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Optimizing and Validating a Brief Assessment for Identifying
Children of Service Members at Risk for Psychological Health
Problems Following Parent Deployment

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14. ABSTRACT Parental deployment can disrupt the care children receive both as a result of deployment-related separation and the potentially destabilizing impact of deployment on the remaining caregiver and daily routines. This study will follow 230 intact military families with a child between 4-7 years in a longitudinal pre- mid- and post-deployment study. At pre- and post-deployment, Service Members and their Spouses complete questionnaires and interviews regarding their psychological health, marital and family functioning, and parent functioning. Spouses complete questionnaires regarding children's psych health and development at pre- mid- and post-timepoints. Children participate through doll and puppet play interview. Teacher ratings of the child are collected at all timepoints. The objectives of this study are to: 1) Determine the impact of Service Member's post-deployment psychological health on children ages 4 to 7 years old, and; 2) Identify those particular Service Member's Psychological Health-related symptoms that place children at risk for negative outcomes and assess the means by which these symptoms undermine children's adjustment directly by the Service Member and indirectly via negative impact on the Spouse. Current progress includes successful IRB review and survey development. The PI changed institutions and the award was transferred to her new institution. The US Marine Corps has agreed to host the study with the I Marine Expeditionary Force at Base Camp Pendleton. Data collection is ongoing.									
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INTRODUCTION

Parental deployment can disrupt the care children receive both as a result of deployment-related separation and the potentially destabilizing impact of deployment on the remaining caregiver and daily routines. This study will follow 230 intact military families with a child between 4-7 years in a longitudinal pre-, mid-, immediate post-deployment and post-deployment follow-up study. At pre- and both post-deployment timepoints, Service Members and their Spouses complete questionnaires and interviews regarding their psychological health, marital and family functioning, and parent functioning. Spouses complete questionnaires regarding children's psychological health and development at pre- mid- and 2 post-timepoints. Children participate through doll and puppet play interview. Teacher ratings of the child are collected at all timepoints. The objectives of this study are to: 1) Determine the impact of Service Member's post-deployment psychological health on children ages 4 to 7 years old, and; 2) Identify those particular Service Member's Psychological Health-related symptoms that place children at risk for negative outcomes and assess the means by which these symptoms undermine children's adjustment directly by the Service Member and indirectly via negative impact on the Spouse.

BODY

The majority of work accomplished in the first 12 months of this award included the finalization of the assessment protocols and successful obtainment of IRB approval from The University of Connecticut. In August 2012, the Principle Investigator and Co-PI left their respective institutions for Wayne State University. New IRB approval was obtained at Wayne and the award was transferred to the new institution. Coordination of recruitment with combat brigades at Fort Drum is pending deployment cycles and approval of command. As a recruitment alternative, we were also working with the USMC to study a deploying MEU. Given the differences in deployment cycles between Army and Marine Corps, we will only study one of these groups.

In the 2014/2015 year, efforts focused on securing a commitment from the United States Marine Corps to host the study. In Winter 2014, the Drs. Aikins presented the study to the Marine and Family Programs Division, Headquarters Marine Corps, Quantico, VA. Several suggestions were made regarding revising the study to fit USMC-specific details of the deployment lifecycle. In December 2014, we received a letter of support from BGen Sanborn, Director, Marine and Family Programs Division. We then submitted our revised IRB protocol to our local Academic Institution and received approval of the USMC-based protocol in March, 2015. The study was recognized by I Marine Expeditionary Force (I MEF) at Base Camp Pendleton in July, 2015. I MEF supports the 15th, 13th and 11th Marine Expeditionary Units (MEUs) on a rotating deployment schedule.

It was determined in the Fall of 2015 that a renewed FWA amendment between Wayne State University and the Department of the Navy was required prior to data collection. This was an unexpected requirement, which took until December 2015 to complete. This

delay attributed to our collecting only 6 families with the 15th MEU prior to their deployment in early Winter 2016.

