDHRA data)	Baseline and Follow-Up Outcomes
CHAMPS: <ul style="list-style-type: none"> • Mental health and injury history • Cognitive ability • Service-related events (e.g., demotions, disciplinary actions) ASVAB: PDHRA: Health and mental health	Survey: <ul style="list-style-type: none"> • Deployment stressors (e.g., trauma exposure) • Peer networks/social support/marital-family status • Perceived stress • Life events • Health-Related QOL • Current health status • Mental health and injury history • Perceived health • Coping behaviors • Spirituality/religiosity • Health behaviors: exercise; diet; nutrition; smoking, etc. 	Initial baseline levels and change scores: <ul style="list-style-type: none"> • PTSD • Depression symptoms • Anxiety symptoms – PRIME-MD/PHQ • Alcohol and drug abuse • Resilience

Exhibit 3. Major Study Domains and Design Features

Historical Predictors (CHAMPS + PDHRA data)	Baseline and Follow-Up Survey Predictors (Survey + PDHRA data)	Baseline and Follow-Up Outcomes
	<ul style="list-style-type: none"> • Access to and quality of health care • Occupational stability/job satisfaction PDHRA: same as historical	
Control variables (Survey data, also available from CHAMPS if missing) <ul style="list-style-type: none"> • Sociodemographics: age, gender, race/ethnicity, education, income • Service variables: length in service, rank, occupation, branch 		

Repeated Measures modeling of the effect of deployment stressors on the 6 month changes in resilience, mental health, and substance abuse between the separation and the follow-up data collections, as well as the moderating effect of important risk and protective factors will be conducted using structural equation models or generalized mixed models. These models allow us to account for the correlated structure of the outcome data as well as to identify possible correlates of individual change in these outcome variables. These models also allow us to retain all the data in the modeling even if data, as expected, ends up being missing due to attrition.

5. Statistical Consultants

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