RESEARCH REPORT #2004-002

Validation of the 90 to 120 Day Post-Deployment Psychological Short Screen

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Research conducted by the US Army Medical Research Unit – Europe (USAMRU-E) shows that Soldiers report an increase in psychological symptoms at 120 days post-reintegration relative to symptom levels reported immediately upon reintegration. Based on this research, the US Army, Europe (USAREUR) requested psychological screening of USAREUR personnel at 90 to 120 days post-deployment. To accomplish this task, a short screen was developed that could easily be administered and coded by medical or behavioral health technicians. The overall goal of the short screen was to provide Soldiers with an easy means to self-identify mental health issues and receive counseling. This report details the statistical validity underlying the development of the psychological short screen. The work is based on two blind validation studies conducted in Europe in 2004 by the USAMRU-E.

BACKGROUND

Mental health providers often conduct psychological screening of Soldiers returning from deployments as an early intervention strategy. In terms of timing, post-deployment screening has been conducted anywhere from the immediate reintegration period to several months post-reintegration. Recent work by the US Army Medical Research Unit – Europe (USAMRU-E), however, has shown an increase in psychological symptom levels at 90 to 120 days post-reintegration in Soldiers returning from combat in Iraq. In a matched sample of 509 Soldiers providing data both immediately post-reintegration and at 120 days post-reintegration, USAMRU-E found reports of depression increased from 6.9% to 14.3%; reports of PTSD increased from 1.2% to 4.3%; Soldiers exceeding criteria for anger problems increased from 3.3% to 10.6% and finally relationship problems increased from 4.7% to 5.5%.

While the 120-day rates in the matched sample of 509 are lower than rates reported in other comparative samples at the same time point (e.g., Hoge et al., 2004), the results nonetheless show that psychological symptoms increase during the time from immediate reintegration to 120 days post-reintegration. This, in turn, suggests psychological screening may be particularly useful at 90 to 120 days post-reintegration relative to being conducted immediately at reintegration. Based on these results, the Commanding General of the US Army, Europe (USAREUR) tasked the Europe Regional Medical Command (ERMC) to develop a plan to screen all USAREUR Soldiers at 90 to 120 days after returning from a combat deployment. To conduct this screening effectively it was necessary to develop a valid short screen that could be easily administered and scored by medical or behavioral health technicians. This report details the analytic strategy underlying the

selection of items in the 90 to 120 day psychological short screen.

• Screening Research

Psychological screening has been a research focus of the USAMRU-E in Heidelberg since 1996 (see Wright, Huffman, Adler, & Castro, 2002, for a review). Since that time, research has examined screening results across a range of operations (Adler, Wright, Huffman, Thomas, & Castro, 2002; Martinez, Huffman, Adler, & Castro, 2000). Subsequent studies have developed the groundwork for validating the primary screening instrument (Wright, Thomas, Adler, Ness, Hoge, & Castro, in press).

Building on a 2002 pre-deployment content validity study (Wright, et al., in press), five content areas have been identified as targets for screening: (1) traumatic stress, (2) depression, (3) relationship problems, (4) alcohol problems, and (5) anger problems. Currently, however, the scales used to screen for these dimensions are lengthy. In addition, the scoring on some of the scales tends to be rather complicated. Thus, there is a need to develop short, validated scales that can be used in a quick screening procedure. The current report details the development of short screen scales for this purpose.

• Current Study: Sample and Procedure

The current report is based on analyses from two blind validation study samples. The first sample is comprised of responses from Soldiers returning from combat in Iraq. Soldiers were screened as part of an in-depth psychological screening assessment requested by the combat unit's senior leadership. In all, 1,604 Soldiers were screened, and 1,578 Soldiers (98%) consented to having their data subsequently analyzed for the purposes of improving the primary screen. Of the consenting Soldiers, 592 (38%) were selected to receive face-to-face structured interviews conducted by clinical providers during the screening process. These 592 Soldiers comprise the post-deployment sample.

The second sample analyzed in the report comes from 767 Soldiers screened as part of a pre-deployment medical assessment of Soldiers deploying to Iraq. Of the 767 Soldiers screened, 739 consented to having their data analyzed for research purposes (96%). Of the consenting Soldiers, 356 Soldiers received interviews. This sample of 356 constitutes the pre-deployment sample.

In both the post-deployment and pre-deployment samples, Soldiers completed a 20-minute primary screening survey. Soldiers' responses to the scales in the primary screen were evaluated using cut-off criteria established from prior studies. Soldiers were then sent for a secondary interview through two possible mechanisms: (1) Soldiers exceeding criteria on any one of the five content areas were directed to a secondary interview; (2) a random sample of between 20% and 30% of the Soldiers scoring below established criteria were directed to secondary interviews. This provided a group of controls.

Throughout, clinical providers conducting the secondary interviews were blind to the results of the primary screen. That is, providers did not know whether Soldiers being interviewed were controls or positives, nor did they know which content area those exceeding criteria had endorsed. These procedures resulted in a blind validation study design.