In order to improve recruitment, several options were considered in 2016, including adding Camp LeJeune as a second study site and opening recruitment at Camp Pendleton to non-MEU deployments. In discussions with Behavior Research Specialists at Quantico, it was determined that there were no “hard” accurate number of families with children in our study age range (ages 4-7) per Base Camp across MEFs, although it was generally estimated that Camp LeJeune would have some amount of families of interest. It was also determined that revising our protocol to add Camp LeJeune would require a protocol review at Quantico, a selection of a Camp LeJeune site PI, and USMC IRB review, in addition to our University IRB and HRPO approval. The estimated time for these reviews and selection was given at approximately a year. Therefore, this option was not considered feasible. After discussion with the Marine Corps Community Services director at Camp Pendleton, it was decided that recruitment of non-MEU deploying families would be a favorable option, particularly as our IRB protocols did not specify that the deployments were MEU-specific. A 1 year No Cost Extension request that included this revised recruitment strategy was submitted in late Summer 2016.

Our primary 2016 recruitment focus was with MEU deployments at Camp Pendleton. Unfortunately, a Family Readiness Officer took a surprise medical leave and was unable to disseminate our recruitment documents for the predeployment cycle. In that absence, we focused on Battalion deployments. Our shift in recruitment allowed us to enroll 17 new families in the 2016/2017 year. As can be seen in Table 1, recruiting with Battalion deployments in the second half of the 2017 year was where we had our greatest success to date.

Table 1: Data interviews completed by study timepoint

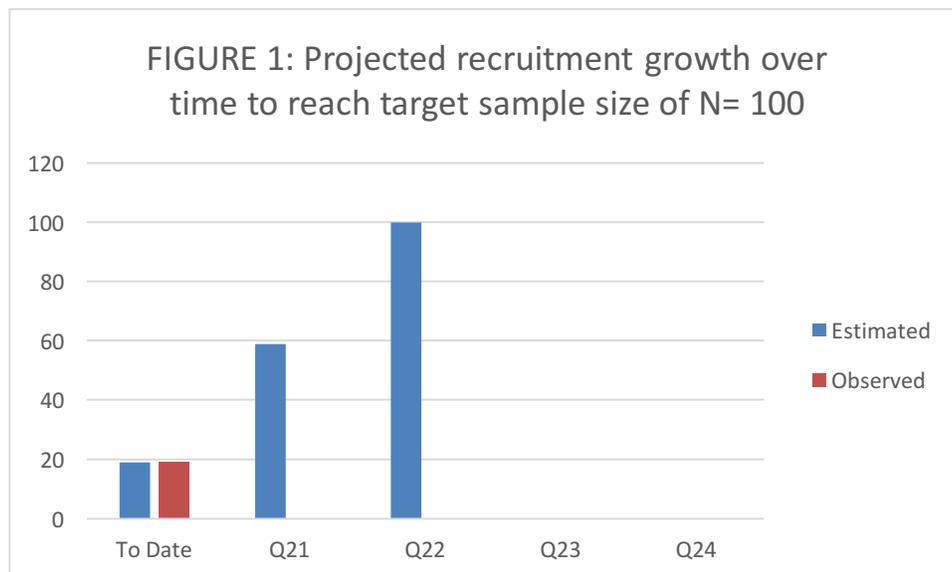
	Pre-Deploy	Mid-Deploy	Post-Deploy	Follow-Up
To date	2	0	0	0
Q1 2017	3	0	0	0
Q2 2017	0	5	0	0
Q3 2017	8	0	2	0
Q4 2017	6	2	2	0
Totals	19	7	4	0

We revisited the issue of our sample size of 240 families. Structured Equation Modeling (SEM) is considered a forward edge use of statistical methods in the social behavioral sciences. The use of power analyses to justify an estimated sample size for a given effect size for a given degree of confidence in SEM analyses was not a conventional standard at the time this award was given. Indeed, at the time of this proposal, convention was to require a minimum of 100 participants or 5 to 10 participants per parameter being estimated. Based on these earlier guidelines and consideration of the number of parameters being estimated our original sample of 240 was chosen.

