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14. ABSTRACT

Purpose: The purpose of this longitudinal study is to test relevant theory providing results that will support future military behavioral research and provide guidance for interventions to promote mental health and retention. An additional wave of data explored how various personal and organizational factors (e.g., job stress, involvement, commitment, supervisor support) contribute to deployment readiness, mental health and functioning, and ultimately retention. Qualitative data were gathered with supplemental funding to identify the main events, experiences and agents that bring about conflict and disruption in the re-integration of OEF and OIF veterans. **Design:** Survey methodology was used to gather measures based on the selected theoretical frameworks (reported earlier). **Methods:** Mixed methods including surveys and qualitative in-depth telephone interviews. **Sample:** Randomized, stratified sample (component, deployment & parental status) of 829 US Army men and women deployed to OEF and OIF. A subset of 24 respondents volunteered for an additional telephone interview to assess family stressors. **Analysis:** A multivariate data analysis strategy was utilized to address the specific aims and qualitative analyses were used to describe the family stressors and social network characteristics of the military family participants. **Findings:** Testing multivariate models revealed that post-deployment mental health is influenced by multiple interactive factors in an individuals military environment, family and social network. The study revealed several models that will be useful for future research into this complex network of factors that enhance or impede psychological recovery from stressful and sometimes traumatic experiences. **Implications for Military Nursing:** This research is instrumental in understanding the relationships among the psychological, motivational and organizational factors that influence soldier and family well being. These longitudinal analyses can demonstrate the power and utility of important predictor variables in a theoretical model that will support recommendations regarding causal effects of deployment readiness and retention during these turbulent and stressful deployments.

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A. Abstract

Purpose: The purpose of this longitudinal study is to test relevant theory providing results that will support future military behavioral research and provide guidance for interventions to promote mental health and retention. An additional wave of data explored how various personal and organizational factors (e.g., job stress, involvement, commitment, supervisor support) contribute to deployment readiness, mental health and functioning, and ultimately retention. Qualitative data were gathered with supplemental funding to identify the main events, experiences and agents that bring about conflict and disruption in the re-integration of OEF and OIF veterans.

Design: Survey methodology was used to gather measures based on the selected theoretical frameworks (reported earlier).

Methods: Mixed methods including surveys and qualitative in-depth telephone interviews.

Sample: Randomized, stratified sample (component, deployment & parental status) of 829 US Army men and women deployed to OEF and OIF. A subset of 24 respondents volunteered for an additional telephone interview to assess family stressors.

Analysis: A multivariate data analysis strategy was utilized to address the specific aims and qualitative analyses were used to describe the family stressors and social network characteristics of the military family participants.

Findings: Testing multivariate models revealed that post-deployment mental health is influenced by multiple interactive factors in an individual's military environment, family and social network. The study revealed several models that will be useful for future research into this complex network of factors that enhance or impede psychological recovery from stressful and sometimes traumatic experiences.

Implications for Military Nursing: This research is instrumental in understanding the relationships among the psychological, motivational and organizational factors that influence soldier and family well being. These longitudinal analyses can demonstrate the power and utility of important predictor variables in a theoretical model that will support recommendations regarding causal effects of deployment readiness and retention during these turbulent and stressful deployments.

B. TSNRP Research Priorities that Study or Project Addresses Primary Priority

Force Health Protection:	☒ Fit and ready force ☐ Deploy with and care for the warrior ☐ Care for all entrusted to our care
Nursing Competencies and Practice:	☐ Patient outcomes ☐ Quality and safety ☐ Translate research into practice/evidence-based practice ☐ Clinical excellence ☐ Knowledge management ☐ Education and training
Leadership, Ethics, and Mentoring:	☐ Health policy ☐ Recruitment and retention ☐ Preparing tomorrow's leaders ☐ Care of the caregiver
Other: (specify)	☐

Secondary Priority

Force Health Protection:	☐ Fit and ready force ☐ Deploy with and care for the warrior ☐ Care for all entrusted to our care
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Leadership, Ethics, and Mentoring:	☐ Health policy ☒ Recruitment and retention ☐ Preparing tomorrow's leaders ☐ Care of the caregiver
Other: (specify)	☐

C. Progress Towards Achievement of Specific Aims of the Study or Project

In this section we summarize the work conducted under the five specific aims that guided this study (previous reports contained more detailed information; this reporting period reports on the amendment focusing on the military family). The overall intent of this study was to complement our existing portfolio of deployment health studies with a longitudinal panel of US Army personnel who have deployed in service of OEF and/or OIF and participated in the first wave of our current study, "US Army: Deployment, Resilience and Retention," (N06-012). Growing evidence suggests that the burden of prolonged warfare is taking a toll on the soldiers and seriously impacting their post-deployment health and willingness to remain in military service. The specific aims and the related findings are provided below.

Specific Aim 1. Determine the direct effects of deployment and its characteristics (frequency, length, location) on job and family stresses and strains of the soldiers.

Using longitudinal data from both Waves 1 and 2 (N=382) we examined the associations between family experiences (i.e., social support received from spouse/partner, spouse/partner relationship strain, parental role involvement, and parental role strain) at Wave 2, military rank (enlisted/warrant v. officer) and deployment characteristics, including: deployment location (at Wave 1: 1=elsewhere; 2=theater, i.e., Operation Iraqi Freedom), number of deployments (at Wave 2: 1=deployed once since 2001; 2=deployed 2+ times), and combat exposure (at Wave 1: Sum count of 9 items; During October, 2001 to present time did you...Ex: come under small arms fire; witness anyone dying).