The secondary interview was conducted by clinical providers using an adapted form of a validated structured interview (the MINI) developed by Sheehan et al. (1998). The structured interview assessed the same content areas as those covered in the primary screen. Thus, analytically we are able to validate the primary screen by identifying items most predictive of clinical providers' evaluations. This examination of the congruence between primary screen survey items and clinical providers' independent evaluations comprise the remainder of this report.

• Key Assumptions

There are several key assumptions that underlie the development, validation and implementation of the short screen.

Push Mental Health to Soldiers. The short screen is designed to be a simple tool allowing Soldiers to self-select for mental health services. Soldiers often report significant barriers to care (Hoge, et al., 2004), and the short screen is a way to reduce barriers. Thus, in the

short screen we favor simple, direct questions such as "would you like to see a counselor?"

Some Mental Health Problems are Complex. In cases involving mental health problems such as depression or traumatic stress, it may not be reasonable to expect Soldiers to correctly identify symptoms indicative of psychological problems. Thus, the screen should use scales that contain characteristic symptoms when screening for complex psychological dimensions rather than ask direct questions such as "Do you want to see a counselor for depression?" In cases where we use symptom-based scales, we attempt to select simple, direct items as components of the scales.

Create a Specific Test and Minimize False Positives: The short screen has two competing demands: (a) avoid missing any symptomatic Soldiers by having a test that is sensitive enough to identify Soldiers with symptoms, and (b) have a test that is specific enough to minimize the number of false positives and unnecessarily overloading USAREUR mental health resources.

In a situation where a short screen is being administered to thousands of individuals without an immediate secondary screening interview, it is necessary to emphasize the specificity of the items. The screening system, as a whole, will fail to be effective if it is overloaded with Soldiers who do not, in fact, need mental health care. Thus, we selected cut-off values with specificity values of around .95, meaning that we could be 95% sure that a Soldier scoring positive on the dimension would meet the criteria for the dimension when interviewed by mental health assets.

The high specificity value of .95 means that few false positives will be identified. It also means, however, that the screen will miss some symptomatic Soldiers. This is not as problematic as it first appears, though, because Soldiers generally displayed comorbidity. For instance, in the post-deployment sample, 43% of the Soldiers who exceeded criteria on the screening survey showed symptoms on more than one dimension as assessed by clinical providers in the secondary interview. Therefore, the screen should identify most of the symptomatic Soldiers because it has five content areas. In addition, the short screen includes items that allow Soldiers to self-select to speak to counselors without having to meet any screening criteria and it has specific trigger items for critical dimensions such as suicide ideation and intention to harm others.

Levels of Severity: In the screening validation work underlying this report, clinical providers made the final determination as to whether or not a Soldier needed to be referred for a mental health evaluation. Clinical providers could identify three categorizations of severity for symptoms: (1) immediate referral for complete evaluation; (2) standard referral for complete evaluation; and (3) clinically-evident symptoms not necessarily severe enough for referral (termed subclinical).

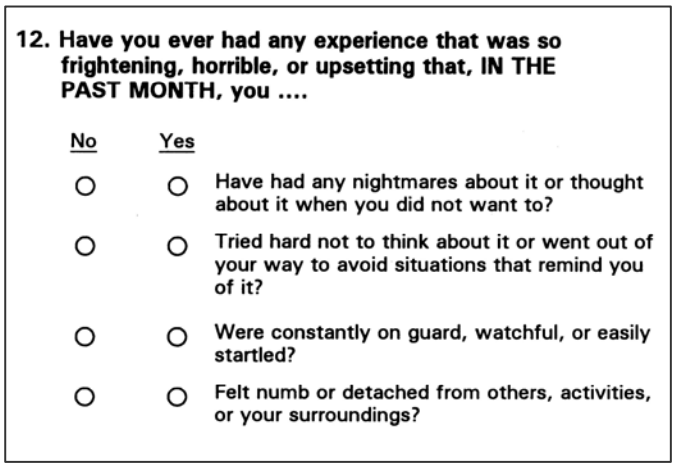
When we developed the short screen we had two choices about how to define symptomatic Soldiers. One choice was to define symptomatic Soldiers as those who were referred (either immediately or with a standard referral). The other choice was to define symptomatic Soldiers as those who showed any signs of symptoms by including subclinicals along with those who were referred.

In evaluating each dimension (traumatic stress, depression, anger problems, relationship problems, and alcohol problems) we attempted to define symptomatic Soldiers in terms of referrals; however, in the case of relationship problems, it was necessary to include subclinical Soldiers to achieve sufficient sample size. This is because with the post-deployment sample, only 17 Soldiers were referred for relationship problems and in the pre-deployment sample, only 10 were referred. By defining symptomatic Soldiers as being either referred or subclinical, 33 post-deployment Soldiers and 21 pre-deployment Soldiers were identified. These numbers provided adequate sample sizes on which to conduct analyses.

