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Development and Validation of a Brief Self-Report Measure of Agitation: The Brief Agitation Measure

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Emerging evidence indicates that agitation is an ominous precursor to imminent death by suicide, yet measures of it are few, and to our knowledge, no self-report measure of agitation exists. To fill this gap, we have developed the Brief Agitation Measure (BAM), which is designed as a brief measure to assess agitation. In this article, we provide preliminary evidence from 2 studies examining the reliability and validity of the BAM in an undergraduate sample as well as a clinical sample. We close with a discussion of the limitations of the studies and implications of our findings.

In part because it is a low base rate phenomenon, suicide is difficult to predict—even in high-risk populations and especially on the level of the individual (Nock et al., 2008; Pokorny, 1983). A key first step in preventing suicidal behavior is the accurate assessment of risk. Systematic risk assessment focuses on identifying the risk and protective factors that influence the likelihood of engaging in serious suicidal behavior (Simon, 2004). Research to date has largely focused on identifying chronic or distal risk factors, such as suicide attempt history, suicidal ideation, and hopelessness (Busch, Fawcett, & Jacobs, 2003). Although certainly informative, an assessment approach that solely takes into account distal risk factors is limited in its predictive utility and is sure to result in high false-positive predictions. Distal risk factors have high specificity in identifying individuals at chronic risk, but low sensitivity in identifying individuals who are at immediate risk of death by suicide. Given that, accurate assessment of immediate risk presents a major challenge for clinicians.

In contrast to distal risk factors, acute risk factors have greater predictive utility in terms of identifying individuals who are at immediate risk. In one of the first studies that focused on differentiating chronic versus acute risk factors of suicide, Fawcett and colleagues (1990) examined data from the National Institute of Mental Health (NIMH) Collaborative Study of Depression, which followed 954 patients with depression for a 10-year period. Of the 954 patients included in the study, 13 patients had died by suicide within 1 year of the initial assessment. There were 34 suicide deaths in total by the 10-year follow-up assessment. Based on the data collected, Fawcett and colleagues were able to tease apart the risk factors that were predictive of death within 1 year of entry into the study (i.e., acute risk factors) and the risk factors that were predictive of suicide 1 or more years after entry into the study (i.e., chronic risk factors). According to their findings, neither history of past attempts nor suicidal ideation at the time of the first assessment—strong risk factors of eventual suicide—were able to discriminate those individuals who died by suicide in the short term from those who died by suicide later on. Of the acute risk factors identified, a cluster all related to hyperarousal—severe psychic anxiety, agitation, and panic attacks—emerged as a strong predictor of near-term suicide (Fawcett et al., 1990).

As it relates to suicide risk, agitation refers to both motoric and psychic hyperarousal. It is often described in the literature as excessive or repetitive behaviors (e.g., fidgeting, hand-wranging, pacing, etc.) coupled with expressions of mental anguish, tension, or emotional turmoil (Benazzi, Koukopoulos, & Akiskal, 2004; McGufﬁn, Farmer, & Harvey, 1991). Unfortunately, the literature on the theoretical underpinnings of the association between suicidality and acute agitation is limited. Given the fearsome nature of overcoming the strong self-preservation instincts required to engage in suicidal behavior, we suggest that agitation is a behavioral and psychological state that reﬂects the extreme effort and energy required to overcome such instincts.

Although still relatively understudied, emerging evidence suggests that there is a strong relationship between acute agitation, particularly during depressive episodes, and imminent death by suicide. For instance, in a retrospective study of 76 suicide decedents, “severe anxiety and/or extreme agitation” was noted in 76% of the inpatients during the week prior to dying by suicide (Busch et al., 2003). Consistent with these ﬁndings, Busch and Fawcett (2004) reported that agitation that occurred within the week before death was a strong indication of imminent risk of suicide. Kovaszny, Miraglia, Beer, and Way (2004) also found that 70% of 40 inmates who died by suicide in a New York state prison exhibited signiﬁcant agitation prior to dying by suicide. Further substantiating the relationship between agitation and imminent suicide, Hall, Platt, and Hall (1999) evaluated the clinical correlates associated with severe suicide attempts in 100 patients admitted to emergency mental health care units immediately following a suicide attempt. Approximately 90% of the sample endorsed severe psychic anxiety and 80% reportedly experienced panic attacks within a 1-month period before attempted suicide. As high as the percentages are in these three studies, it is important to note that they are likely underestimates, because some decedents might well have experienced agitation that was not observed or detected—a point that further underscores the important role of agitation in near-term risk.