Those who experienced more deployments as of Wave 2 reported significantly less relationship strain with their spouse/partner and significantly less parental role strain (a counterintuitive finding that could be explored in future work). Military rank and deployment characteristics were not found to be associated with reports of social support received from one's spouse/partner and parental role involvement. Also, military rank, deployment location, and combat exposure were not found to be associated with spouse/partner relationship strain and parental role strain.

When examining associations between military rank and deployment characteristics with longitudinal changes in family experiences (i.e., controlling for Wave 1 family experiences) we found similar results as for the cross-sectional (Wave 2) models. Specifically, those who experienced more deployments as of Wave 2 reported a significant decrease in parental role strain. In contrast to the cross-sectional model, there was no evidence in the longitudinal model that more deployments were associated with spouse/partner relationship strain; neither was there evidence for more spouse/partner relationship strain.

These results overall highlight the variability in military experiences and the impact that this variability has on family life. As noted, some of the particular family relationship

findings are counterintuitive and contrary to the media portrayal of the disruptions in military family. Certainly, it would be fruitful to explore these findings further to identify factors that have contributed to low spouse/partner relationship strain among deployed military members.

Specific Aim 2. Determine the direct effects of deployment and its characteristics (frequency, length, location) on Army personnel's mental health and functioning and deployment readiness over time.

Using data from both Waves 1 and 2 (N=382) we examined the associations between military rank and deployment characteristics (i.e., deployment location, number of deployments, and combat exposure) with changes in mental health outcomes from Wave 1 to 2, including post-traumatic stress disorder (PTSD), anxiety, and depression. Demographic characteristics were included in the models as covariates including age, gender, and education.

We found that greater exposure to combat at Wave 1 was related to an increase in both anxiety-related and depressive symptoms at Wave 2. Military rank, deployment location, number of deployments, and combat exposure were not found to be related to changes in the experience of PTSD symptoms. Military rank, deployment location, and number of deployments were not related to changes in the experience of anxiety or depression symptoms. These findings highlight the particular negative impact of being exposed to combat on the mental health of US Army personnel.

Specific Aim 3. Determine the direct effects of military and job experiences and of family experiences on our key outcomes of mental health and functioning and deployment readiness.

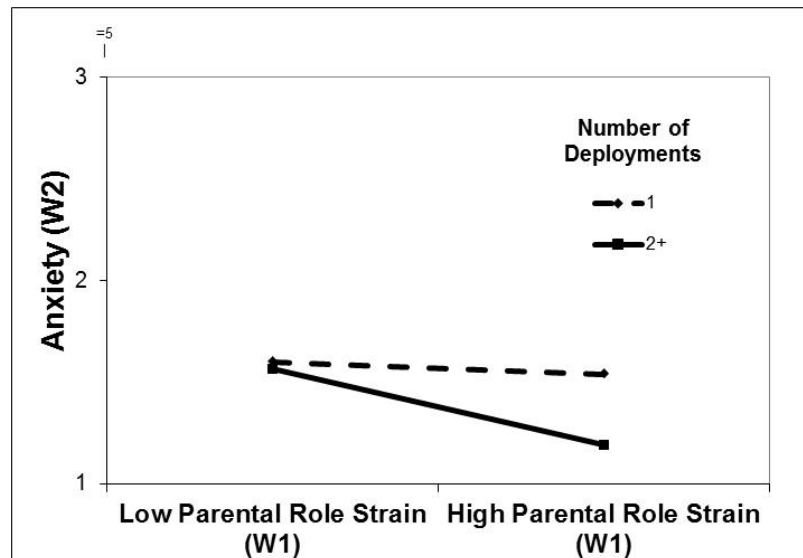
We examined how specific family relationships (i.e., with spouse/partner and children) as well as social relationships in general influence mental health outcomes in varying military and deployment contexts. The goal of this analysis was to examine if social support from specific family relationships and in general are related to longitudinal changes in the experience of PTSD, anxiety and depression in varying military contexts. Specifically, we addressed two research questions: 1) Are positive and negative aspects of social relationships associated with well-being among U.S. Army personnel? and 2) Is the association between social relationships and well-being moderated by specific aspects of the military context?

In terms of the first research question, examining the direct/main effect of family and other relationships on changes in mental health, findings were mixed. Consistent with our hypotheses, we found that reports of more social support generally (from anyone) and from spouse/partner at Wave 1 were both associated with declines in PTSD and anxiety-related symptoms at Wave 2. Interestingly, and contrary to our hypotheses, we found that reports of greater spouse/partner relationship strain at Wave 1 were associated with declines in both PTSD and anxiety-related symptoms at Wave 2. This may mean that when relationship strain was recognized early rather than ignored or

