

Deployment Risk and Resilience Inventory-2 (DRRI-2): An Updated Tool for Assessing Psychosocial Risk and Resilience Factors Among Service Members and Veterans

Dawne Vogt,^{1,2} Brian N. Smith,^{1,2} Lynda A. King,^{1,2,3} Daniel W. King,^{2,3,4} Jeffrey Knight,^{2,4} and Jennifer J. Vasterling^{2,4,5}

¹Women's Health Sciences Division, National Center for PTSD, VA Boston Healthcare System, Boston, Massachusetts, USA

²Department of Psychiatry, Boston University School of Medicine, Boston, Massachusetts, USA

³Department of Psychology, Boston University School of Medicine, Boston, Massachusetts, USA

⁴Behavioral Sciences Division, National Center for PTSD, VA Boston Healthcare System, Boston, Massachusetts, USA

⁵Psychology Service, VA Boston Healthcare System, Boston, Massachusetts, USA

The Deployment Risk and Resilience Inventory (DRRI) is a widely used instrument for assessing deployment-related risk and resilience factors among war veterans. A revision of this instrument was recently undertaken to enhance the DRRI's applicability across a variety of deployment-related circumstances and military subgroups. The resulting suite of 17 distinct DRRI-2 scales is the product of a multiyear psychometric endeavor that involved (a) focus groups with Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) veterans to inform an assessment of the content validity of original DRRI measures, (b) examination of item and scale characteristics of revised scales in a national sample of 469 OEF/OIF veterans, and (c) administration of refined scales to a second national sample of 1,046 OEF/OIF veterans to confirm their psychometric quality. Both classical test theory and item response theory analytical strategies were applied to inform major revisions, which included updating the coverage of warfare-related stressors, expanding the assessment of family factors throughout the deployment cycle, and shortening scales. Finalized DRRI-2 scales demonstrated strong internal consistency reliability and criterion-related validity. The DRRI-2 can be applied to examine the role that psychosocial factors play in postdeployment health and inform interventions aimed at reducing risk and enhancing resilience among war veterans.

The recent wars in Afghanistan and Iraq have highlighted the importance of understanding how war-zone deployments impact the health of war veterans. The original Deployment Risk and Resilience Inventory (DRRI; King, King, Vogt, Knight, & Samper, 2006) was developed to address psychosocial factors that have implications for the health and well-being of returning war veterans. The theoretical framework for the DRRI builds on the recognition that a comprehensive understanding of why some war veterans experience negative mental health sequelae following deployment requires a consideration of a variety of

factors from across the deployment cycle (e.g., King, King, Foy, Keane, & Fairbank, 1999). As such, the DRRI addresses both mission-related and interpersonal factors from the deployment period, such as combat exposure and sexual harassment, as well as risk and resilience factors from the predeployment and postdeployment period, such as prior life stressor exposure and postdeployment social support. Since being introduced to the field in 2003, individual DRRI scales have been adopted for use in many studies, and the DRRI is now one of the most widely used tools for assessing deployment-related risk and resilience factors.

Both the nature of warfare and the military population have changed, however, since the DRRI was initially developed in the context of the 1990–1991 Gulf War. Given that changes in the nature of constructs, as well as the target population, can lead to degradations in the psychometric quality and usefulness of instruments (Cook & Campbell, 1979; Cronbach & Meehl, 1955), a revision of the DRRI was recently undertaken to ensure that its component scales continue to be of high utility. A key focus of this revision centered on updating the assessment of warfare-related stressors. Whereas the Gulf War was a relatively brief conflict that involved limited combat

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Correspondence concerning this article should be addressed to Dawne Vogt, National Center for PTSD (116B-3), VA Boston Healthcare System, 150 South Huntington Avenue, Boston, MA 02130. E-mail: Dawne.Vogt@va.gov

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exposure, but high levels of concern about nuclear, biological, and chemical exposures, the recent wars in Iraq and Afghanistan have involved more sustained combat operations characterized by more substantial risk for exposure to insurgency warfare (Ruzek, Schnurr, Vasterling, & Friedman, 2011). As noted by Ruzek and colleagues, conflicts after September 11, 2001 (9/11) infuse the warzone with the pervasive element of terror, in which missions shift rapidly between humanitarian assistance and the delivery of lethal force, and it is rarely certain who is friend or foe. Therefore, our first aim in updating the DRRI was to ensure that this inventory adequately captures the range of stressors that are characteristic of more contemporary warfare.