Within the realm of acute risk factors, agitation is particularly promising in terms of its utility for two reasons: first, its limited face validity with respect to overt suicidality and second,
its modifiability. With respect to its limited face validity, agitation bypasses an inherent limitation of current risk assessment procedures—the reliance on self-reported suicidal ideation and intent. Reliance on self-reported suicidality to determine risk is particularly problematic because high-risk individuals might be motivated to conceal suicidal ideation or intent (Simon, 2008). Indeed, there is evidence to suggest that it is not uncommon for individuals at risk to conceal their intent. For instance, Isometsä, Heikkinen, Marttunen, and Henriksson (1995) found that only 22% of suicide decedents reportedly communicated suicidal intent during their last contact with clinicians. Busch and Fawcett (2004) reported that 67% of their sample denied suicidal intent within 1 week before their deaths. Similarly, 78% of suicide decedents included in the Busch et al. (2003) study also denied suicidal ideation or intent during the last documented suicide risk assessment. These findings call into question the reliability of self-reported suicidal ideation and intent in high-risk individuals, particularly in the presence of acute risk factors such as severe anxiety or agitation. Although individuals who are motivated to conceal suicidality might deny questions assessing suicide directly, they might be less likely to conceal information about agitation because it is not clearly associated with suicide. Moreover, acute agitation is modifiable. Should acute agitation be observed or reported, treatment can easily be delivered (Fawcett, 2007).

Despite the limited research on acute risk factors of suicide and given what is known to date, agitation stands as an ominous predictor of imminent suicide. Based on the existing literature, agitation has promising predictive utility that might extend above and beyond assessment of distal risk factors and self-reported suicidal ideation and intent. However, to our knowledge, there are no psychometrically sound measures presently available designed to assess agitation as it relates to suicide risk, and none are self-report measures. To be sure, self-report measures have disadvantages—in particular, they are often susceptible to self-report bias. If questions are transparent, individuals might be motivated to either conceal or distort their true responses. Importantly, to be motivated to conceal their responses, respondents need to be aware of what the measure is designed to assess. Consequently, a self-report measure of agitation designed to index suicide risk is likely less susceptible to self-report bias as compared to other more straightforward self-report measures of suicidality.

As such, the intention of this article is to introduce and evaluate the Brief Agitation Measure (BAM), a short self-report measure of agitation. Importantly, the items of the BAM are designed to capture the subjective experience of agitation. To our knowledge, very few measures of agitation exist, even including those designed for purposes other than suicide risk assessment. A large proportion of the measures we are aware of focus on the behavioral correlates of agitation and, instead of self-report, rely on behavioral observation methods. To be sure, behavioral observation can be extremely useful in the measurement of agitation; however, it fails to capture the subjective experience of the phenomenon. It is possible that the subjective experience precedes or even occurs independently of the behavioral aspects of agitation and yet is still predictive of suicide risk. As a result, individuals who are experiencing agitation but not exhibiting behavioral correlates of the phenomenon might not be identified as being at risk. Thus, behavioral observation alone might be insufficient and our assessment of agitation could be enhanced by coupling behavioral methods with self-report. To address the lack of available self-report instruments assessing agitation, we present preliminary data from two studies evaluating the psychometric properties of the BAM. The first study examines the measure in a sample of undergraduate students, and the second study examines the measure in a clinical population. We close with a discussion of the limitations of these studies and implications for future research.

**STUDY 1**

The intention of Study 1 was to collect preliminary data on the reliability and validity of the BAM in a nonclinical sample. We examine the factor structure, internal consistency, and construct validity of the BAM in an undergraduate sample.

**Methods**

**Participants.** The sample consisted of 212 participants currently enrolled in undergraduate psychology courses at a large southeastern university. The majority of the sample (n = 173; 68.7%) was female. The sample included 85% Caucasian, 10% Black, 4% Hispanic, and 1% Asian participants. Ages ranged from 18 to 56 (M = 19.41, SD = 3.95). All participants consented to the procedures of the study and received credit toward course research requirements.

**Procedure.** Data for this study were collected as a part of a larger study on factors associated with suicide-related pathology. Prior to the experiment, all participants were provided with written and oral descriptions of the procedure and purpose of the study. Participants were then required to review and sign an informed consent form approved by the university’s Human Subjects Committee/Institutional Review Board (IRB). The entirety of the study involved completing a battery of self-report questionnaires on a computer. Order of questionnaire presentation was randomized across participants. Questionnaires relevant to the current analyses are described here. Research assistants reviewed all participants’ responses to questionnaires assessing current levels of suicidality while the participants were still in the lab as a means of screening for serious and immediate suicide risk. Participants who endorsed a Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991) score of 5 or greater were further assessed by a graduate student in clinical psychology trained in suicide risk assessment procedures. Level of risk was determined using the Joiner, Walker, Rudd, and Jobes (1999) framework. Several factors were particularly salient to the assessment of imminent risk, including having a well-detailed plan for an attempt, having access to the method and means, engaging in preparatory behaviors, and expressing intent to die within the short-term future. Although approximately 5% of the sample endorsed suicidal ideation, none of the participants in this sample was determined to be at imminent risk of death by suicide. Following the completion of the questionnaire battery, all participants were debriefed and provided with contact information for several mental health resources.