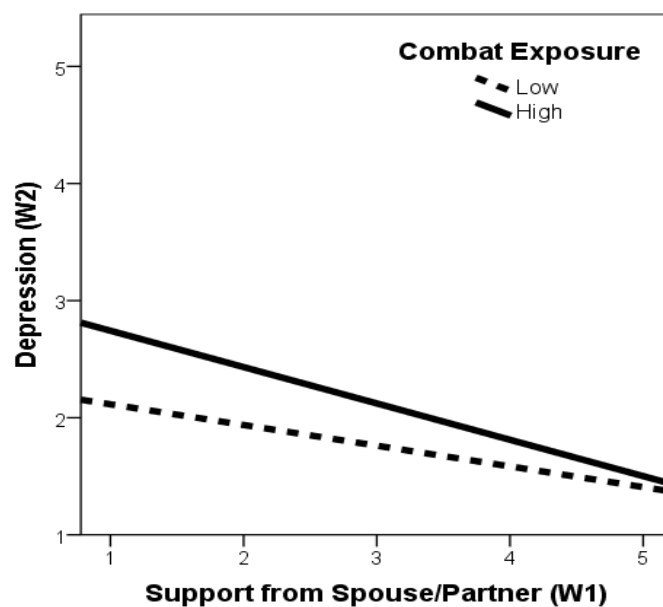
denied, intervention or other formal or informal resources were sought, thus resulting in a reduction in PTSD and anxiety-related symptoms. Similarly, greater parental role strain at Wave 1 was associated with a decline in anxiety-related symptoms at Wave 2, but not associated with changes in PTSD symptoms. On the other hand, we found that negative social support from people in general in the form of social undermining was not associated with changes in mental health. Also, , there were no direct effects of general or family specific support and relationship strain at Wave 1 on changes in the experience of depressive symptoms from Wave 1 to 2.

In terms of the second research question, there were two main findings regarding interaction effects between military context (i.e., rank and deployment characteristics) and social relationships on longitudinal changes in mental health outcomes:

- 1) Greater parental role strain at Wave 1 was associated with declines in anxiety only among those deployed multiple times (see figure below).



- 2) Among U.S. Army personnel who reported more combat exposure, there was a strong association between spouse/partner social support at Wave 1 and a decline in depression at Wave 2, i.e., as predicted, more support was related to a decline in depression. In contrast among those who experienced low levels of combat exposure, the association between spouse/partner support and changes in depressive symptoms was less pronounced (see figure below).



These results illustrate the importance of both positive and negative social relations with family and friends in the military context, and contribute to a growing body of literature documenting the multifaceted way in which negative support influences well-being. Additional and ongoing analyses building upon these results include: 1) examining competing hypotheses of moderation: how do social relationships buffer/exacerbate the effects of military rank and deployment characteristics on well-being? and 2) examining the mediating role of social relationships in the link between military turbulence and well-being.

Specific Aim 4. Determine the effects of deployment and its characteristics (frequency, length, location) as well as of military job and family experiences and stressors on the outcome of retention as predicted by the attitude toward reenlistment and subjective norms (i.e., expectations of significant others) and the intention to reenlist.

To better understand attitudes, norms and intentions regarding reenlistment, we first examined changes from Wave 1 to Wave 2 in these measures. We found that attitudes toward reenlistment did not significantly change across the two waves, remaining on average high at both Waves (W1: mean=5.1, SD=1.3; W2: mean=5.0; SD=1.3; Range: 1-7). Similarly, we found that subjective norms (i.e., expectations of significant others) also did not significantly change from Wave 1 to 2 again remaining on average high at both Waves (W1: mean=3.8, SD=1.0; W2: mean=3.7; SD=0.9; Range 1-5). In contrast, when examining changes in actual intentions to reenlist we did find a significant change across the two waves, with respondents reporting significantly higher intentions to reenlist at Wave 2 (mean=0.8; SD=1.0; Range: -1.1 to 1.8) compared to Wave 1 (mean=0.5; SD=0.9; Range: -1.4 to 1.5).

Next, we examined associations between military rank and deployment characteristics and attitudes, norms, and intentions to reenlist. We found that those who reported more deployments reported more positive attitudes and norms concerning reenlisting at Wave 2 (Beta=.18, $p<.05$). However, number of deployments was not associated with intentions to reenlist at Wave 2. Also, contrary to our hypotheses, military rank, deployment location, and combat exposure were not related to reenlistment attitudes, norms, or intentions.

When examining the influence of military rank and deployment characteristics on changes in reenlistment attitudes, norms, and intentions results were similar to the cross-sectional model. Again we found that more deployments were associated with a significant increase in attitudes toward reenlisting (Beta=.13; $p<.05$). In contrast, in the longitudinal/change model, number of deployments was not associated with changes in norms regarding reenlistments.

We then examined cross-sectional associations between family relationships and attitudes, norms, and intentions toward reenlistment, while controlling for military rank and deployment characteristics in the model. We found that reports of more spouse/partner relationship strain at Wave 2 was associated with less positive attitudes toward reenlistment at Wave 2 (Beta=-.34; $p<.05$) and lower intentions to reenlist (Beta=-.41; $p<.01$). Social support received from one's spouse/partner was not associated with any of the reenlistment measures, and parental role involvement and strain also were not associated.

When examining the influence of family relationships on reenlistment attitudes, norms and intentions in a longitudinal change model (Wave 1 relationship measures predicting Wave 2 reenlistment measures controlling for Wave 1 reenlistment measures) the results were interestingly different compared to the cross-sectional model. First, we found a marginally significant association between parental role involvement at Wave 1 and an increase in positive attitudes about reenlisting (Beta=.17, $p=.054$). Also, we found that more parental role involvement at Wave 1 was significantly associated with an increase in subjective norms concerning reenlistment (Beta=.21; $p<.05$), i.e. the likelihood of family agreeing with/expecting reenlisting. Also, in contrast to the cross-sectional model, spouse/partner support or relationship strain at Wave 1 was not associated with changes in reenlistment attitudes, norms, or intentions.