A second objective in updating the DRRI was to enhance the coverage of family-related factors throughout the deployment cycle to better reflect the field's growing recognition of the key role that family plays in service members' deployment experiences and their postdeployment readjustment. Family factors are likely to be particularly salient for service members deployed in more recent wars, which have been characterized by repeated and prolonged separations from family (Cozza, 2011). Given that deployment family experiences have implications for both deployment performance (e.g., Bell & Schumm, 1999) and postwar adjustment (e.g., Vasterling et al., 2010; Vogt et al., 2011), a particular focus of attention was on expanding the assessment of the family-related risk and resilience factors that characterize the deployment timeframe.

A third aim for this revision was to reduce redundancy in item coverage within the DRRI to allow for shorter scales when possible. This aim was informed by our recognition that increasing the number of items to provide broader content coverage of contemporary deployment experiences without simultaneously considering possible item deletions could make using the DRRI impractical for some contexts, particularly those in which it is desirable to administer the full suite of DRRI scales. Therefore, the current project supplemented the focus on CTT in the initial development of the DRRI with item response theory analyses (IRT), which are particularly well-suited to identifying unnecessary overlap in item coverage.

A final aim was to revise items as needed to improve upon the inventory's content and language for different war cohorts (e.g., OEF/OIF, Gulf War, Vietnam) service branches (e.g., Army, Navy), deployment roles (e.g., combat arms and service support), and demographic and military subgroups (e.g., men and women; regular Active Duty and National Guard/Reservist personnel). Although the original DRRI was targeted to a broad audience, the increasingly diverse nature of the military population with respect to age, gender, and deployment component (i.e., regular Active Duty vs. National Guard/Reserves) underscores the importance of ensuring that items are relevant to different subsets of the larger military and veteran population. This large-scale psychometric endeavor, which consisted of three phases, is described below and illustrated in Figure 1.

Phase I: Focus Groups, Literature Review, and Instrument Revision

Phase I began with an initial assessment of the content validity of the original DRRI scales for OEF/OIF veterans. Following a comprehensive review of the OEF/OIF deployment stress literature that included particular attention to measures used to assess deployment-related constructs, four focus groups were conducted with a total of 21 OEF/OIF veterans recruited through flyers at the VA Boston Healthcare System. Participants included both men and women deployed from Active Duty and National Guard/Reserve components, with representation from all service branches. Following recommended procedures for the application of focus groups in instrument development (Vogt, King, & King, 2004), a focus group guide was used to facilitate discussion of deployment-related experiences and partial transcripts were coded for themes of deployment-related risk and resilience. This information, along with what was learned in the literature review, was used to refine definitions of previously identified risk and resilience factors, delineate complete and clearly expressed definitions of newly identified constructs, and guide the development of new items to address gaps in the DRRI's content coverage. Additional details on this procedure is available in Vogt et al. (2004).

We made a number of changes to preexisting DRRI scales based on this information. For example, to better assess stressors characteristic of more contemporary deployments, items were added to the Combat Exposure scale (e.g., disarming potential enemy combatants and locating explosive devices) and the Perceived Threat scale (e.g., concern that "friendly" civilians were actually enemies). In addition, items were added to the Concerns about Life and Family Disruptions scale to expand the assessment of concerns related to children (e.g., effect of deployment on relationships with children). Several new scales were also developed to address Deployment Social Support from Family and Friends, Family Stressors, and Postdeployment Family Functioning.

We next appraised items to evaluate their relevance for different service member subgroups, and those that were judged to be highly specific to a particular deployment experience (e.g., Gulf War) were eliminated or rewritten to be more broadly relevant across veteran cohorts. For example, several items in the Perceived Threat scale address concerns related to nuclear, biological, and chemical exposures. Given that these concerns are likely to be more characteristic of the Gulf War, they were revised to enhance their generalizability. We also scrutinized items to ensure their applicability across other military subgroups (e.g., Active Duty and National Guard/Reservist personnel, members of different service branches), and revised them as needed.