PSYCHOLOGICAL SHORT SCREEN ITEMS

• Traumatic Stress

The items used to assess traumatic stress were drawn from question 12 of the DD Form 2796. The DD Form 2796 is the Department of Defense mandatory post-deployment health assessment tool. The items from the DD Form 2796 are listed in the following text box:



12. Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you ....

No	Yes	
○	○	Have had any nightmares about it or thought about it when you did not want to?
○	○	Tried hard not to think about it or went out of your way to avoid situations that remind you of it?
○	○	Were constantly on guard, watchful, or easily startled?
○	○	Felt numb or detached from others, activities, or your surroundings?

Table 1 shows how various cut-off values on the DD Form 2796 correspond to clinical providers' ratings. When the cut-off value was set at one, the primary screen identified 32 of the 37 Soldiers who were identified as positive by the clinical providers. This resulted in a sensitivity value of 0.86. At the same time, however, the criterion of requiring only one of the four items to be endorsed produced 148 false positives for a specificity value of 0.73.

A large reduction in false positives was garnered by requiring Soldiers to endorse at least 2 items. In this case, the sensitivity and specificity were 0.73 and 0.88, respectively. When the cut-off value required Soldiers to endorse 3 or more items, the test sensitivity dropped fairly dramatically (0.46) and more referred Soldiers were missed by the primary screen than were identified. At the same time, though, the specificity increased to 0.97 and very few false positives were identified.

A summary of the sensitivity, specificity and phi-coefficient values is provided in Table 2 (see Bliese, Wright, Adler, Thomas & Hoge, 2004 for complete details). The table also includes phi-coefficients. These are measures of association bounded by 1 and -1. Values above 0.30 suggest moderately strong to strong relationships.

Table 1: Provider Referrals Based on Modified MINI

	Primary Screen with 1 or More Positive Response to DD FORM 2796 Trauma Items	
Clinical Provider	Negative	Positive
Negative	405	148
Positive	5	32
	Primary Screen with 2 or More Positive Response to DD FORM 2796 Trauma Items	
Clinical Provider	Negative	Positive
Negative	488	65
Positive	10	27
	Primary Screen with 3 or More Positive Response to DD FORM 2796 Trauma Items	
Clinical Provider	Negative	Positive
Negative	538	15
Positive	20	17
	Primary Screen with 4 or More Positive Response to DD FORM 2796 Trauma Items	
Clinical Provider	Negative	Positive
Negative	552	1
Positive	29	8

Table 2: Provider Referrals Based on Modified MINI

	Index used for Evaluating Cut-Off		
Cut-Off	Phi-Coefficient	Sensitivity	Specificity
2796: 1 or More	0.31	0.86	0.73
2796: 2 or More	0.41	0.73	0.88
2796: 3 or More	0.46	0.46	0.97
2796: 4 or More	0.42	0.22	1.00

A replication of the results using the pre-deployment sample was not possible because the pre-deployment sample contained only 12 Soldiers referred for psychological trauma.

Based on the need to create a highly specific test in the short screen, we recommend using a cut-off value of 3 or more positive responses as the short screen criteria for identifying Soldiers with symptoms of traumatic stress.

• Relationship Problems

Recall that in analyzing relationship problems, we identified symptomatic Soldiers as those whom the clinical providers referred for treatment as well as those whom the clinical providers identified as being

subclinical. This latter group included Soldiers with relationship problems but whose problems were not severe enough for referral. As noted, it was necessary to include the subclinical group in the analysis because very few Soldiers were referred for relationship problems in either the post-deployment or pre-deployment samples.

In the analyses, we examine two separate groups of Soldiers: (1) those who reported being married, and (2) a larger population that included married Soldiers along with Soldiers reporting that they were involved in a significant relationship.

A short screen relationship problem scale was created using two items. These two items were selected as part of an Item Response Theory (IRT) analysis of a marital satisfaction scale (Norton, 1983) used in previous psychological screening (Ployhart, 2004). Based on these criteria, the two items identified were:

1. Are you having marital or relationship problems? (Yes, No)
2. Our relationship is strong. (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree)

Item one is coded as a 1 if the Soldier endorses "Yes". Item two is coded as a 1 if the Soldier endorses "Strongly Disagree", "Disagree" or "Neutral".

Table 3 provides the classification table for married Soldiers in the post-deployment sample. Notice that there is good congruence between the Soldiers' response to the items, and the clinical providers' independent evaluation of whether the Soldier was experiencing relationship problems. If the Soldier was identified as being at risk by receiving a 1 on either of the two items, the sensitivity and specificity of the scale were .86 and .80, respectively. While these are reasonable values from a psychometric standpoint, the relatively low specificity (.80) produced 35 false positives. In cases where a Soldier was identified at risk on both items, the specificity increased dramatically to 0.92, while the sensitivity had a minor drop to 0.81 resulting in 14 false positives.