Additional analyses are planned to examine the moderating effect of military rank and deployment characteristics on the associations between family relationships and reenlistment measures.

We also examined associations between intentions to reenlist and experience of sexual harassment and assault using the Wave 1 data. We found that exposure to sexual misconduct was associated with reduced intentions to reenlist. Ongoing analyses are being conducted to examine the longitudinal impact of experiencing sexual harassment and assault on attitudes, norms, and intentions to reenlist.

Although we did not have a specific aim to address military sexual trauma, our survey contained items that provided information about this topic so we explored it further given the recent heightened interest in the media.

Experience of Sexual Harassment and Assault: We also conducted analyses using the Wave 1 data to describe exposure to and experience of sexual harassment and assault among US Army personnel, and to examine associations with mental health outcomes.

A total of 98 out of 183 study participants reported being aware of sexual harassment (53.6%), and 96 out of 151 respondents reported they were aware of sexual abuse (63.6%). Over one quarter (29.3%) of respondents reported they were sometimes, often or almost always exposed to sexual conduct (159 out of 541 responses), and 18.3% reported being offended or intimidated by sexual conduct (99 out of 542). Note that response rates varied on these items from a low of 26% (151 responses out of 570 participants, on awareness of sexual abuse) to a high of 95% (542 responses out of 570 participants, reported being offended or intimidated by sexual conduct). Relatively fewer officers reported sexual harassment and assault as compared to enlisted and warrant officers. Relatively fewer men reported assault and harassment as compared to women in the study. The percentage of officers versus enlisted/warrant officers in the analysis sample did not differ significantly by gender ($\chi^2(1) = 1.06, p = 0.30$). The pattern of association between rank and gender and sexual harassment and assault was mixed, though enlisted women reported higher levels of sexual harassment and assault as compared to women officers, and as compared to male enlisted and officers (see table below).

Percentage of "Yes" Responses on Sexual Harassment and Assault Items, by Rank and Gender

Officers	Female % Yes	Male % Yes
Aware of sexual harassment	46.7	45.5
Aware of sexual abuse	47.4	22.2
Exposed to sexual conduct	22.2	11.4
Offended by sexual conduct	20.6	4.5
Experienced sexual harassment	15.2	6.1
Experienced sexual assault	2.3	0
Enlisted and Warrant Officers	Female % Yes	Male % Yes
Aware of sexual harassment	75.3	53.2
Aware of sexual abuse	71.7	17.4
Exposed to sexual conduct	41.4	12.2
Offended by sexual conduct	28.3	8.1
Experienced sexual harassment	44.0	2.6
Experienced sexual assault	9.2	1.3

In general, the sexual harassment and assault items were positively associated with PTSD, anxiety and depression. Being aware of sexual harassment was significantly associated with experiencing greater symptoms of PTSD, anxiety and depression at Wave 1. Being aware of sexual abuse was associated with increased PTSD. Exposure to sexual misconduct was associated with higher levels of PTSD, anxiety and depression. Being offended or intimidated by conduct of a sexual nature had a negative influence was associated with increased PTSD, anxiety and depression. The experience of sexual harassment was associated with increased PTSD, anxiety and depression. Experiencing sexual assault was also associated with increased PTSD, anxiety and depression, which has been well documented in the literature.

Ongoing analyses are examining these same questions using the Wave 2 data and exploring the longitudinal impact of experiencing sexual harassment and assault on US Army personnel mental health.

Military Family Study Amendment: Convoys of support Among Deployed Military Personnel. Through an amendment to the US Army Deployment Resilience & Retention: Wave II Study we further explored this additional aim using social network data. The aim of this amendment was to address a lack of in-depth knowledge about family relationships, specifically regarding those serving in the military where the occupational and operational demands are known to create family hardships and mental health concerns.

Data are from a subset (n=24) of the sample (n=829) of U.S. Army men and women who were deployed between October 2001 and the time of participation in a study called US Army: Deployment Resilience and Retention (ADRR; 2007-2008). To assess in-depth the social relationships of active duty US Army personnel we used the Hierarchical Mapping technique, which measures and documents the structural aspects of personal social support networks including: network size, emotional closeness (as measured by circle placement), geographic proximity, contact frequency, etc. Below we summarize some of the main findings from this amendment.

Military members' average network size was 10 with a range from 2 to 24. 39% of network members were placed in the inner circle. Nearly 50% of network members were nuclear family and 10% were friends. 11% of network members were also in the military. 51% of network members lived within an hour's drive of the participant. Frequency of contact with network was on average about once a week (3.9). Positive relationship quality was fairly high (3.8) and negative relationship quality was fairly low (1.8). Being forgotten or ignored during and after deployment averaged between not at all and a little (1.4) and having help with readjustment after deployment averaged at just above somewhat (3.1). Support provided to participants during deployment and readjustment varied within networks, with participants stating that 32% of their network provided less support, 36% provided equal support, and 32% provided more support than the participant provided to the network.