Newly developed and revised items were then refined based on the research team's judgments of the extent to which items met six criteria: readability (i.e., items were easy to understand), item-to-response format match (i.e., response format was appropriate for the items), face validity (i.e., items appeared to

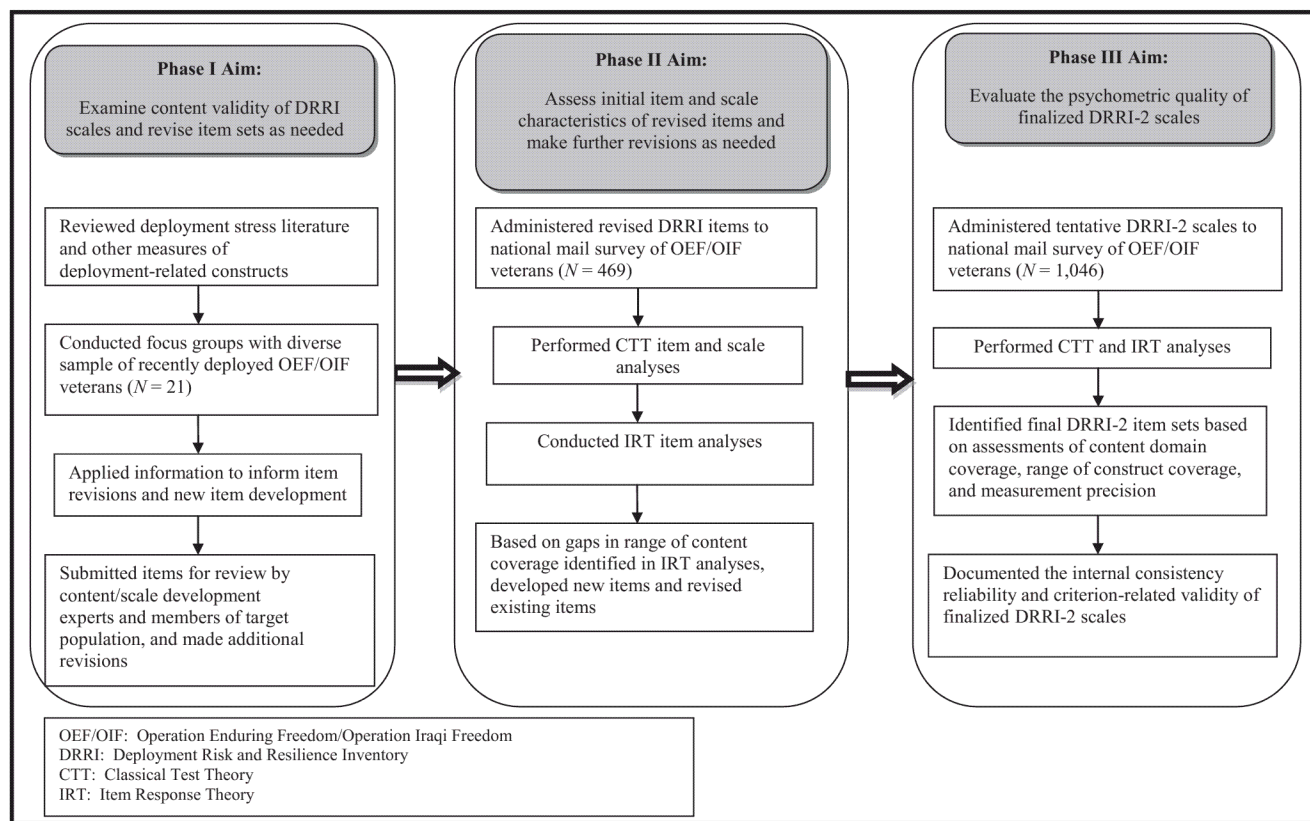


Figure 1. Deployment Risk and Resilience Inventory-2 (DRRI-2) development procedure.

assess relevant content), neutrality (i.e., items were not leading), “double barreledness” (i.e., items did not assess multiple domains), and response variance (i.e., items maximized dispersion of responses). Consistent with recommendations for enhancing content validity (Haynes, Richard, & Kubany, 1995), items were then subjected to a final review by content and scale development experts, as well as members of the target population recruited through flyers at the VA Boston Healthcare System ($N = 9$ OEF/OIF veterans). Items that were flagged as problematic according to any of these criteria were reexamined and revised accordingly.