Table 3: Relationship Problems (Post-Deployment Married Soldiers)

	Primary Screen with One of the Two Relationship Items Endorsed	
Clinical Provider	Negative	Positive
Negative	139	35
Positive	3	18

	Primary Screen with Both of the Relationship Items Endorsed	
Clinical Provider	Negative	Positive
Negative	160	14
Positive	4	17

Table 4 provides the results based upon all Soldiers involved in significant relationships. In this analysis, the specificity rates decrease while the sensitivity rates slightly increase. With one risk factor positive, the sensitivity value was 0.88, and the specificity value was 0.75. With both risk factors endorsed, the sensitivity value was 0.82, and the specificity value was 0.89.

Table 4: Relationship Problems (Post-Deployment Soldiers in Any Significant Relationship)

	Primary Screen with One of the Two Relationship Items Endorsed	
Clinical Provider	Negative	Positive
Negative	190	63
Positive	4	29

	Primary Screen with Both of the Relationship Items Endorsed	
Clinical Provider	Negative	Positive
Negative	224	29
Positive	6	27

The post-deployment analyses could be partially replicated using the pre-deployment sample. Recall, however, that only 21 Soldiers were either referred or showed subclinical symptoms of relationship problems in the pre-deployment sample. Furthermore, of the 21 Soldiers, only 12 were married. Because 12 Soldiers are too few upon which to perform analyses, the partial

replication was conducted on the combined sample of married Soldiers and Soldiers who reported being in a significant relationship.

The results of the replication using the pre-deployment sample are provided in Table 5. The results are based upon 20 symptomatic Soldiers because one Soldier failed to answer both trigger items. With one trigger item endorsed, the sensitivity and specificity values in the pre-deployment sample are 0.75 and 0.79, respectively. These are reasonable values from a psychometric perspective, and similar to those reported in the post-deployment sample. Nonetheless, the low specificity as associated with a large number of false positives. With two trigger items endorsed, the specificity increases to 0.90; however, the sensitivity drops to 0.40. Recall, in the post-deployment analysis the sensitivity remained above 0.80 with both trigger items endorsed.

Table 5: Relationship Problems (Pre-Deployment Soldiers in Any Significant Relationship)

	Primary Screen with One of the Two Relationship Items Endorsed	
Clinical Provider	Negative	Positive
Negative	155	40
Positive	5	15

	Primary Screen with Both of the Relationship Items Endorsed	
Clinical Provider	Negative	Positive
Negative	176	19
Positive	12	8

Overall, the results from both the post-deployment and pre-deployment samples suggest that requiring Soldiers to endorse both trigger items produces a screen with specificity values close to or greater than 0.90. The wide variability in sensitivity values with this cut-off (0.82 versus 0.40) raises questions about the sensitivity of the test. Importantly, however, the higher sensitivity value of 0.82 is associated with the larger sample size making this value potentially more reliable. Thus, requiring a Soldier to score positively on both risk factors is a reasonable screen for relationship problems and should not produce an unacceptably high level of false positives.

• Anger Problems

The third dimension validated for the short screen was anger problems. The items evaluated were selected from a larger pool of anger items developed at USAMRU-E. These items were modified versions of representative anger items published in the open literature (e.g., Buss & Perry, 1992).

Validation analyses for the short screen identified three items that corresponded well to clinical providers' referrals for anger problems. These three items are:

During the PAST MONTH, how often have you been bothered by any of the following problems? (Not at All, Rarely, Sometimes, Often, Very Often)

1. Became so angry that you have broken things.
2. Was on the verge of losing control of your anger.
3. Flew off the handle for no good reason.

The items are scored such that a Soldier is at risk (receives a rating of 1 for the item) if he or she endorses "Sometimes", "Often" or "Very Often". The total anger risk factor is calculated by summing the three items once they have been coded as 1 for at risk or 0 for not at risk.

Table 6 details the results for the 19 Soldiers who were referred for anger problems. If the referrals had been generated when the Soldier received a value of 1 or more, the sensitivity of the scale would be 0.74, and the specificity would be 0.86. These are reasonable values from a psychometric standpoint; however, the cut-off criteria generates a large number of false positives (79 in this case). Raising the criteria such that a Soldier has to score positively on two of the three items lowered the sensitivity to 0.53, but raised the specificity to 0.97. Notice that only 17 false positives were generated. The final cut-off value of requiring a Soldier to positively endorse all three items raises the specificity slightly to 0.99, but drops sensitivity dramatically to 0.32.