Military Members (n=24)			
Overall Convoy/Network Structure	Mean	SD	Range
Inner Circle Size ^a	3.7	2.1	0-9
Middle Circle Size ^a	3.9	2.8	0-10
Outer Circle Size ^a	2.7	2.0	0-6
Total Network Size	10.2	5.1	2-24
% Inner Circle	39.1	22.3	0-100
Close Convoy/Network Structure ^b			
% Female	51.5	22.9	0-80
% Nuclear Family	49.7	29.0	0-100
% Extended Family	36.7	27.5	0-100
% Friends	10.3	18.5	0-67
% Military Relationships	11.4	23.2	0-80
Network Age	40.5	13.0	16-63
% Live with Respondent	28.9	24.7	0-75
Years Known	26.9	8.8	11-52
% Proximate	51.3	40.9	0-100
Frequency of Contact	3.9	0.6	2.5-5
Close Convoy/Network Quality ^b			
Positive Relationship Quality	3.8	0.5	2.5-4.5
Negative Relationship Quality	1.8	0.6	1-3.2
Relationship Closeness	4.0	0.5	3.2-5
Relationship Rating	6.0	0.5	5-6.8
Forgot During Deployment	1.4	0.6	1-3
Helps with Re-adjustment	3.1	0.9	1.3-4.4
% Provide Less Support	32.2	35.5	0-100
% Provide Equal Support	36.3	32.3	0-100
% Provide More Support	31.5	34.2	0-100

Correlations among convoy structure and quality characteristics were examined. This analysis highlights some significant associations between general network structure/quality and military context specific relationship quality. A larger outer circle is associated with a smaller proportion of the network providing more support to the participant during deployment and readjustment ($r_s = -.44$, $p < .05$). Higher average positive relationship quality is associated with a smaller proportion of the network providing less support to the participant during deployment and readjustment ($r_s = -.49$, $p < .05$). More help with readjustment after deployment is associated with higher average positive relationship quality ($r_s = .63$, $p < .01$), higher average relationship rating ($r_s = .41$, $p < .05$), and a larger proportion of the network providing more support to the participants during deployment and readjustment ($r_s = .47$, $p < .05$). Higher average negative relationship quality is associated with a greater likelihood of being forgotten or ignored during or after deployment ($r_s = .52$, $p < .01$).

These findings provide a more in-depth look at the available social resources of U.S. Army personnel and can be used in the development of future interventions focused on supporting military families. Additional analyses are ongoing exploring links between the structural aspects of the social networks described in detail and mental and physical health outcomes.

D. Significance of Results

A List of the results considered significant

- U.S. Army personnel who experienced more deployments reported significantly less relationship strain with their spouse/partner and significantly less parental role strain.
- Those who experienced more deployments reported a significant decrease in parental role strain.
- Greater exposure to combat at Wave 1 was related to an increase in both anxiety-related and depression symptoms at Wave 2.
- More social support generally (from anyone) and from spouse/partner were both associated with declines in PTSD and anxiety-related symptoms at Wave 2.
- Greater spouse/partner relationship strain was associated with declines in both PTSD and anxiety-related symptoms.
- Among those deployed multiple times, greater parental role strain was associated with declines in anxiety, whereas among those only deployed once there was no association.
- Among those reporting more combat exposure, there was a strong association between spouse/partner social support and declines in depression at Wave 2, i.e. more support is associated with less depression, whereas among those reporting less combat exposure the association was weaker.
- Nearly 50% of network members were nuclear family and 10% were friends.
- U.S. Army personnel reported significantly higher intentions to reenlist at Wave 2 compared to Wave 1.
- More deployments were associated with a significant increase in positive attitudes toward reenlisting.
- More spouse/partner relationship strain at Wave 2 was associated with less positive attitudes toward reenlistment at Wave 2.
- More parental role involvement at Wave 1 was significantly associated with an increase in subjective norms concerning reenlistment.
- Experiencing sexual harassment and/or assault in a military context has detrimental implications for the mental health and reenlistment intentions of US Army personnel.

Relationship of current findings to previous findings: The deleterious consequences of wartime service including depression, unemployment, alcohol and drug abuse, and post-traumatic stress disorder are well documented (e.g., Breslau, Davis & Schultz, 2003; Deahl et al., 1994; Dobson & Marshall, 1997). Changing demographics in military forces since 1973, with the advent of the all volunteer force, an increase in the number of women, as well as in dual career families has highlighted the consequences of wartime separation on the family. It also highlighted the devastating outcomes of such stressors which are manifested in marital instability and divorce (Call & Teachman, 1996; Gimbel & Booth, 1994; South & Spitzer, 1986), intimate partner aggression and violence (Begic & Jokic, 2001; Beckham, Moore & Reynolds, 2000; Clark & Messer, 2006; Langhinrichsen-Rohling, Neidig & Thorn, 1995; McCarroll, 2000) and suicide (Kaplan, 2006; Zoroya, 2008). There is a limited body of research describing the characteristics of ($W \Rightarrow F$) and ($F \Rightarrow W$) conflict in the military (Adams, Jex & Cunningham, 2006; Hammer, Cullen, Marchand & Dezsofi, 2006). To the best of our knowledge, our work is the first to document the significant and independent influence of ($W \Rightarrow F$) and ($F \Rightarrow W$) conflicts with multiple mental health outcomes, the most notable being post-traumatic stress disorder. It is this potentially fruitful line of inquiry that motivates future inquiry, in part because these conflicts constitute modifiable factors that can be attenuated with targeted interventions.