More recently, however Wolf and colleagues (2013) suggest considerations of the particular model being estimated are necessary for calculating the minimum sample sizes needed to provide sufficient power rather than relying on the previously mentioned old

rules of thumb. Specifically, models using latent variables decrease measurement error and by doing so likely improve both the strength and accuracy of parameter estimates and the resulting increase in statistical power. As such, calculations based on our hypothesized model with 8 latent variables, 32 observed variables, anticipated effects sizes in the medium range based on both theory and findings in the extant literature, a desired statistical power of .80, and reliability set to .05 suggests that the minimum sample size necessary to detect effects and model structure is somewhere between 85 and 100 participants (Soper, 2017). In addition, Kim (2005) propose methods to calculate the required sample size to have sufficient power to assess the overall fit of structural equation models based upon different fit indices (e.g. RMSEA or AGFI) using the degrees of freedom of the proposed model and the chi-square distribution. Using this method, a model with 32 observed variables that includes 8 latent variables, some type of bivariate associations between all 8 latent factors and some correlated error terms on latent factors to improve fit (e.g., ranging from 0-12), a sample size of at least 85 is needed for adequate power for assessing the overall model fit.

In this manner, we believe that we can reach an adjusted sample size target in the 2017/2018 project year by expanding our recruitment to incorporate deploying infantry groups that are separate from deploying MEUs, which would allow us to reach an estimated 2,000 children that the Marine Corps has identified between our study age range (ages 4-7). We are prepared to coordinate our recruitment efforts with the Family Readiness Officers of two Battalions who are deploying in Fall 2017. Further, in order to complete the study in a 12-month extension, we will request the elimination of the 6-month post-deployment follow-up assessment from the Statement of Work. Completing the remaining three timepoints will still represent a significant increase in our understanding of family functioning during a deployment lifecycle. Therefore, as we currently have 19 families enrolled in the study, we will seek to enroll an additional 81 families in the upcoming NCE to complete are new target sample size (see Figure 1). It will be our intention to seek further funding to continue to assess the families for the fourth timepoint. A 1-year No Cost Extension request that included this revised sample size was submitted in late Summer 2017.



Measures

Below is a list of constructs, the measures or means by which they are being assessed, and the rationale for why each construct is important to the study.

Service Member psychological functioning – to be completed by the Service Member prior to and following deployment:

- PTSD Checklist Military Version – measures PTSD symptoms
- Dissociative Experiences Scale – measures Dissociative symptoms
- Center for Epidemiological Studies Depression Scale – measures depressive symptoms
- Difficulties in Emotion Regulation Scale – measures difficulties with emotion regulation that are often co-occurring difficulties with poor psychological functioning
- Penn State Worry Questionnaire – measures general anxiety and worry symptoms
- Michigan Alcohol Screening Test – measures alcohol misuse
- State-Trait Anger Inventory – measures difficulties with anger that often co-occur with difficulties with poor psychological functioning

Each of these measures are necessary for understanding Service Members' pre-deployment level of psychological functioning as well as their post-deployment level of functioning in order to ascertain the ways in which functioning across time points and changes in that functioning influence spouse functioning, marital relationship functioning, parenting, and child well-being.

Service Member's exposure to stressful events prior to and during deployment as well as their social support following deployment will be assessed with the 14-dimension Deployment Risk and Resiliency Inventory. *This measure will allow us to gain a better assessment of Service Member's stressful experiences and those factors that might mitigate stress and as such serve to moderate risk to families and children.*

Spouse psychological functioning – to be completed by the spouse prior to, during, and following deployment:

(please see list above regarding what measures assess)

- PTSD Checklist Civilian Version
- Dissociative Experiences Scale
- Center for Epidemiological Studies Depression Scale
- Difficulties in Emotion Regulation Scale
- Penn State Worry Questionnaire
- Michigan Alcohol Screening Test
- State-Trait Anger Inventory

Each of these measures are necessary for understanding Spouses' pre-, mid-, and immediate post-deployment and follow-up post-deployment level of psychological functioning. Spouses play an important role in moderating the impact of deployment and Service Member functioning on children – as such it is necessary for us to ascertain how spouses are functioning at each time point. We hypothesize that one mechanism by which child well-being may be undercut is through spouse functioning to be negatively impacted by the Service Member's functioning.