As indicated in Table 1, items within 13 of the original 14 DRRI scales were revised at this stage of the instrument development process. An average of 34% of items were revised within each scale, and over 50% of the items were revised for four scales (Combat Experiences, Aftermath of Battle, Perceived Threat, Unit Social Support). Three items on average were added to each scale, and in several cases, items deemed to be too specific to a particular cohort (most often, Gulf War veterans), or otherwise deficient, were eliminated.

Phase II: Initial Item and Scale Characteristics and Second Set of Revisions

Phase II involved examining the initial item and scale characteristics of updated DRRI scales in a national sample of OEF/OIF

veterans to inform further scale refinements. The internal consistency reliability and criterion-related validity (as reflected in associations with PTSD symptom severity) of revised items sets were then evaluated and compared with the original DRRI to assess the impact of revisions on these indices of psychometric quality.

Method

Participants and procedure. Potential participants were identified from a Defense Manpower Data Center (DMDC) roster of all OEF/OIF veterans who had returned from deployment and separated from service within the last 2 years (2007–2009). To obtain sufficient variability on the targeted constructs, a key requirement for a psychometric study of this nature, the sample was stratified on both deployment component (50.0% Active Duty, 50.0% National Guard/Reservist personnel) and gender (50.0% women, 50.0% men).

We conducted an Internal Revenue Service (IRS) address search to identify updated mailing addresses for potential participants and applied a modification of the Dillman (Dillman, Smyth, & Christian, 2009) mail survey procedure for data collection. Specifically, potential participants were mailed an initial survey followed by a reminder/thank-you postcard 2 weeks later. Nonresponders were sent a second mailing of the assessment package, followed by a second reminder/thank-you

Table 1
Modification of Deployment Risk and Resilience Inventory Scales in Phase I

Scale	Items revised (%)	New items (n)	Items removed (n)
Prior stressors	47.1	2	—
Childhood family functioning	6.7	—	—
Preparedness	28.6	4	3
Difficult living & working environment	15.0	8	2
Perceived threat	60.0	7	—
Combat experiences	66.7	7	1
Aftermath of battle	60.0	1	—
Nuclear, biological, and chemical exposures	20.0	2	3
Concerns about life and family disruptions	14.3	7	1
Unit social support	58.3	3	1
General harassment	—	1	—
Sexual harassment	28.6	1	—
Postdeployment stressors	47.1	2	2
Postdeployment social support	20.0	—	—

Note. If multiple items were combined into one item or an item was split into multiple items, this was counted as one item revision.

postcard 2 weeks later. This procedure was repeated a third time for nonresponders. A cover letter that detailed the purpose of the research and conformed to all standards for the protection of human subjects was included with each mailing of the survey, along with an opt-out form and a preaddressed postage-paid envelope. The initial mailing also included a VISA gift card as a small token of appreciation.

Of the 1,200 potential participants, 202 could not be reached. Of the 998 potential participants who are likely to have received the mailing (i.e., mailings not returned as undeliverable), 85 (8.5%) declined participation by returning the opt-out form. We received completed surveys from 469 veterans (59.1% female, 40.9% male), yielding a response rate of 46.9%.

During their most recent deployment, 69.8% of participants reported serving in support of OIF, and 30.2% served in support of OEF. Nearly half of the sample (42.5%) reported two or more deployments to Iraq or Afghanistan. About half (53.4%) were deployed from Active Duty and 46.6% were deployed from the National Guard or Reserves. All branches of the service were represented, with about two thirds in the Army (67.0%). Nearly

three quarters of the sample self-identified as White (72.7%), 15.8% as Black, and 11.7% as Hispanic. The mean age of participants at the time of survey completion was 35 years.