The armed forces constitute a total institution that views its demands as superseding any competing family or personal needs (Segal, 1986a, 1986b, 1989; Stanley, Segal and Laughton, 1990). Segal (1986b) describes both work and family as “greedy institutions,” placing military members in a tenuous position of sacrifice and compromise between the two roles. To date there is only a scant literature exploring the demands of a professional military career on the health and well-being of its members and their families (e.g., Gimbel & Booth, 1994). In addition, there is little information on how military members reconcile the demands of family life with the extraordinary expectations of the role of a professional soldier during wartime when the demands present uncommon challenges. The lifestyle of the military family is unpredictable and one in which they must maintain a state of readiness to respond to possible deployment, extended tours, absence from the family for extended periods of time, and in some cases disability or death (Drummet, Coleman & Cable, 2003; Ruger, Wilson & Waddoups, 2002). The extraordinary expectations and demands placed on today’s military, in concert with the demands of marriage and parenthood, provide a useful arena for the study of these competing influences on mental health. It is this context that precipitates stress and conflict and which provides an ideal ground for testing theories of work-family conflicts in a military population where resilience and positive coping, helps maintain a fit and ready force and psychological well being.

Following are selected comments highlighting the significance of the study as well as the implications for improving our scientific understanding of this complex phenomenon.

1. The investigators believe they have identified a new pathway to poor mental health outcomes that has not yet been investigated that includes the interaction between military work and family work, as well as the role and stability of social networks.
2. Findings may suggest practical measures to address the nature, frequency and intensity of work-family conflicts as well as the pathway through which mental health and retention are affected.
3. The findings can inform policy and programs targeting family support to promoting mental health saving significant health care costs and reduce attrition due to emotional and adjustment problems following wartime service.

The purpose of this modification to address the military family more directly, was to provide a valuable linkage between our previous and ongoing quantitative surveys to allow us to move toward larger NIH-supported observational and/or intervention studies. A missing component of our existing portfolio is an in-depth qualitative grasp of the stressors, conflicts, and issues as they are experienced by returning veterans and their families. Results of our first, as well as our most recent surveys we have conducted with the support of the TriService Nursing Research Program, demonstrated that the experience of work interfering with family life ($W \Rightarrow F$) and family life interfering with work ($F \Rightarrow W$)¹ that produced conflicts have serious negative effects on mental health and functioning, retention, and children's adjustment following maternal separation (Pierce, Vinokur & Buck, 1998). Because the measures assessing ($W \Rightarrow F$) and ($F \Rightarrow W$) conflicts are composed of a few general rating scales, there is a gap in knowledge relative to the **specific events or experiences** as well as the **character of family relationships** that bring about these conflicts. This gap in knowledge is even wider regarding those serving in the military where the occupational and operational demands are known to create family hardships (e.g., Adams, Jex & Cunningham, 2006). In order to design interventions to address work-family and family-work conflicts to improve psychosocial adjustment and reduce post-war attrition, it is necessary to bridge this gap with specific information on the frequency and severity of actual events and the disruptions in relationships that produce such conflicts. That is, it is necessary to document both the key events and the significant agents involved in these events (i.e., spouses, partners, children, supervisors, etc). Thus, **the goal of the proposed amendment was to identify the main events, experiences and agents that bring about elevated conflicts within military families, in the words of the veterans and their spouses.** Achieving this goal is critical to the longer term objective of designing effective interventions to ready soldiers and their families to cope with ($W \Rightarrow F$) and

¹ $W \Rightarrow F$ indicates that the conflict originates in the work domain and spills over to the family domain. $F \Rightarrow W$ indicates that the conflict originates in the family domain and spills over to the family domain.

(F⇒W) conflicts to be in an informed position to ultimately intervene to mitigate their negative effects of problematic re-integration.

A large missing component of the military research portfolio is a systematic analysis of the operational demands on military families and the ways in which they respond to these demands. Despite the recognition that wartime separation and family reintegration can be stressful, there is still limited data on the association of these stressors, in combination with combat-related stressors, on mental health and retention in the armed forces (Griffith, Rakoff, & Helms, 1993; Hoge et al., 2002). We believe we have begun to address this shortfall in an expedient and scientifically sound manner, in part, because we are building on a well-designed survey, a readily available sample, and sound institutional resources.

Although there is a relatively large literature on work and family conflict, there are only a few descriptive studies examining this concept within a military population, particularly during the stressful experience of deployment during wartime. We want to know if there are unique conflicts, how they respond to these conflicts, and a description of their coping with such conflicts. Briefly, these interviews revealed that there are unique features for this population that have to deal with the nature, length, and frequency of family disruptions due to deployments. In addition, there are sub-groups that expressed intense conflicts and these subgroups appear to be dual career families (particularly when both parents are deployed at the same time), single parents, and families with very young children. Unlike family separations described in the literature that are due to corporate relocations or for promotion or advancement, these separations involve a real sense of threat to the integrity to the family structure. These families report their realization that the deployed member may be killed, injured, or return to the family with other serious physical or emotional problems. Further, deployment-related separations are typically longer than those reported in the civilian community and many times families are experiencing the impact of multiple deployments as well (Reed & Segal, 2000; Schumm, Jurich & Stever, 1998).

Lastly, we sought to identify broad themes to be explored further in future studies. These themes are: *Family Disruption, Marital and Parental Distress, Awareness of Competing Obligations (Conflict,) Coping and Support, Striving for Balance, Resilience, and Triggers Related to Retention Decisions*. Although these were short interviews conducted for the purpose of determining the feasibility of a larger study, they provided sufficient information that will enable us to frame the interview questions to be conducted in much greater detail. Following is a brief description of each theme.

Family Disruption. This category captures the *nature and extent of disruptions* caused by deployment within the family and includes features of missed events and milestones (e.g., birthdays, graduation) and the response of the deployed member (e.g., sadness, regret).