**Measures.**

**Brief Agitation Measure:** The BAM is a 3-item self-report inventory designed to measure levels of agitation within the past week. The three items included in the measure are: (a) I want to crawl out of my skin, (b) I feel so stirred up inside I want
to scream, and (c) I feel a lot of emotional turmoil in my gut. As we were not aware of any existing self-report measures of agitation, the items of the BAM were developed rationally by a group of experts in the field of military suicide, during a series of meetings on suicide risk assessment. Respondents are asked to identify how true of them each item is using a 7-point likert scale. Total scores can range from 3 to 21, with higher scores reflecting greater severity of agitation symptoms. We elected to assess agitation during a 1-week time frame because of its relatively brief duration and episodic nature.

**Beck Depression Inventory–II:** The Beck Depression Inventory–II (BDI–II; Beck, Steer, & Brown, 1996) is a 21-item self-report inventory designed to assess severity of depressive symptoms. Each item is rated using a 4-point Likert-type scale ranging from 0 to 3. Total scores range from 0 to 63, with higher scores indicating greater severity of depressive symptoms. In this sample, coefficient alpha was .89, indicating good internal consistency. We anticipate a small to moderate positive correlation between BDI–II and BAM scores, as depressive symptom severity is associated with suicidality but not necessarily a strong indicator of imminent risk.

**Suicide Cognitions Scale:** The Suicide Cognitions Scale (SCS; Rudd et al., in press) is a 10-item self-report scale developed as an assessment of suicidal cognition. In particular, it assesses core beliefs related to suicidality, namely unlovability (e.g., “I’m worthless”), helplessness (e.g., “I can’t solve my problems”), poor distress tolerance (e.g., “I can’t stand the way I feel”), and perceived burdensomeness (e.g., “Everyone would be better off if I were dead”). Each item is rated using a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). With respect to psychometric properties, the scale has demonstrated good reliability and validity in a range of samples (Rudd et al.). This measure was included to provide evidence for the construct validity of the BAM. We anticipate that the SCS would have a positive correlation with scores on the BAM. Furthermore, we expect that the magnitude of the correlation would be moderate, given that scores on the SCS tap into broad beliefs associated with suicidality but not necessarily imminent risk. Coefficient alpha in this sample was .85, indicating good internal consistency.

**Beck Scale for Suicide Ideation:** The BSS (Beck & Steer, 1991) is a 21-item scale used to assess suicidal ideation and suicidal intent in the past week. Responses are scored using a 3-point Likert scale where possible responses range from 0 to 2, with higher numbers representing higher levels of suicide risk. The BSS has demonstrated good reliability and validity as a measure of suicidality. In this sample, the measure also demonstrated adequate internal consistency (α = .75). We anticipate a moderate positive correlation between the BSS and BAM, given that the BSS is designed to measure suicidality but not necessarily imminent risk.

**Depressive symptoms inventory–suicide subscale:** The Depressive Symptoms Inventory–Suicide Subscale (DSI–SS; Metalsky & Joiner, 1997) consists of four self-report items focusing on frequency and intensity of suicidal thoughts and impulses during the past 2 weeks. Respondents are asked to indicate which of four options best describes their thoughts (e.g.

“Sometimes I have thoughts of killing myself”). Total scores can range from 0 to 12, with higher scores representing increased severity of suicidal ideation. Prior studies have reported good psychometric properties for the measure (e.g., Joiner, Pfaff, & Acers, 2002; Joiner & Rudd, 1996). The DSI–SS was included to provide evidence for construct validity of the BAM. We expect a small to moderate correlation between the measures, given that the DSI–SS is a measure of suicidal ideation but not necessarily a strong predictor of imminent risk. Internal consistency of the DSI–SS in this sample was adequate (α = .80).