Service Member and Spouse Attachment Representations – to be completed with the Service Member and Spouse prior to deployment and following deployment.

It is hypothesized the organization of Service Member and spouse's attachment representations may influence children's psychological health and well-being. In addition, attachment representations may be viewed as one assessment of Service Member's and spouses' own well-being.

Marital and Family Functioning - to be completed by the Service Member prior to and following deployment and by the spouse prior to, during, and following deployment:

Dyadic Adjustment Scale – measures marital functioning
Conflict-Tactics Scale
Family Adaptability and Cohesion Scales

Marital and family functioning will serve as an indicator of family well-being. Measuring this construct at each time point is necessary in order to monitor changes in well-being in this domain. In addition, it is hypothesized that marital conflict may also contribute to increased child difficulties and therefore serve as predictive role in the model as well.

Parent-Child relationship quality and parent's experience of parenting –

- Parenting Stress Index – Short Form – Service Member will complete prior to and following deployment and spouse will complete before, during, and after deployment
- Caregiving Helplessness Questionnaire - Service Member will complete prior to and following deployment and spouse will complete before, during, and after deployment
- Free Play and clean up observation of parent and child with toys – Child will engage in these interactions with their father prior to and following the deployment and with their mother prior to, during, and after the deployment.

Parenting behaviors, attitudes, and perceptions have all been found to be important contributors to child well-being and as such is an important construct to be measured at each time point as a predictor of child adjustment.

Child psychological functioning and adjustment -

- Child Behavior Checklist – to be completed by Service Member prior to and following deployment and spouse prior to, during, and following deployment
- Child Behavior Checklist – Teacher Report Form – to be completed by child's teacher (whoever is teaching the child at that time point) at each of the data collection time points
- Sessa Puppet Interview – conducted by research assistant with the child at each of the three time points
- Doll Play – conducted by a research assistant with the child as a measure of attachment status.
- Caregiver Helpless Questionnaire – the 4-item Child Frightened subscale and 6-item Child Caregiving Towards Parents subscale will be used to assess children's feelings of fright in response to parent's symptomatology or behavior.

Child adjustment from parent, teacher, and child perspectives are one of the key outcomes of the study.

Child developmental skills –

- Child Behavior Questionnaire – Very Short Form – This measure of temperament will be completed by Service Members prior to and following the deployment and by spouses prior to, during, and following the deployment

- Cleanup - This task will also be used to measure compliance as a measure of self regulation.
- Delay Task (M & M or Marshmallow) – This measure of self regulation will be conducted with the child by the research assistant.
- Persistence Task (Puzzle or Circles) – This measure of self regulation will be conducted with the child by the research assistant.
- Emotion Regulation Checklist – This measure will be completed by the Service Member prior to and following deployment and by the spouse prior to, during, and after deployment.
- Problem solving tasks (Puzzles and Mazes or Pegs and Beads and Anagrams) – These task will be completed by Service Members and spouses with their children as a measure of emotion regulation.
- Wait task - This task will be completed by the research assistant with the child in the presence of one parent as a measure of child emotion regulation and self regulation.
- Social Skills Rating Scale – This measure will be completed by Service Members and spouses as a measure of preschool children’s development of age appropriate skills in interacting with peers.
- Preschool Behavior Questionnaire – Teachers will complete this 30-item measure as a measure of children’s interpersonal competence and social adjustment in the classroom.
- Preschool Social Competence Scale – Teachers will complete this 39-item measure which assess children’s level of cooperation, assertiveness, and prosociability in interaction with peers.
- Measure adapted from Lansford et al. (2006) project– Parent’s will complete this 14-item questionnaire as a measure of school age children’s social acceptance, popularity, friendship formation, and friendship quality among early school age children.
- Teacher-Child Rating Scale – 10-item social subscale – Teachers will complete this 10 item subscale as a measure of preschool children’s social behavior and skills that contribute to peer acceptance.
- 5 –item academic competencies and difficulties subscale will be completed by teachers as a measure of school age children’s school competencies.
- Behavior Assessment System for Children – 13 items will be used from this measure to assess preschool children’s “work related skills” such as their ability to try new things, adjust to changes in routines, pay attention, and persist when learning.
- ECLS – Adapted versions of questionnaires regarding academic competence will be given to teachers of school age children. These 21-item questionnaires measure specific skills that children should demonstrate at each grade.