Table 6: Anger Problems (Post-Deployment)

	Primary Screen with One of the Three Anger Items Endorsed	
Clinical Provider	Negative	Positive
Negative	492	79
Positive	5	14

	Primary Screen with Two of the Three Anger Items Endorsed	
Clinical Provider	Negative	Positive
Negative	554	17
Positive	9	10

	Primary Screen with Three of the Three Anger Items Endorsed	
Clinical Provider	Negative	Positive
Negative	566	5
Positive	13	6

As further validation, we replicated the analyses using the pre-deployment sample. Table 7 shows the results. Notice that the results are similar to the post-deployment findings. The sensitivity and specificity associated with endorsing one or more positive responses is 0.85 and 0.79, respectively. With two positive responses the values are 0.59 and 0.91, and with three positive responses they are 0.41 and 0.97.

Table 7: Anger Problems (Pre-Deployment)

	Primary Screen with One of the Three Anger Items Endorsed	
Clinical Provider	Negative	Positive
Negative	258	69
Positive	4	23

	Primary Screen with Two of the Three Anger Items Endorsed	
Clinical Provider	Negative	Positive
Negative	299	28
Positive	11	16

	Primary Screen with Three of the Three Anger Items Endorsed	
Clinical Provider	Negative	Positive
Negative	316	11
Positive	16	11

Based on these results, we recommend screening for anger problems using the three items and selecting Soldiers who endorse “Sometimes”, “Often” or “Very Often” on any two of the three items.

• Depression

Over the years, USAMRU-E has used a number of depression measures in the primary screen to include the Self-Rating Depression Scale (SDS; Zung, 1965) and the Patient Health Questionnaire (PHQ; Spitzer et al., 1999). Analyses of the psychometric properties of the SDS, including Item Response Theory (IRT) analyses (Ployhart, 2004), have generally been unfavorable towards the SDS. In addition, simple correlational analyses based on the post-deployment blind validation sample found the SDS items to be less predictive of referral status for depression than the PHQ items.

Based on these analyses, eight of the nine PHQ items were used as the pool of potential items for the short screen. The eight items were coded as recommended by Spitzer et al. where responses of “More than Half the Days”, and “ Nearly Every Day” received a value of 1 (at risk), and responses of “Not at All”, and “Few or Several Days” received values of 0 (not at risk). The ninth item assessing suicidal ideation was excluded from the creation of the short depression scale. It will be included in the final draft of the short screen as a trigger item given the critical importance of identifying Soldiers with suicidal ideation.

Once the eight items had been recoded, they were used as predictors of whether or not the clinical provider referred the Soldier for depression. All combinations of the eight items were examined within a stepwise logistic regression design (Venables & Ripley, 2002), and a combination of three items was identified as providing the best predictive power. In addition, based on the Diagnostic and Statistical Manual for Mental Disorders (DSM IV; American Psychiatric Association, 1994)

criteria for depression, a fourth item ("feeling down, depressed, or hopeless") was included. The instructions for the scale and the four items are:

Over the last 2 weeks, how often have you been bothered by any of the following problems? (Not at All, Few or Several Days, More than Half the Days, Nearly Every Day)

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Poor appetite or overeating
4. Trouble concentrating on things such as reading the newspaper or watching television

Table 8: Depression (Post-Deployment)

	Primary Screen with One of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	491	64
Positive	7	23

	Primary Screen with Two of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	535	20
Positive	15	15

	Primary Screen with Three of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	547	8
Positive	22	8

	Primary Screen with Four of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	554	1
Positive	27	3

Table 8 provides the classification results. Notice that by traditional psychometric standards it would be reasonable to select Soldiers who have one or more of the four risk factors as needing follow-up attention. With this cut-off, 23 of the 30 referrals are identified (sensitivity of 0.77), and only 64 false positives are identified (specificity of 0.88). Because our goal, however, is to avoid overloading mental health assets within USAREUR, we recommend referring Soldiers who are at risk on two or more items. In this case, the sensitivity drops to 0.50, but the specificity increases to 0.96. Notice that only 20 false positives are identified. The criteria of requiring Soldiers to be at risk on three or four of the trigger items only incrementally increases the specificity rate (0.99 and 1.0), but reduces sensitivity dramatically (0.27, 0.10).

Table 9: Depression (Pre-Deployment)

	Primary Screen with One of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	253	59
Positive	8	32

	Primary Screen with Two of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	292	20
Positive	19	21

	Primary Screen with Three of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	301	11
Positive	27	13

	Primary Screen with Four of the Four Depression Items Endorsed	
Clinical Provider	Negative	Positive
Negative	310	2
Positive	32	8

To further validate the four-item depression screen, we replicated the analyses using the pre-deployment sample. The results are presented in Table 9. The sensitivity and specificity values are close to those in the post-deployment analysis. For instance, the sensitivity and specificity associated with endorsing one or more of

the four items are 0.80 and 0.81, respectively. The values associated with endorsing two or more items are 0.53 and 0.94 (nearly identical to the 0.50 and 0.96 values post-deployment values). Requiring Soldiers to endorse three or four items raises the specificity to 0.96 and 0.99, respectively; however, using these cut-off values diminishes sensitivity values to 0.33 and 0.20, respectively.