Measures. The original DRRI includes scales to assess two predeployment factors (Prior Stressors, Childhood Family Functioning), 10 deployment factors (Preparedness; Difficult Living and Working Environment; Perceived Threat; Combat Experiences; Aftermath of Battle, Nuclear, Biological, and Chemical Exposures; Concerns about Life and Family Disruptions; Unit Social Support; General Harassment; Sexual Harassment), and two postdeployment factors (Postdeployment Social Support, Postdeployment Stressors). Original DRRI items and candidate items for updated DRRI-2 scales were included in the survey. In addition, three potentially new DRRI-2 scales were added: Family Stressors, Deployment Support from Family and Friends, and Postdeployment Family Functioning.¹ Items were grouped in a single experimental form that required approximately 45 minutes to complete, with candidate DRRI-2 items presented subsequent to the original DRRI items. Respondents were informed that we were evaluating alternative items; therefore, they should expect some items to be similar in wording or focus. Respondents completed scales with respect to their most recent OEF/OIF deployment.

The military version of the 17-item PTSD Checklist (PCL-M; Weathers, Litz, Herman, Huska, & Keane, 1993) was included to evaluate the criterion-related validity of the revised DRRI scales with respect to PTSD symptom severity. Participants were instructed to think about the event or events that were most disturbing during deployment, and indicate the degree to which they had been bothered by each PTSD symptom in the last 3 months using a 5-point response format (1 = *not at all* to 5 = *extremely*).² This measure has demonstrated good internal consistency, test-retest reliability, and convergent validity in prior research (Wilkins, Lang, & Norman, 2011). The α for this scale in the current study was .97.

Data Analysis. The analytic strategy combined the strengths of classical test theory and IRT analyses. Initial classical test theory analyses included computation of frequency distributions for updated DRRI items with multipoint Likert-type response formats (e.g., *strongly disagree* to *strongly agree*) and probabilities of endorsement for dichotomous DRRI items (e.g., yes/no). Next, corrected item-total correlations (correlations of each item's score with the sum of scores on all other items) and estimates of internal consistency reliability (Cronbach's α) were computed for updated DRRI scales. Items with higher item-total correlations and interitem correlations that are moderate in range and cluster around the mean value are

¹ Several additional potential DRRI-2 scales were developed during Phase I, but were ultimately not retained, as it was determined that they did not add sufficient psychometric value when tested during Phase II.

² Please note that the instructions were modified from a 1-month timeframe.

generally preferred (Clark & Watson, 1995; Nunnally, 1978). For certain constructs, however, content domain coverage and breadth were considered more critical to item retention than item-total correlations, which are more suited to traditional latent variables than to causal indicator variables such as discrete stressor events (Bollen & Bauldry, 2011; Bollen & Lennox, 1991). After item sets were revised based on these results, estimates of internal consistency reliability and criterion-related validity in relation to the PCL-M were compared for the revised item scales (DRRI-X) and original DRRI scales.

IRT analyses were also conducted during this stage to inform further item and measure refinements, with the primary goal of identifying gaps and potential overlap in the range of construct coverage (i.e., the extent to which items address all targeted levels of the construct). Only scales that represented latent constructs were analyzed via IRT: Childhood Family Functioning, Preparedness, Difficult Living and Working Environment, Perceived Threat, Unit Social Support, Deployment Support from Family and Friends, Postdeployment Social Support, and Postdeployment Family Functioning. In all cases, two related assumptions—unidimensionality and local independence—were examined before proceeding with IRT analyses. Problematic items were removed as needed (or revised for readministration in Phase III). Once unidimensionality and local independence were confirmed, IRT models were fit to the data for each of the updated DRRI scale item sets using the graded response IRT model in Parscale 4.1 (Muraki & Bock, 2003); discrimination and difficulty parameters, as well as fit indices, were computed for each item. Discrimination refers to the degree to which responses to an item change as a function of differences in the latent trait, and difficulty (or threshold) refers to the amount of the trait that is needed to endorse a given item. Item fit is a measure of how closely the observed item responses match what the IRT model would predict. Using WINSTEPS Version 3.60.1 (Linacre, 2006), item-person maps were generated for each scale and used to evaluate both gaps and overlap in construct coverage across the targeted construct continuum. In cases where gaps in the range of construct coverage were identified, new items were developed to target the desired region of the latent construct. To meet our goal of providing more efficient (i.e., shorter) scales, items that demonstrated overlap in the range of construct coverage were considered for deletion when eliminating them would not compromise content integrity. Items that demonstrated poor fit or other undesirable item qualities (e.g., problematic difficulty parameters in the context of the larger scale) were also considered as candidates for deletion or revision. Additional detail on the IRT results is available from the first author.