The other key outcome of the study is children's ability to attain stage salient tasks at each developmental stage. These measures and tasks are designed to assess these.

In addition, sociodemographic information will including age, marital status, household composition, education, personal/household income, spouse/partner occupational status/history, race/ethnicity, and current living situation (e.g. on base, off base, with extended family etc.) will be collected as well as military specific information including service member's military history such as current rank, history of deployment (i.e. number of deployments, longest and shortest deployment), length of time stationed at Camp Pendelton.

The Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981) a measure of receptive language will be used as an estimate of children's intellectual functioning

KEY RESEARCH ACCOMPLISHMENTS

- Protocol design completed and survey assessments finalized.
- IRB approval obtained.
- PI Transferred from University of Connecticut to Wayne State University
- Award transferred to new Institution.
- Coordination of recruitment with combat brigades at Fort Drum or MEU with USMC is pending deployment cycles and approval of command.
- LOS from USMC.
- Local IRB approval of USMC protocol.
- Hiring of Project Coordinator, June 2015
- Equipment and materials purchase, June 2015
- Recruitment underway, December 2015

REPORTABLE OUTCOMES

IRB approval was obtained and the assessments were finalized. After a significant delay, the award was transferred to the new institution. Data collection began December 2015. A No Cost Extension was awarded in late Fall 2016. Data collection continued in 2016, with successes in reaching families in deploying MEUs and battalions. A final No Cost Extension was awarded in late Fall 2017.

CONCLUSION

With this award, we hope to identify the specific pathways of influence a Service Member's Psychological Health related problems influence their spouse and child's well being and provide a guide for improving resilience.

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Optimizing and Validating a Brief Assessment for Identifying Children of Service Members at Risk for Psychological Health Problems Following Parent Deployment

12280001



DMRDP

PI: Wargo Aikins

Org: Wayne State University

Award Amount: \$1,416,671

Study/Product Aim(s)

- 1) Determine the impact of Service Member's post-deployment psychological health on children ages 4 to 7 years old.
- 2) Identify those particular Service Member's Psychological Health-related symptoms that place children at risk for negative outcomes and assess the means by which these symptoms undermine children's adjustment directly by the Service Member and indirectly via negative impact on the Spouse.

Approach

230 intact military families with a child between 4-7 years in a longitudinal pre- mid- post- and follow-up deployment study. Pre and post deployment Service Members and their Spouses complete questionnaires and interviews regarding their psych health, marital and family functioning, and parent functioning. Spouses complete questionnaires regarding children's psych health and development at pre- mid- and post-timepoints. Children participation through doll and puppet play interview. Teacher ratings of child at all four timepoints.



Accomplishment: Protocol development completed and under IRB review. PI has changed institutions. Data collection of families is ongoing. A final No Cost Extension will be granted to complete the project in 2018

Timeline and Cost

Activities	CY	14	15	16	17
Protocol development and regulatory approvals					
Pre deployment data collection					
Mid deployment data collection					
Post deployment data collection					
Analyze, process and publish data					
Estimated Budget (\$K)		\$22K	\$464K	\$964K	\$1.4M

Updated: 22 August 2017

Goals/Milestones

CY14 Goals

- USMC approval
- Local IRB full board review

CY15 Goals Recruit and enroll subjects

- HRPO approval
- 230 military families assessed at pre-deployment

CY16 Goals Recruit and enroll subjects

- 230 military families assessed at mid-deployment
- 230 military families assessed at post-deployment

CY17 Goals Recruit and enroll subjects

- complete military families assessed at post-deployment
- Write manuscript for submission to peer-reviewed scientific journal
- Final report due to DMRDP

Comments/Challenges/Issues/Concerns

- Timeline delay due to grant transfer and transition to USMC site

Projected Expenditure: \$1.4M Actual Expenditure: \$870,000