**Insomnia Severity Index:** The Insomnia Severity Index (ISI; Morin, 1993) is a 5-item self-report scale that assesses subjective symptoms of insomnia, including the degree of distress associated with each symptom. Items are rated using a 0 to 4 scale. Total scores can range from 0 to 20, with higher scores indicating greater impairment and distress. More specifically, total scores ranging from 0 to 5 indicate no clinically significant insomnia; scores ranging from 6 to 11 suggest subthreshold insomnia; scores between 12 and 16 indicate moderate insomnia; and scores between 17 and 20 indicate severe insomnia. The internal consistency and convergent validity of the ISI with other insomnia measures have been well supported (Bastien, Vallières, & Morin, 2001; Bernert, Joiner, Cukrowicz, Schmidt, & Krakow 2005). The ISI was included as a means of providing evidence for the construct validity of the BAM as a measure of imminent suicide risk. In addition to agitation, insomnia has also been identified as an acute risk factor for suicide (Bernert et al., 2005; Fawcett et al., 1990). Given that, we expect a significant relationship between the ISI and the BAM. Coefficient alpha in this sample was adequate (α = .85).

**Results and Discussion**

**Internal consistency.** Means and standard deviations of all measures are presented in Table 1. To evaluate scale reliability, we examined the interitem correlations and coefficient alpha. Interitem correlations of the three items of the scale are presented in Table 2. The mean interitem correlation was .71, with values ranging between .66 and .78, indicating that the items are strongly correlated and perhaps somewhat redundant, based on the guidelines provided by Clark and Watson (1995). Given the strong interitem correlations, as expected, the coefficient alpha in this sample was also high (α = .88). Coefficient alpha of greater than .80 is recommended (Clark & Watson, 1995) as an indication of adequate scale reliability. This is a notable result given that the scale includes only three items.

**Single-factor confirmatory factor analysis.** Confirmatory factor analysis (CFA) with maximum likelihood estimation (ML) using Mplus 5.0 (Muthén & Muthén, 2005) was used to examine the factor structure of the BAM. Provided that the

1 Analyses were also conducted using weighted least squares as the method of estimation, given that some of the BAM items evidenced skewed distributions. Results were similar to those found using ML. In the student sample, item loadings were as follows: BAM 1 = 0.76, BAM 2 = 0.90, AGI 3 = 0.87. In the clinical sample, loadings are BAM 1 = 0.77, BAM 2 = 0.95, BAM 3 = 0.92. All estimates remained highly significant (i.e., p < .001).

2 We recognize there might be some question concerning the incremental value of a CFA in a just-identified model above and beyond the information obtained from other internal consistency analyses, given the interpretation of
measure consists of three items, we only examined a one-factor solution, as a solution with a greater number of factors would fail to be identified. Because CFA with only three indicators results in a model that is only just-identified, standard model fit indexes cannot be used. For our purposes, however, this was not problematic because testing a one-factor solution in a CFA framework forces all indicators to load on one factor, thus allowing us to test the individual significance tests of how well each item loads on the factor ($\alpha = .05$). The ability to test the significance of individual loadings of indicators onto a factor cannot be done outside a CFA framework. As seen in Table 2, the items all significantly loaded onto a single factor ($BAM_1 = .823$, $BAM_2 = .929$, $BAM_3 = .954$, all $p < .001$). These values suggest the one-factor model provides an excellent fit to the data, and the scale appears to be measuring a single construct.

Preliminary validity. Pearson product–moment correlations were used to examine the convergent validity of the BAM with other measures designed to assess levels of suicide risk and associated pathology. With respect to suicidal ideation, the BAM total scores evidenced a moderate positive correlation with DSI–SS total scores ($r = .424$, $p < .001$). Level of agitation was also found to have a strong positive association with suicidal cognitions, as assessed by the SCS ($r = .623$, $p < .001$). BAM scores evidenced strong associations with depressive symptoms, as indexed by the BDI–II ($r = .673$, $p < .001$) and moderate associations with insomnia severity, as indexed by the ISI ($r = .432$, $p < .001$). Correlations are presented in Table 3.

Discussion

Structural analyses of the BAM in this sample indicate that all items significantly load on to a single factor, which suggests that the items are good indicators of the latent agitation construct. With respect to the validity data, findings from Study 1 provide preliminary construct validity of the BAM as a measure of suicide risk. In particular, in this sample we found that BAM total scores were significantly positively correlated with measures of suicidality, including insomnia severity, which has been identified as an acute factor of suicide risk as well (Bernert et al., 2005; Fawcett et al., 1990). The BAM also demonstrated a moderately strong association with depressive symptom severity, which was as expected. Correlations all fell within the moderate range with depressive symptoms and suicidal cognitions evidencing the strongest associations with BAM scores in this sample.

Although Study 1 provided positive preliminary data, the investigation has several limitations. One drawback of this study involves the sample. Because the data were collected from a relatively healthy undergraduate population, symptom severity was somewhat restricted. In addition to restricted symptom severity in the sample, these data fail to provide clear evidence for the BAM as a measure of imminent risk of suicide. Prospective studies tracking suicide and suicidal behavior over time would be ideal. Examining the validity of the measure as an index of suicide risk in a higher risk sample would also allow for further validation of the measure as an index of risk. As such, in a follow-up study, the psychometric properties of the BAM were examined in an outpatient clinical sample. Examining the psychometrics of the BAM in a clinical sample will extend its use in treatment settings, as well as provide evidence for its use in detecting clinical levels of suicidality, building on the findings of Study 1.