Consistent with recommendations from the broader literature (Lai, Cella, Chang, Bode, & Heinemann, 2003), content domain coverage (i.e., extent to which items address all aspects of the content identified within each scale), range of construct coverage (i.e., extent to which each scale captures the full targeted range of each construct, avoids construct coverage overlap, and minimizes both floor and ceiling effects), and measurement pre-

Table 2

Comparison of Internal Consistency Reliability Analyses for Original DRRI Scales (Phase II), DRRI-X Scales (Phase II), and Final DRRI-2 Scales (Phase III)

Scale	DRRI	DRRI-X	Final DRRI-2
Prior stressors	.77	.77	.79
Childhood family functioning	.93	.93	.95
Preparedness	.87	.85	.91
Difficult living and working environment	.88	.85	.90
Perceived threat	.89	.89	.91
Combat experiences	.90	.91	.91
Aftermath of battle	.92	.91	.92
Nuclear, biological, and chemical exposures	.85	.83	.80
Family stressors ^a	—	.75	.76
Concerns about life and family disruptions	.85	.83	.89
Unit social support	.94	.94	.96
Deployment support from family/friends ^a	—	.84	.92
General harassment	.92	.90	.93
Sexual harassment	.84	.86	.86
Postdeployment stressors	.66	.68	.70
Postdeployment social support	.88	.86	.90
Postdeployment family functioning ^a	—	.89	.96

Note. High internal consistency reliability is not expected for the composite variables (i.e., Prior Stressors, Combat Experiences, Aftermath of Battle, Nuclear, Biological, and Chemical Exposures, General Harassment, Sexual Harassment, Family Stressors, Postdeployment Stressors). DRRI = Deployment Risk and Resilience Inventory.

^aNew scale that was not part of the original DRRI.

cision (i.e., extent to which items provide the highest amount of information across the full spectrum of scores) were each considered in finalizing item sets at this phase of instrument development.

Results and Discussion

As shown in Table 2, DRRI-X scales demonstrated high internal consistency overall, with α coefficients greater than .80 for all scales representing traditional latent variables. Of note, alphas for DRRI-X and original DRRI scales were generally comparable, suggesting that the expanded content coverage did not substantially impact internal consistency reliability. As shown in Table 3, all correlations between DRRI-X scales and PTSD symptom severity were significant and generally similar to those observed for the original DRRI.

Table 3

Comparison of Bivariate Correlations Between PTSD Symptom Severity and Original DRRI Scales (Phase II), DRRI-X Scales (Phase II), and Final DRRI-2 Scales (Phase III)

Scale	DRRI	DRRI-X	Final DRRI-2
Prior stressors	.17	.19	.33
Childhood family functioning	-.11	-.11	-.15
Preparedness	-.27	-.29	-.28
Difficult living and working environment	.53	.51	.56
Perceived threat	.56	.56	.55
Combat experiences	.48	.41	.45
Aftermath of battle	.40	.34	.43
Nuclear, biological, and chemical exposures	.46	.45	.40
Family stressors ^a	—	.37	.40
Concerns about life & family disruptions	.30	.31	.31
Unit social support	-.23	-.20	-.27
Deployment support from family/friends ^a	—	-.37	-.35
General harassment	.30	.30	.36
Sexual harassment	.18	.19	.32
Postdeployment stressors	.54	.51	.55
Postdeployment social support	-.55	-.55	-.46
Postdeployment family functioning ^a	—	-.28	-.42

Note. All correlations were significant at $p < .05$. DRRI = Deployment Risk and Resilience Inventory.

^aNew scale that was not part of the original DRRI.