Marital and Parental Distress. The characterization of this *type of distress* results from an inability to manage multiple demanding roles and the recognition that one or the other is suffering at any point in time. There appears to be a compensatory process going on wherein the members expressed that if either their marital or parental roles were being compromised; they would “make it up” at a later point in time.

Awareness of Competing Obligations (Conflict). Narratives supporting this theme highlight the awareness of military members regarding the multiple responsibilities that have to be managed and the conflict that arises when these obligations are not equally met. Interestingly, there is awareness that either the family or the military should be “number one” and that was not always possible.

Coping and Support. Respondents spoke freely about the *type of support* that was most helpful including such help as social support from family or friends and instrumental support in managing a household for an extended period of time (e.g., child care arrangements). With respect to the *coping* with the separation during deployment, many spoke of having to put family aside so they could give their full attention to their military duties. This theme has to do with recognizing and/or accepting one’s inability to control certain events and the implementation of clear boundaries between family and work. Establishing boundaries seem to be adaptive in terms of allowing soldiers to attend to a mission while deployed but it is not known how these boundaries are re-configured when they return home.

Striving for Balance. This theme includes the *behaviors and activities* involved in trying to adapt to and cope with competing obligations that place demands on the respondent. Of particular note is mention of the amount of energy required when trying to meet the needs of a family and the responsibilities of a military career. There is recognition that the size of the family and the particular age of the children comprise various demands on a parent. It appears that the seeking of this balance leads to either creating more resilient families or it serves as the stimulus for leaving the military to bring more security or stability to the family.

Resilience. Among more experienced members who have successfully remained in the military, the theme of resilience emerged to describe the way in which families deal successfully with deployment separation as well as family readjustment. We need further exploration of specific ways in which families enhance their ability to cope over the years and maintain an intact family.

Triggers Related to Retention Decisions. This theme captures the work and family conflicts that serve as triggers to leaving the military. Factors such as long absence from the family, developmental or emotional problems with children, an unsupportive spouse, or lack of advancement or promotion because of family responsibilities, serve as a tipping point in favor of the family. Many expressed their pride in a military career as well as a desire to continue but could not withstand the competing demands that proved to be detrimental to their family.

These preliminary themes will guide the construction further work with a larger sample to: (1) identify and operationalize unique and specific events and/or behaviors that produce to work-family and family-work conflicts in this population, (2) increase our confidence in generalizing the results to a larger military sample, and (3) contribute to the development of future interventions designed to assess work-family and family-work conflicts in military personnel throughout the deployment cycle.

Effect of problems or obstacles on the results: We did not experience any unexpected problems in the conduct of this research. However, research utilizing survey methods are always influenced by respondents' willingness to participate, our ability to reach them with frequent change of address, and the lack of an ability to provide incentives to military personnel to participate in social science research. Although this has recently changed, during the course of our study we had to work diligently to stay in contact with our respondents and maintain their interest and good will toward the project.

Limitations: We addressed the possible limitations inherent in self-report measures by including a measure that controls for that aspect of social science research. In addition, we used well-known measures with demonstrated validity and reliability, placing them in well-tested theoretical models and using complex statistical analytic techniques including structural equation modeling. Our sample was randomized and stratified allowing for an adequate and representative proportion of active duty, reserve and National Guard, those deployed to the theater or elsewhere during OIF and OEF, and parental status with representation of both men and women. Attrition is always an issue in longitudinal research however we maintained an adequate sample to conduct the analyses we had proposed.

Conclusion: The aims of this project focused on determining the direct effects of deployment on job and family stresses and strains on the mental health and functioning and deployment readiness and retention over time. Although our findings relating greater combat exposure to both anxiety-related and depressive symptoms consistent with the literature, when examining family functioning we found low spouse/partner relationship strain among deployed members. Among our most interesting results related to the ways in which specific family relationships influenced mental health outcomes. Specifically, the role of social support was associated with declines in PTSD and anxiety-related symptoms at wave II. Further, and contrary to our expectations, spouse/partner relationship strain as well as parental role strain at wave I was associated with a decline in anxiety-related symptoms at wave II, but not associated with changes in PTSD symptoms. Further exploration of these relationships is warranted to more reliably prescribe the type and timing of interventions within families coping with military stressors.

Significance of Study or Project Results to Military Nursing

The significance and contribution of the findings of this longitudinal study is twofold: (1) we developed and tested a theoretically based model to examine multiple contributing factors influencing physical and psychological wellbeing following wartime deployments, and (2) we explored the influence of various social and psychological factors of family well-being that will be instrumental in developing family support interventions. Although there is no immediate and direct influence on policy, we believe the impact of this project is directly related to informing the scientific community of the rigorous testing of theoretical models developed to address the psychological well-being of military members following deployment.

The scientific and programmatic value of this project was to obtain “real time” deployment data with a representative sample at two points in time (vs. retrospective). This approach permitted the testing of theoretically based hypotheses through advanced statistical analyses of factors that promote mental health and functioning, deployment readiness, and retention; to rule out competing hypotheses including psychological stress among others, all the while controlling for the effects of age, gender, rank and other background factors. Testing theoretical models with complex experiences of the current war effort can help guide further efforts to determine if there are preventable risks to the mental health and retention of military members and their families that are associated with specific military duties, deployment, occupational and family stressors, or a combination of these factors. In summary, the overall objective was to substantially and efficiently build a portfolio of research on military members deployed in service of OEF and OIF, to disentangle the multiple, additive and interactive effects of war-related stressors including mobilization and deployment, and other predisposing factors that impact physical and emotional health, deployment readiness, and ultimately retention. Such information will prove invaluable to our efforts to protect the well-being, readiness and retention of our nation’s service members and servicewomen through interventions targeted at problematic areas.