**Study 2**

Participants and Setting

Participants in this study consisted of 107 adult outpatients receiving services at the Florida State University (FSU) Psychology Clinic. Although affiliated with the university, the FSU Psychology Clinic largely serves individuals from the community who are not associated with the university. Due to the FSU Psychology Clinic’s inexpensive sliding scale fee schedules, individuals receiving services at the FSU Psychology Clinic are generally of lower socioeconomic status. Also, exclusionary criteria at the FSU Psychology Clinic are minimal, as individuals are only referred elsewhere if they are suffering from psychotic or bipolar-spectrum disorders and not stabilized on medication, or if an individual is in immediate danger to self or others. The FSU Psychology Clinic population presents with a variety of conditions of ranging in severity.

In this sample, participants’ ages ranged from 18 to 58 ($M = 26.51$, $SD = 9.04$). Approximately 59% of the sample was female. Roughly 84% of the sample reported being single, 10% were married, 4% were divorced, 1% were separated, and 1% were widowed. With respect to ethnicity, 76.2% of the

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**TABLE 1.—Means and standard deviations.**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Agitation BAM</td>
<td>5.71</td>
<td>3.67</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>3.16</td>
<td>5.81</td>
</tr>
<tr>
<td>History of suicidal</td>
<td>2.11</td>
<td>1.48</td>
</tr>
<tr>
<td>and nonsuicidal self-</td>
<td>2.00</td>
<td>1.41</td>
</tr>
<tr>
<td>injury</td>
<td>1.45</td>
<td>.92</td>
</tr>
<tr>
<td>History of suicidal</td>
<td>5.17</td>
<td>3.67</td>
</tr>
<tr>
<td>and nonsuicidal self-</td>
<td>26.12</td>
<td>10.53</td>
</tr>
<tr>
<td>History of suicidal</td>
<td>15.04</td>
<td>12.98</td>
</tr>
<tr>
<td>and nonsuicidal self-</td>
<td>13.30</td>
<td>4.64</td>
</tr>
</tbody>
</table>

Note. BAM = Brief Agitation Measure; BSS = Beck Scale for Suicide Ideation; DS–SS = Depressive Symptoms Inventory–Suicide Subscale; SCS = Suicide Cognitions Scale; NSSI urges/impulses = Not administered.

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sample was White, 11.9% was Black, 7.1% was Hispanic, 2.4% was Asian/Pacific-Islander, and 2.4% was Alaskan/American Indian, which is generally consistent with the representative ethnic breakdown of the general population in Tallahassee, FL.

Methods

The data presented in this study were collected at screening, prior to receiving psychological services, as part of a large battery of screening questionnaires. All individuals included in the sample agreed to participate in the FSU Institutional Review Board–approved research conducted at the FSU Psychology Clinic.

Measures.

Brief Agitation Measure: Refer to Study 1 for a detailed description of this measure.

Beck Anxiety Inventory: The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) is a 21-item self-report inventory designed to assess level of subjective anxiety within the past week. Responses are rated on a Likert-type scale with values ranging from 0 (not at all) to 3 (severely, I could barely stand it). Scores range from 0 to 63, with higher scores indicating higher levels of self-reported anxiety symptoms. The BAI has demonstrated excellent internal consistency and high concurrent validity with other measures of anxiety. Coefficient alpha in this sample was .93, indicating good internal consistency. We expect that the BAI will evidence a small to moderate correlation with the BAM, as both measures assess a facet of anxiety or hyperarousal.

Beck Depression Inventory–II: Refer to Study 1 for a description of the BDI–II (Beck et al., 1996). Coefficient alpha in this sample was excellent (α = .95). For the same reasons described in Study 1, we would expect a small to moderate positive correlation between the BDI–II and BAM scores.

Beck Scale for Suicide Ideation: A description of the BSS (Beck & Steer, 1991) is provided in Study 1. In this sample, the measure also demonstrated good internal consistency (α = .82). As in Study 1, we expect a moderately strong positive correlation with the BAM.

Depressive Symptoms Inventory–Suicide Subscale: Refer to Study 1 for a description of the DSI–SS (Metalsky & Joiner, 1997). In this sample, the measure also demonstrated good internal consistency (α = .88). In line with our hypothesis noted in Study 1, we anticipate a small to moderate positive association between the DSI–SS and BAM.