Although classical test theory analyses suggested that the DRRI-X scales performed well overall, IRT analyses pointed to the need for further revision to better capture the full construct continuum for several scales. Specifically, results revealed that several scales included too few items that discriminated at the high or low end of the construct (e.g., Preparedness and Postdeployment Social Support). Therefore, new scale items were developed to target gaps in the range of construct coverage, which were then administered to a second sample of OEF/OIF veterans in the next and final step in the DRRI-2 development process (Phase III).

Phase III: Confirmation of Item/Scale Characteristics and Final Set of Revisions

Phase III involved finalizing the DRRI-2 scales and evaluating their psychometric quality in a new sample of OEF/OIF veterans.

Method

Participants and procedure. For this phase, we selected a random sample of 3,053 potential participants from a DMDC roster of all OEF/OIF veterans who had returned from deployment and separated from service within the last 2 years (2008–2010). Of these, 391 could not be reached. The same mailed survey procedure was applied. Of the 2,662 potential participants who were likely to have received this second mailing, 84 (3.1%) declined participation by returning an opt-out form. Completed surveys were received from 1,046 veterans (53.5% female, 46.5% male), yielding a response rate of 39.2%. During their most recent deployment, 66.1% of participants reported OIF service, and 33.9% served in support of OEF. About half of the sample (51.1%) reported having been deployed for OEF/OIF at least twice. Slightly more than half (57.0%) were deployed from Active Duty; 43.0% were deployed from the National Guard or Reserves. All service branches were represented, with about two thirds in the Army (64.5%). Three quarters (74.7%) of the sample self-identified as White, 13.6% as Black, and 11.9% as Hispanic. The mean age of participants at the time of survey completion was 35 years.

Measures. Phase III included the 17 updated DRRI scales and the PCL-M (Weathers et al., 1993). The α for the PCL-M was .96 in this sample.

Data analysis. Classical test theory item and scale characteristics were again computed (Aiken, 1994; Anastasi, 1982; Nunnally, 1978), as well as IRT-based analyses focused on assessing range of construct coverage for the measures and identifying items that could be removed without damaging psychometric quality or content validity. As for Phase II, IRT models were fit to the data using the graded response IRT model and item-person maps were used to examine range of construct coverage. In cases where overlap in range of coverage was identified, items that could be eliminated without losing important content were removed. Content domain coverage, range of construct coverage, and measurement precision were again considered in finalizing item sets.

After underperforming items were omitted, internal consistency reliability was computed for the finalized DRRI-2 scales, and estimates of criterion-related validity were generated based on correlations with PTSD symptom severity.

Results and Discussion

As indicated in the final column in Table 2, the finalized DRRI-2 scales that represented latent variables showed high internal consistency reliability (alphas for these scales averaged .92). Of note, alphas were slightly higher on average than either the original DRRI ($\alpha = .89$) or the DRRI-X scales ($\alpha = .88$) examined in Phase II. There were no substantial problems with either ceiling or floor effects, as evidenced by the scales' dispersion. IRT analyses indicated that the item sets for each scale have high discrimination overall. Specifically, the average item

discrimination parameter was above 1.50 for all scales, indicating that items provide precision for differentiating among individuals at varying levels of the latent trait. Difficulty parameters indicated that the scales have the greatest precision at levels expected to be most predictive of postdeployment functioning and mental health, with average threshold estimates for all scales falling between the midpoint and the end of the latent trait indicating high risk.

As documented in Table 3, associations with PTSD symptom severity supported the criterion-related validity of the finalized DRRI-2 scales. Specifically, these measures demonstrated moderate to strong relationships with PTSD symptom severity, with the absolute value of correlations ranging from $|r| = .15$ to $.56$. The mean association with PTSD symptom severity was $|r| = .40$, and all correlations were significant at the $p < .050$ level. Finally, compared to the original DRRI, DRRI-2 scales are 15% shorter, on average. (See Supporting Information, Table 1, for definitions, sample items, and response format for the finalized DRRI-2 scales.)