Based on analyses from both the post-deployment and the pre-deployment samples, we recommend using the four items with a cut-off value of 2 or more positive responses. Recall, a positive response is indicated when a Soldier endorses "More than Half the Days" or "Nearly Every Day".

• Alcohol Problems

The validation of a short screen for alcohol in the post-deployment setting poses challenges because the deployment environment prohibits alcohol consumption. This restriction of alcohol makes it difficult to assess the validity of many published alcohol scales in either an immediate or 90-120 day post-deployment setting because alcohol screening instruments typically reference alcohol-related behavior in the past year. The long-term reference times used in alcohol scales thus raises questions about the validity of the scales in situations where alcohol access has been restricted.

Given these limitations, we were unable to evaluate alcohol items in the post-deployment sample, and instead used two items included in the pre-deployment study. The two items were adopted from Brown, Leonard, Saunders and Papasouliotis (2001) and reference alcohol use in the preceding four weeks.

The two items are:

1. In the past 4 weeks have you used alcohol more than you meant to? (Yes, No)
2. In the past 4 weeks have you felt you wanted or needed to cut down on your drinking? (Yes, No)

Table 10 provides the classification summary associated with using these two items as a primary screen. Notice that when a Soldier endorses either one of the two items, 15 of the 24 total referrals for alcohol problems are identified for a sensitivity value of 0.63. However, with this cut-off value, 51 false positives are identified resulting in a low specificity value of 0.85. In contrast, when one requires the Soldier to endorse both items, the sensitivity drops to 0.33, but the specificity increases to 0.94. Despite the low sensitivity, the option of requiring a Soldier to be positive on both items before generating a referral is a reasonable strategy because it does not generate too many false positives.

Table 10: Alcohol Referral

	Primary Screen with One of the Two Alcohol Items Endorsed	
Clinical Provider	Negative	Positive
Negative	280	51
Positive	9	15

	Primary Screen with Two of the Two Alcohol Items Endorsed	
Clinical Provider	Negative	Positive
Negative	311	20
Positive	16	8

• Additional Items

• Suicidal Ideation: In addition to the five clinical dimensions, we recommend including Question 9 from the PHQ for Depression (Spitzer et al., 1999). This item assesses suicidal ideation. Any response other than "Not At All" should be considered a trigger for an immediate referral. Due to the small number of Soldiers endorsing this item, sensitivity and specificity rates could not be calculated. The item is:

Over the last two weeks, how often have you been bothered by any of the following problems?

"Thoughts that you would be better off dead or hurting yourself in some way."

• Harm to others: A final item that we recommend including on the short screen is an item that assesses whether or not a Soldier is having thoughts of harming others. Due to the small number of Soldiers endorsing

this item, sensitivity and specificity rates could not be calculated. The item is:

During the past Month, how often have you been bothered by any of the following problems?

"Felt you could not control your urge to harm others such as a unit member or friend."

An "Often" or "Very Often" response to this item is considered a trigger for an immediate referral.

• Self Referral Items: We also recommend a set of items giving Soldiers an opportunity to ask for help directly, and one item on current treatment status.

The four items are:

1. Are you currently receiving behavioral health, marital, or alcohol counseling?
2. Would you like to speak with a behavioral health counselor for relationship or family problems?
3. Would you like to speak with a behavioral health counselor for alcohol problems?
4. Would you like to speak with a behavioral health counselor about other concerns?

• Copy of Short Screen

The appendix contains a copy of the final short screen and a scoring template.

FUTURE WORK

Screening research is a long-term process of testing and validating items and procedures. Within the screening program several areas have been identified for future research. We briefly list these areas in this section.

• Content Validity Gap Analysis

In the screening procedure, we asked Soldiers: "Anything else bothering you that we have not already discussed?" Based on the analysis of their answers, we determined that the five clinical content areas in the primary screen covered the range of mental health problems with one possible exception. In the analysis of the content validity question, 22% (n=6) of the Soldiers who responded reported concerns about sleep. This was the most common clinical complaint. Other responses tended to include highly specific individual circumstances (e.g., miscarriage) and dissatisfaction with Army life (e.g., housing issues). Future research will include survey items on sleep to determine whether these items help identify Soldiers in need of follow-up.

• Blind Validation of Short Screen

The screen developed for USAREUR is based upon the best research data available. Nonetheless, the items on the final short screen need to be evaluated in an independent sample.

In addition, the sensitivity and specificity analyses suggest that additional items may be warranted in the case of (a) relationship problems and (b) alcohol problems. A blind validation study will facilitate future item development.

• Program Evaluation of 90-120 Day Screening

Screening is a way of connecting Soldiers with mental health services. We assume that Soldiers who self-identify mental health problems will be open to receiving care. We also suspect that repeated mental health screens may serve to reduce the stigma associated with admitting mental health problems and seeking care. By conducting a program evaluation 3 months after the 90-120 day screen, we will be able to evaluate the ability of screening to reduce stigma and we can determine how Soldiers perceive the screening process in terms of facilitating mental health service use.

