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Factor Structure, Factorial Invariance, and Validity of the Multidimensional Shame-Related Response Inventory-21 (MSRI-21)

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Abstract

We describe 2 studies designed to evaluate scores on the Multidimensional Shame-related Response Inventory-21 (MSRI-21), a recently developed instrument that measures affective and behavioral responses to shame. The inventory assesses shame-related responses in 3 categories: negative self-evaluation, fear of social consequences, and maladaptive behavior tendency. For Study 1, ($N = 743$) undergraduates completed the MSRI-21. Confirmatory factor analysis supported the validity of the MSRI-21 3-factor structure. Latent variable modeling of coefficient- α provided strong evidence for the internal consistency of scores on each scale. In Study 2, ($N = 540$) undergraduates completed the instrument along with 5 concurrent measures chosen for clinical significance. Achievement of factorial invariance supported the use of MSRI-21 scale scores to make valid mean comparisons across gender. In addition, MSRI-21 scale scores were associated as expected with scores on measures of self-harm, suicide, and other risk factors. Taken together, results of 2 studies support the internal consistency reliability, factorial validity, factorial invariance, and convergent validity of scores on the MSRI-21. Further work is needed to assess the temporal stability of the MSRI-21 scale scores, invariance across clinical status and other groupings, item-level measurement properties, and viability in highly symptomatic samples.

Keywords

self-harm; shame; help-seeking; assessment instruments; psychometrics

Due to the known adverse effects of shame on mental health and functioning, *individual responses* to shame are of particular concern to clinicians and researchers. In recent years, several self-report instruments have been developed to measure shame and guilt as state- or trait-based constructs. Until recently, however, no published self-report instruments were available that measure internal responses to shame, such as psychological distress, and external responses to shame, such as maladaptive behavior tendency and fear of social consequences, within a brief stand-alone inventory. Osman, Freedenthal, Bagge, Gutierrez, and Wong (2014) sought to address this gap by developing a multidimensional instrument

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that would be suitable for clinical and research purposes. Prior to describing the development and preliminary evaluation of the Multidimensional Shame Response Inventory-21 (MSRI-21), we elaborate on the research literature that informed the development of the MSRI-21 scales.

Differential Correlates of Shame and Guilt

According to current conceptualizations, shame involves a global negative evaluation of self, in contradistinction to guilt, which is concerned with specific unwanted behaviors or perceived transgressions. Previous research shows that, although shame and guilt are overlapping constructs, they have distinct correlates. Carefully distinguishing between guilt and shame, several studies have found that guilt and guilt-proneness are associated with positive consequences, including enhanced interpersonal problem solving (Covert, Tangney, Maddux, & Heleno, 2003), constructive responses to anger (Lutwak, Panish, Ferrari, & Razzino, 2001), perspective taking (Leith & Baumeister, 1998), a heightened concern for ethical behavior (Cohen, Panter, & Turan, 2012), and positive long-term interpersonal outcomes (Tangney, Miller, Flicker, & Barlow, 1996). Other studies have shown that, when shame is partialled out, guilt is unrelated to depression, anxiety, and other forms of psychopathology (e.g., Averill, Diefenbach, Stanley, Breckenridge, & Lusby, 2002; Rüscher et al., 2007).

Shame is a social emotion, commonly triggered by negative evaluations of the self by others, and is characterized by an internal experience of self-criticism and negative self-evaluation (Kim, Thibodeau, & Jorgensen, 2011). According to shame theorists (e.g., Gilbert, 1998; Kim et al., 2011; Smith, Webster, Parrott, & Eyre, 2002), the psychological distress associated with the external aspect of shame stems from the knowledge that others hold a negative view of oneself, whereas the distress associated with the internal aspect of shame is generated by internalized negative beliefs one holds concerning oneself, often arising from negative early childhood experiences (Luby et al., 2009). Common shame-evoking scenarios include actual or anticipated parental disapproval, situations involving the potential for negative evaluation by others, socially embarrassing situations, being berated or belittled by others, and engaging in behaviors that break social norms (Tangney, 1992).