Positive and Negative Affect Schedule: The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is PANAS is a 20-item self-report inventory designed to measure global emotional states at the time of assessment. Items fall into two 10-item subscales that assess positive and negative affect (PA and NA, respectively) with each item rated on a 5-point Likert scale. Psychometrically sound, it has demonstrated adequate reliability and validity as a measure of affect. Coefficient alpha for the PANAS–PA and PANAS–NA in this sample were .94 and .93, respectively, indicating good internal consistency for both subscales of the measure. With respect to PANAS–NA, we anticipate a moderate positive correlation with the BAM, given that agitation is a facet of negative affect. Conversely, we expect a moderate to strong negative correlation between the BAM and PANAS–PA, as the latter is a measure of positive affect and the BAM is designed to capture a facet of intense negative affect.

History of suicidal and nonsuicidal self-injury: As part of the intake procedure, all participants are asked to provide information concerning mental health history. Three questions included in the intake assessments ask individuals to endorse the frequency of their past suicidal behavior or nonsuicidal self-injury (NSSI): “Have you ever experienced self-inflicted pain or injury,” “Have you made any suicide gestures,” and “Have you ever experienced a suicide attempt.” These items were scored on a Likert-type scale with values ranging from 1 (never) to 5

## Table 2.

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loadings</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>M</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I want to crawl out of my skin</td>
<td>.823</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.62</td>
<td>1.19</td>
<td>2.32</td>
<td>5.25</td>
</tr>
<tr>
<td>2. I feel so stirred up inside I want to scream</td>
<td>.929</td>
<td>.682</td>
<td>—</td>
<td>—</td>
<td>1.98</td>
<td>1.42</td>
<td>1.68</td>
<td>2.42</td>
</tr>
<tr>
<td>3. I feel a lot of emotional turmoil in my gut</td>
<td>.954</td>
<td>.659</td>
<td>.775</td>
<td>—</td>
<td>2.13</td>
<td>1.48</td>
<td>1.35</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Note. BSS = Beck Scale for Suicide Ideation; DSI–SS = Depressive Symptoms Inventory–Suicide Subscale; SCS = Suicide Cognitions Scale; NSSI = Nonsuicidal Self-Injury Inventory; BDI–II = Beck Depression Inventory–II; PANAS–NA = Positive and Negative Affect Schedule–Negative Affect; PANAS–PA = Positive and Negative Affect Schedule–Positive Affect; BAI = Beck Anxiety Inventory; ISI = Insomnia Severity Index; NA = not administered.

*Study 2 partial correlations controlling for PANAS–NA.

*p < .01. **p < .001.
Given that past NSSI and suicidal behaviors are predictive of future suicide risk (Joiner et al., 2003; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006) but not necessarily imminent risk, we anticipate a moderate correlation between history of these behaviors and the BAM.

Results

Internal consistency. We refer the reader to Table 1 for means and standard deviations of all measures included in Study 2. As in Study 1, we examined interitem correlations and coefficient alpha to evaluate the internal consistency of the BAM in this sample. We present the interitem correlations in Table 4 along with the mean and standard deviation for each item. The mean interitem correlation was .77. As before, this suggests that the items are strongly correlated and, perhaps, somewhat redundant based on the guidelines of Clark and Watson (1995). Consistent with the high interitem correlation, coefficient alpha in this sample is also strong (α = .91).

Single-factor CFA. As in Study 1, we again used CFA to examine the factor structure of the BAM. Factor loadings were all strong and significant (BAM 1 = .77, BAM 2 = .95, BAM 3 = .99; all p < .001) and are presented in Table 4. Importantly, the individual loadings for each item in both Study 1 and Study 2 were of similar magnitude, suggesting consistency in factor loadings across samples.

Preliminary validity. Consistent with Study 1, Pearson product–moment correlations were used to examine the convergent and discriminant validity of the BAM. Correlations between respondents’ BAM total scores and scores on the validation measures are presented in Table 4. Convergent validity analyses examined the associations between the BAM and measures of anxiety, suicidality, and related conditions. The BAM showed modest positive correlations with measures of current suicidality, including the BSS (r = .279, p < .01) and DSI–SS (r = .391, p < .001). Furthermore, the scale total scores also evidence modest positive correlations with indicators of past suicide risk, including past suicidal behavior (r = .278, p < .001) and past NSSI (r = .405, p < .001). Scores on the BAM also showed a strong positive association with depression, as indexed by BDI–II scores (r = .748, p < .001). There was also a strong positive association between BAI total scores and total BAM scores (r = .691, p < .001). The NA subscale of the PANAS total scores also demonstrated a strong positive association with the agitation measure (r = .775, p < .001). As expected, the PA subscale of the PANAS was moderately negatively associated with BAM total scores (r = −.536, p < .001). Refer to Table 3 for validity data.