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Material has been reviewed by the Walter Reed Army Institute of Research. There is no objection to its presentation and/or publication. The opinions or assertions contained herein are the private views of the author, and are not to be construed as official, or as reflecting true views of the Department of the Army or the Department of Defense.

We gratefully acknowledge the support of the Europe Regional Medical Command (ERMC); the Southern European Task Force (SETAF); COL Trotta, Commander, Vicenza Health Clinic and CPT Robert Johnson, Division Psychologist, Ist Infantry Division.

Post-Deployment Psychological Screen Short Form

Version August 2004

Psychological screening is a mandatory 1st Armored Division program to match soldiers with behavioral health and counseling services. Your responses may result in a behavioral health referral.

Privacy Act Statement

1) Authority: 10 U.S.C. Section 136 and 1074f
2) Principal Purpose: The information you provide may result in a referral for behavioral health care. The requested information is required due to the need to document all active duty medical incidents in view of future rights and benefits. Personal information will facilitate & document your health care. Social Security Number (SSN) is required to identify and retrieve health records. If requested information is not provided, comprehensive health care may not be possible, but CARE WILL NOT BE DENIED. Your signature merely acknowledges that you have been advised of the foregoing.
3) Routine Uses: Responses to this survey will guide possible referrals to behavioral health care specialists.

___ ___ ___-___ ___-___ ___ ___ ___ _____ _____

Social Security Number | Date | Signature

_____

Please Print Name

CONTACT INFORMATION	**UNIT INFORMATION**		**MARITAL STATUS**
Phone #:	Platoon: _____	**RANK:** _____	Single O
_____	Company: _____	**AGE:** _____	Married O
Cell phone #:	Battalion: _____	**GENDER**	Separated O
_____		Female O	Divorced O
		Male O	Widowed O

A. OVER THE LAST 2 WEEKS, how often have you been bothered by any of the following problems?	**NOT AT ALL**	**FEW OR SEVERAL DAYS**	**MORE THAN HALF THE DAYS**	**NEARLY EVERY DAY**
1. Little interest or pleasure in doing things.	O	O	O	O
2. Feeling down, depressed, or hopeless.	O	O	O	O
3. Poor appetite or overeating.	O	O	O	O
4. Trouble concentrating on things such as reading the newspaper or watching television.	O	O	O	O
5. Thoughts that you would be better off dead or hurting yourself in some way.	O	O	O	O

B. Rate the following statements about your spouse (if legally married) or your significant other (if in serious relationship).

O **Not in a serious relationship and not legally married (Skip to Section C on the back of the page)**

1. Are you having marital or relationship problems? **YES** O **NO** O

	STRONGLY DISAGREE	**DISAGREE**	**NEUTRAL**	**AGREE**	**STRONGLY AGREE**
2. Our relationship is strong.	O	O	O	O	O

C. DURING THE PAST MONTH:
How often have you been bothered by any of the following problems?

	NOT AT ALL	RARELY	SOMETIMES	OFTEN	VERY OFTEN
1. Became so angry that you have broken things.	O	O	O	O	O
2. Was on the verge of losing control of your anger.	O	O	O	O	O
3. Flew off the handle for no good reason.	O	O	O	O	O
4. Felt you could not control your urge to harm others such as a unit member or friend.	O	O	O	O	O

D. Have you EVER had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you…

	YES	NO
1. Have had any nightmares about it or thought about it when you did not want to?	O	O
2. Tried hard not to think about it or went out of your way to avoid situations that remind you of it?	O	O
3. Were constantly on guard, watchful, or easily startled?	O	O
4. Felt numb or detached from others, activities, or your surroundings?	O	O

E. In the past 4 weeks…

	YES	NO
1. Did you use alcohol more than you meant to?	O	O
2. Have you felt you wanted or needed to cut down on your drinking?	O	O

F. Please answer the following questions:

	YES	NO
1. Are you currently receiving behavioral health, marital or alcohol counseling?	O	O
2. Would you like to speak with a behavioral health counselor for relationship or family problems?	O	O
3. Would you like to speak with a behavioral health counselor for alcohol problems?	O	O
4. Would you like to speak with a behavioral health counselor about other concerns?	O	O
5. Would you like to speak with a chaplain?	O	O

For Administrative Use

Reason for Referral				Referral Status		Case Disposition	
	YES		YES		YES		YES
A. Dep	O	F. Self-Referral	O	Immediate	O	Behavioral Health Clinic	O
A5. SI	O	1. Already in treatment	O	-SI	O	Social Work Services: Family Problems	O
B. Rel	O	2. Family/Relationship	O	-HI	O	Alcohol Program	O
C. Ang	O	3. Alcohol	O	-Other Reason	O	Chaplain Services	O
C4. HI	O	4. Other Concerns	O	Standard Follow-up	O		
D. PTS	O	**NOTES:**					
E. Alc	O						

Post-Deployment Psychological Screen Short Form

Version August 2004

Psychological screening is a mandatory 1st Armored Division program to match soldiers with behavioral health and counseling services. Your responses may result in a behavioral health referral.