Building on the approach and findings of this study, future investigations could focus on the family structure as a fundamental network of factors contributing to well-being as well as retention. The exploratory portion of this study was small but informative and could serve as the basis for a larger family-centered study to identify the mediating and moderating factors contributing to successful re-integration following deployment and other stressful and disruptive military experiences.

E. Changes in Clinical Practice, Leadership, Management, Education, Policy, and/or Military Doctrine that Resulted from Study or Project

As with most social science research, there is a time lag between disseminating research findings and influencing policy. It is unlikely that the findings of a single study will be influential in this regard. However, we have provided clear direction for future studies that, taken together, will influence policy instrumental to the well-being and retention of military families.

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G. Summary of Dissemination

Type of Dissemination	Citation	Date and Source of Approval for Public Release
Publications	Vinokur, A.D., Aizen, I., Pierce, P.F., & Lewandowski-Romps, L. (in revision). <i>Factors affecting the decision of Air Force personnel to reenlist: An application of the theory of planned behavior.</i> <u>Military Psychology.</u> Hobfoll, S.E., Vinokur, A.D., Pierce, P.F., & Lewandowski-Romps, L., (under review). <i>Warriors' life stress and its influence on multiple life domains: A test of Conservation of Resources Theory.</i> Hobfoll, S.E., Vinokur, A.D., Pierce, P.F., & Lewandowski-Romps, L. (2012). <i>The combined stress of family life, work, and war in Air Force men and women: A test of conservation of resources theory.</i> <u>International Journal of Stress Management</u>, 19(3), 217-237. Pierce, P.F., Lewandowski-Romps, L., & Silverschanz, P. (2011). <i>War-related stressors as predictors of post-deployment health of Air Force women.</i> <u>Women's Health Issues</u>, 1-8.	

	Vinokur, A.D., Pierce, P.F. , Lewandowski-Romps, L., Hobfoll, S.E., & Galea, S. (2011). <i>Effects of war exposure on Air Force personnel's mental health, job burnout and other organizational related outcomes.</i> <u>Journal of Occupational Health Psychology</u> , 16(1), 3-17.	
Publications/Manuscripts in Progress	1. The impact of family and friends on well-being in a military context. 2. Convoys of support among deployed military personnel. 3. Sexual Harassment and Assault Influences on Health Outcomes and Intent to Remain in Military Service.	
Podium Presentations	Pierce, P.F., Turkelson, A., & Giasson, H. (2013, November). <i>Convoys of support among deployed military personnel.</i> Paper presented at the 8th biennial meeting of the Society for the Study of Human Development, Fort Lauderdale, FL. Pierce, P.F., Antonucci, T.C., & Webster, N.J. (2014, May). <i>The impact of family and friends on well-being in a military context.</i> Paper presented at the 26th annual convention of the Association for Psychological Sciences, San Francisco, CA.	

	Pierce, P.F., & Antonakas, C.A. (2014, August). <i>Sisters of Lucretia: A Contemporary Image of Military Sexual Harassment and Assault</i>. Paper presented at the 2014 American Psychological Association Annual Convention, Washington, DC.	
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H. Reportable Outcomes

Reportable Outcome	Detailed Description
Applied for Patent	None
Issued a Patent	None
Developed a cell line	None
Developed a tissue or serum	None
Developed a data registry	None

I. Recruitment and Retention Table

Recruitment and Retention Aspect	Number
Subjects Projected in Grant Application	830-1200
Subjects Available	832
Subjects Contacted or Reached by Approved Recruitment Method	832
Subjects Screened	832
Subjects Ineligible	0
Subjects Refused	370
Human Subjects Consented	462
Subjects Who Withdrew	0
Subjects Who Completed Study	462

J. Demographic Characteristics of the Sample

Characteristic (N=462)	
Age (yrs) (N=462)	38.0 ± 9.3
Women, n (%) (N=462)	253 (54.8)
Race (N=451)	
White, n (%)	293 (65.0)
Black, n (%)	59 (13.1)
Hispanic or Latino, n (%)	23 (5.1)
American Indian or Alaska Native, n (%)	4 (0.9)
Asian, Native Hawaiian, or other Pacific Islander, n (%)	20 (4.4)
Other, n (%)	8 (1.8)
More than one race/ethnicity, n (%)	44 (9.8)
Military Service or Civilian (N=462)	
Air Force, n (%)	0 (0.0)
Army, n (%)	364 (78.8)
Marine, n (%)	0 (0.0)
Navy, n (%)	0 (0.0)
Civilian, n (%)	98 (21.2)
Service Component (N=454)	
Active Duty, n (%)	73 (16.1)
Reserve/Guard Active Duty, n (%)	83 (18.3)
Reserve/Guard Not Active Duty, n (%)	117 (25.8)
Reserve Inactive, n (%)	9 (2.0)
Retired Military, n (%)	74 (16.3)
Prior Military but not Retired, n (%)	0 (0.0)
Military Dependent, n (%)	0 (0.0)
Civilian, n (%)	98 (21.6)

Note: N's vary by characteristic due to missing data resulting from non-response (i.e., refusal to answer questions).