The strong correlation between PANAS–NA and BAM scores suggested the possibility that the BAM might be a measure of general negative affect. Our first approach to examining this possibility was to conduct partial correlations between the BAM scores and the other measures, controlling for PANAS–NA. Only associations with the BDI (r = .35, p < .001), NSSI (r = .21, p < .05) and PANAS–PA (r = −.20, p < .05) remained significant. To explore the possibility further, we also followed the recommendations of Clark and Watson (1995). Per the authors’ recommendations, discriminating a scale from a measure of general negative affectivity can be examined by subjecting the items from the target scale (e.g., BAM) and a neuroticism scale (e.g., PANAS–NA) to a joint factor analysis designed to extract two factors, which should be rotated to “simple structure” (e.g., using varimax). Should analyses reveal that the items of the target scale load strongly only onto one factor and items of the neuroticism scale load strongly only onto the other factor, this would provide supporting evidence for the discriminant validity of the target scale. Following these recommendations, we explored the relationship between the items of the BAM and PANAS–NA. Results were positive and as expected: Items of the BAM all loaded strongly onto one factor, with loadings between .82 and .86; conversely, the items of the BAM loaded weakly onto the second factor, with loadings between .13 and .42. Importantly, the items of the PANAS–NA demonstrated the reciprocal pattern, with items loading strongly on the second factor (items loadings between .45 and .76) and weakly on the first (items loadings between .07 and .57).

General Discussion

Previous research suggests that agitation might be an important indicator of imminent suicide risk, but the methods currently used for measuring agitation in clinical samples are limited. In this study we developed and examined the validity of a measure of agitation in two separate samples. The BAM was found to have high internal consistency and promising preliminary concurrent and discriminant validity data. Correlations with other measures of suicidality (BSS and DSI–SS) were positive and moderate in magnitude. Because agitation is a symptom of Major Depressive Disorder (MDD) and assessed by the BDI, the strong positive correlation between the BAM and BDI is not surprising. Similarly, the strong correlation with the PANAS–NA is expected as well because the PANAS–NA taps NA in general and is also strongly associated with MDD. An important contribution of this work is a measure assessing the specific aspect of the domain of depressive symptoms and NA that past research has shown is highly associated with serious suicidal behavior (e.g., Busch et al., 2003). The association of the BAM index of agitation with a measure of positive affect (PANAS–PA) was as also as expected—moderate and inversely correlated—providing preliminary evidence for divergent validity. Furthermore, although the strong relationship between the PANAS–NA and BAM in Study 2 suggested the possibility that the BAM was purely a measure of NA, we provided evidence against that hypothesis in two respects: First, we examined the partial correlations of the BAM with other measures after

Table 4—Clinical sample factor loadings and reliability.

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loadings</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>M</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I want to crawl out of my skin</td>
<td>.77</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.56</td>
<td>1.70</td>
<td>.45</td>
<td>−1.56</td>
</tr>
<tr>
<td>2. I feel so stirred up inside I want to scream</td>
<td>.95</td>
<td>.73</td>
<td>—</td>
<td>—</td>
<td>2.07</td>
<td>1.68</td>
<td>−.11</td>
<td>−1.68</td>
</tr>
<tr>
<td>3. I feel a lot of emotional turmoil in my gut</td>
<td>.99</td>
<td>.71</td>
<td>.90</td>
<td>—</td>
<td>2.13</td>
<td>1.74</td>
<td>−.15</td>
<td>−1.73</td>
</tr>
</tbody>
</table>
partially out the PANAS–NA scores and, second, we conducted a joint factor analysis that included items of both the BAM and PANAS–NA. Results from the partial correlations highlighted that although the PANAS–NA and BAM scores in Study 2 were strongly related, they were not redundant, given that several of the correlations (i.e., BDI, NSSI, and PANAS–PA) remained significant even after controlling for PANAS–NA. Moreover, the exploratory factor analyses provided further support for the discriminant validity between the BAM and NA as indexed by the PANAS–NA as the items from each measure loaded onto two separable factors.

Overall, the findings of both studies provide evidence of face, construct, and convergent or divergent validity of this measure of agitation. These findings are of significant importance. First, the relationship between the BAM and measures of current suicidality show utility and usefulness of this brief measure, especially in clinical settings. Second, because self-report bias of suicidal symptoms is evident in many studies (e.g., Busch and Fawcett 2004; Busch et al., 2003; Isometsä et al., 1995), the BAM fills the need for a psychometrically sound self-report measure of agitation. This measure is specifically designed to screen for imminent risk, within clinical and nonclinical populations, without the usual bias produced by the overt nature of wording in current suicide scales.