Privacy Act Statement

1) Authority: 1
2) Principal Pu al health care. The requested in l incidents in view of future rights th care. Social Security Number (SS nation is not provided, comprehensive health care may not be possible, but CARE WILL NOT BE DENIED. Your signature merely acknowledges that you have been advised of the foregoing.
3) Routine Uses: Responses to this survey will guide possible referrals to behavioral health care specialists.

Scoring Guide

___ ___ ___-___ ___-___ ___ ___ ___ _____ _____

Social Security Number | Date | Signature

BE SURE YOU CAN READ THE SSN THAT IS WRITTEN IN

_____

Please Print Name

CONTACT INFORMATION	UNIT INFORMATION	RANK: _____	MARITAL STATUS
Phone #:	Platoon: _____	AGE: _____	Single O
_____	Company: _____	GENDER	Married O
Cell phone #:	Battalion: _____	Fem	
_____		Mal	

Count the number of responses in the shaded bubbles for each section. If the total number of responses meets or exceeds the cut-off, check the referral box.

A. OVER THE LAST 2 WEEKS, how often have you been bothered by any of the following problems?

	NOT AT ALL	FEW OR SEVERAL DAYS	MORE THAN HALF THE DAYS	NEARLY EVERY DAY	
1. Little interest or p ings	O	O	O	O	
2. Feeling down, depressed, or hopeless.	O	O	O	O	
3. Poor appetite or overeating.	O	O	O	O	
4. Trouble concentrating on things such as reading the newspaper or watching television.	O	O	O	O	
5. Thoughts that you would or hurting yourself in so	O	O	O	O	

Cut-off A: 2+

Cut-off A5: 1

B. Rate the following statements about your spou egally married) or your significant other (if in serious relationship).

O **Not in a serious relationship and not legally married (Skip to Section he pa**

Cut-off B: 2

1. Are you having marital or relationship problems? **YES** O **NO** O

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STR AGREE
2. Our relationship is strong.	O	O	O	O	O

C. DURING THE PAST MONTH:
How often have you been bothered by any of the following problems?

	NOT AT ALL	RARELY	SOMETIMES	OFTEN	VERY OFTEN
1. Became so angry that you ha	O	O	O	O	O
2. Was on the verge of losing co r.	O	O	O	O	O
3. Flew off the handle for no good reason.	O	O	O	O	O
4. Felt you could not control your urge others such as a unit member or frien	O	O	O	O	O

Cut-off C: 2+

Cut-off C4: 1

D. Have you EVER had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you…

	YES	NO
1. Have had any nightmares about it or tho you did to?	O	O
2. Tried hard not to think about it or went o or you may avoid situ hat remind you of it?	O	O
3. Were constantly on guard, watchful, or easily startled?	O	O
4. Felt numb or detached from others, activities, or your surroundings?	O	O

Cut-off D: 3+

E. In the past 4 weeks…

	YES	NO
1. Did you use alcohol more than you meant to?	O	O
2. Have you felt you wanted or needed to cut down on your drinking?	O	O

Cut-off E: 2

F. Please answer the following questions:

	YES	NO
1. Are you currently receiving behavioral health, m unseli	O	O
2. Would you like to speak with a behavioral healt ionshi family problems?	O	O
3. Would you like to speak with a behavioral health counselor for alcohol pr	O	O
4. Would you like to speak with a behavioral health counselor about other co	O	O
5. Would you like to speak with a chaplain?	O	O

Cut-off F: 1+

Yes for A5 or C4 - immediate referral

For Administrative Use

Reason for Referral	YES		YES
A. Dep	O	F. Self-Referral	O
A5. SI	O	1. Already in treatment	O
B. Rel	O	2. Family/Relationship	O
C. Ang	O	3. Alcohol	O
C4. HI	O	4. Other Concerns	O
D. PTS	O	**NC**	
E. Alc	O		

Referral Status	YES
Immediate	O
-SI	O
-HI	O
-Other Reason	O
Standard Follow-up	O

Case Disposition	YES
Behavioral Health Clinic	O
Social Work Services: Family Problems	O
Alcohol Program	O
Chaplain Services	O

Check appropriate box(es) if cut-off was exceeded

Check box(es) if "yes" to any question in Section F

Check the type of referral

To Be Completed by Case Management Team

Behavioral Health Screening Flowchart

Note: Team sizes based on an estimate of screening 400 Soldiers per day with 40 to 60 Soldiers needing a referral for follow-up assessment.

Flow-chart suggest one possible alternative for conducting screening. In practice, variations are frequently used to include on-site secondary screening.