General Discussion

Military deployments present individuals with an array of mental and physical stressors, creating a context in which risk and resilience factors assume critical importance. To address veterans' mental and physical health care needs, we need efficient, but psychometrically sound measures of psychosocial risk and resilience factors with demonstrated implications for the postdeployment health and well-being of war veterans. The goal of the present project was to update the DRRI, a suite of deployment-related scales that was initially developed and validated in the context of the first Gulf War, to enhance its applicability across a variety of deployment circumstances and subsets of the military population. This project involved a multistage, iterative item development procedure that drew from the strength of both quantitative and qualitative methods, as well as classical test theory- and IRT-based analyses. Primary enhancements to the DRRI included updating the coverage of warfare-related stressors; expanding the assessment of family factors throughout predeployment, deployment, and postdeployment timeframes; and shortening scales. An examination of the psychometric quality of finalized DRRI-2 scales revealed that scales demonstrated strong internal consistency reliability and criterion-related validity.

There are a number of future directions for research with the DRRI-2. Whereas the goal of this study was to conduct psychometric analyses in a diverse sample, studies intended to produce representative findings regarding the impact of deployment-related risk and resilience factors on postdeployment health will require a different sampling strategy than that applied in this study, which involved oversampling both women and National Guard/Reservist personnel. In this regard, it is important to note that supplemental analyses revealed slight differences in internal consistency reliability and criterion-related validity based

on gender and deployment component (though psychometric properties were satisfactory for all subgroups), suggesting the need for future investigation of subgroup differences. It will be especially valuable to validate these scales in other deployment cohorts, as well as current military personnel, to evaluate their generalizability. Longitudinal investigations that include reports of experiences targeted closer to the focal timeframe (e.g., predeployment assessment for the predeployment factors), and that allow for an examination of predictors of change in symptomatology over time, will also be useful.

The DRRI-2's expanded focus on family-related factors opens additional avenues for investigation, as these factors are likely to have implications for a host of outcomes that are relevant for military families. In this regard, it will be important to evaluate the predictive validity of DRRI-2 family scales relative to family-related outcomes such as marital functioning and family readjustment. Supplemental analyses supported relationships with other mental health outcomes (i.e., both depression and alcohol abuse), suggesting the importance of evaluating the predictive validity of the DRRI-2 scales with respect to other common conditions experienced by war veterans.³

The availability of different forms of the DRRI raises several practical issues. For example, one question that may arise in the research context is whether longitudinal studies that included the DRRI in a prior data collection should transition to the updated DRRI-2 for subsequent data collections. Though future work will focus on providing a calibration between these different forms, the current study did not allow for direct comparisons between the different versions of the DRRI within a single sample. Therefore, at this point we recommend continued administration of the original DRRI in preexisting longitudinal studies, with supplementation with newly developed DRRI-2 scales as appropriate. Another question is whether the original DRRI is more appropriate for the assessment of pre-OEF/OIF war cohorts and especially Gulf War veterans. This is a judgment call that will depend on the particular constructs of interest to investigators. We would likely recommend use of the original DRRI scales when nuclear, biological, and chemical exposures are a central focus; for studies of less cohort-specific constructs (e.g., social support during deployment), this would not necessarily be the case. Ultimately, these decisions must be made thoughtfully, with a careful consideration of costs and benefits.

In closing, the DRRI-2 represents a psychometrically sound and efficient suite of scales that can be used to capture predeployment, deployment, and postdeployment risk and resilience factors with implications for the postdeployment mental health and functioning of service members and veterans.⁴ Not only does this inventory provide a broader assessment of the warfare experiences and family-related factors than was available

³ Due to space constraints these results are not presented.

⁴ Information on how to obtain DRRI-2 scales and the associated manual is available at <http://www.ptsd.va.gov/professional/pages/assessments/list-drrimeasures.asp>.

in the original DRRI, but it also includes scales that are more efficient and more content-valid for different subsets of the broader population. Importantly, the measures that comprise the DRRI-2 are not subscales that are summed to create a total deployment experience score; instead, they are distinct scales that address different, but related factors that contribute to postdeployment health. Therefore, scales from the DRRI-2 may be administered individually or altogether, depending upon the particular goals of assessment. It is our hope that these measures will be used to better understand the important role that these factors play in postdeployment health, inform interventions aimed at reducing risk and enhancing resilience within these populations, and advance clinical decision making.

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