Exploring the psychometrics of this measure has found that the items appear to be somewhat redundant, indicating that certain items of the agitation measure can be eliminated without undermining its psychometric integrity. Yet, we hesitate to remove items from the already brief scale prior to examining the psychometric properties of the scale using data collected from samples that represent the entire distribution of the target population. In particular, a crucial step for future research would be to examine the psychometrics of the BAM in a larger sample of individuals at severe or imminent risk of suicidal behavior. Although redundancy of items is a concern, it is also possible that these items are not overly redundant, and that the items represent a tight-knit construct. Item redundancy suggests that there is pure repetition of content across items whereas items measuring a tight-knit or well-defined construct are highly correlated but differentiable from one another. The structural integrity of the BAM was also supported by CFAIs that indicated each item significantly loaded onto one factor. Furthermore, coefficient alpha for these samples was high (.88 and .91, respectively), which is notable for such a brief measure. Beyond evidence from reliability and structural analyses, the item possesses strong face validity with respect to capturing the subjective experience of agitation. The item content is clear and appears to effectively tap the construct.

The BAM’s short nature makes it ideal for a screening measure that can be given routinely or when elevated risk is suspected. Importantly, agitation, once detected, can be quickly modified (Fawcett, 2007). One population that might benefit from this type of suicide risk assessment is U.S. military personnel. Suicide is the most common type of traumatic death suffered during armed forces training (Scoville, Gardner, & Potter, 2004). Additionally, there is a significant stigma associated with being suicidal in the military, which limits the willingness of at-risk individuals to seek assistance. Suicide rates in the military have been rising since the beginning of Operation Enduring Freedom and Operation Iraqi Freedom. Regular screening of military personnel for suicidal symptoms is necessary to curb the trend of rising suicide rates. Employing the most up-to-date measurement instruments to risk assessment might represent a vital component to alleviating this disturbing mental health trend in the military. Due to the inherent self-report bias involved in military life regarding suicide, measures such as the BAM could prove to be a valuable, easily implemented device to detect individuals at imminent risk.

This trend is visible in clinical settings as well. Busch et al. (2003) found that over 78% of the state hospital patients sampled denied suicidal thoughts and intent at their last communication with staff workers prior to taking their own lives, and 76% of this sample also had previously reported elevated levels of extreme agitation. Thus, it is imperative that new measures are developed that are specifically designed to target imminent risk. Given its limited face validity for assessing suicidality, it is possible that individuals motivated to conceal suicidality would be less likely to withhold information on the BAM. Importantly, this remains an empirical question, as testing the hypothesis that the BAM is less susceptible to reporting bias, as compared to more direct measures of suicide risk (e.g., BSS) extends beyond the scope of this project.

Another advantage of this measure of agitation is that it aims to measure an important component of imminent risk for suicide. Other frequently used scales (e.g., BSS, DSI–SS) are often retrospective and concerned primarily with mental state over the last few weeks. These well-supported measures are extremely useful in assessing chronic risk; however, evidence concerning the utility of these measures as indicators of acute risk might be limited. Ideally, we would suggest incorporating techniques and measures designed to tap both chronic and acute suicide risk when conducting routine suicide risk assessments to have better insight into current risk status. Of note, we also encourage the use of the BAM in conjunction with other measures of suicide risk because agitation is not pathognomonic of suicide risk. Agitation is broadly related with a number of other medical and psychological conditions. Therefore, including multiple methods and measures of assessment to determine suicide risk would be ideal.

Despite the positive findings for validity in this study, there are still important limitations that need to be considered. Although exclusionary criteria at the FSU Psychology Clinic are minimal, future research could employ an even less restricted sample than the one used in this study. Study 2 is also limited in that the order of presentation of the questionnaires was not randomized or counterbalanced across participants; as such, data from Study 2 could be influenced by the order in which questionnaires were presented to the participants. Despite this, it is important to note that the findings of Study 2 remain consistent with those of Study 1, in which we did control for potential order effects. Additionally, the nature of this study does not allow for assessment of the predictive validity of the BAM for acute suicidal behavior, suicide attempts, or death by suicide. More definitive statements regarding the utility of the BAM as a measure of imminent behavior cannot be made based on the findings of this research. Future studies employing this measure will need to implement a longitudinal design tracking suicide and suicidal behaviors in the short term. Future longitudinal studies should also compare the predictive validity of the BAM to traditional measures of suicidality to test the ability of the measures to capture imminent suicide risk. This study could also be enhanced by providing further data supporting the discriminant validity.
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tizing and routinizing the assessment of suicidality in outpatient practice. Professional Psychology: Research and Practice, 30, 447–453.