Shame and shame-proneness have been associated with a range of maladaptive internal and external behavioral responses, including suicide ideation (Kölves, Ide, & De Leo, 2011; Lester, 1998), nonsuicidal self-injury (NSSI; Brown, Linehan, Comtois, Murray, & Chapman, 2009; VanDerhei, Rojahn, Stuewig, & McKnight, 2014), pathological anger (Tangney, Wagner, Hill-Barlow, Marschall, & Gramzow, 1996), depression and anxiety (Rizvi, 2010; Rüscher et al., 2007), and negative attitudes about seeking help from mental health professionals (Rüscher et al., 2014). In light these findings, some researchers have concluded that shame has exclusively maladaptive consequences (see, e.g., Schoenleber & Berenbaum, 2012a). Others have advanced evidence for adaptive consequences of shame. For instance, de Hooge, Breugelmans, and Zeelenberg (2008) reported that shame functions as a motivator of prosocial behavior in “proself” individuals when its experience is relevant to making a decision about how to attain a specific goal. Taken together, the existing research suggests that shame may be associated with positive external consequences in some

contexts, whereas in others it is experienced as an aversive state characterized by negative internal and external ramifications. In addition, it is not implausible that positive external consequences of shame may co-occur with negative internal experiences, occasioning significant intrapersonal distress despite positive external outcomes.

Shame and Negative Self-Evaluation

For some individuals, shame is commonly experienced as an acutely aversive state accompanied by high levels of internal distress (Schoenleber & Berenbaum, 2012b). It has been argued that the highly aversive quality of shame in such individuals is due to the context of global negative self-evaluation in which the emotion is experienced (e.g., Lewis, 1995). Recent neuroimaging studies provide supporting evidence for this view. The frontal lobes are thought to play an important role in self-awareness and identity (Schmitz, Kawahara-Baccus, & Johnson, 2004; Stuss & Levine, 2002; Stuss, Picton, & Alexander, 2001). In a study comparing the neural correlates of shame with those of guilt, Michl et al. (2014) reported that subjects experiencing induced shame showed greater frontal lobe activation compared with those experiencing induced guilt. Further, shame was associated with a greater overall pattern of neural activation throughout the brain. Taken together, this research provides convergent evidence for the view that in some individuals, shame is experienced in the context of negative global evaluation of self.

The global quality of shame may explain why in some contexts, individuals engage in extreme behaviors aimed at dissipating the emotion. Baumeister (1988) has argued that one function of inflicted pain is to remove or minimize awareness of self. Thus, painful self-inflicted injuries may serve to reduce high levels of internal distress associated with negative self-evaluation, by providing a means of escape from self-awareness (Heatherton & Baumeister, 1991). This perspective is consistent with a number of studies showing that the reason most frequently given for engaging in nonsuicidal self-injury is to escape from or alleviate an aversive emotional state (Brown, Comtois, & Linehan, 2002; Kamphuis, Ruyling, & Reijntjes, 2007; Laye-Gindhu & Schonert-Reichl, 2005; Rodham, Hawton, & Evans, 2004). This rationale is also commonly given by individuals engaging in self-injury with the intent to die (Brown et al., 2002).

The Personal Feelings Inventory-2 (PFQ-2; Harder & Zalma, 1990), the Test of Self-Conscious Affect-3 (TOSCA-3; Tangney, Dearing, Wagner, & Gramzow, 2000), the Experience of Shame Scale (ESS; Andrews, Qian, & Valentine, 2002), and the Internalized Shame Scale (ISS; Cook, 1996) are well-known instruments measuring the propensity to experience shame as a trait-based construct. However, they do not measure the intensity of internal distress experienced in response to negative self-evaluation. Thus, Osman et al. (2014) developed the Negative Self-Evaluation Scale to assess the latter construct.

Shame and Maladaptive Behavior Tendency

In some contexts, self-harm may function as a shame regulation strategy. One function of self-harm is to allow individuals to reduce, block, or otherwise distract themselves from negative emotions that are perceived as intolerable and unavoidable by any other means

(Lacey, 1993; Heatherton & Baumeister, 1991). Self-injurers appear particularly prone to be self-critical and to experience intense self-directed anger or dislike (Schoenleber & Berenbaum, 2012a). Self-injurers have also been found to score highly on measures of negative temperament, emotion dysregulation, depression, and anxiety (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Gratz & Roemer, 2004; Klonsky & Muehlenkamp, 2007; Klonsky, Oltmanns, & Turkheimer, 2003). Those who engage in self-injury are also at increased risk for suicide attempt (Muehlenkamp, Walsh, & McDade, 2010).

The variables that moderate and mediate self-harm specifically as a response to shame have not been elucidated. However, self-injury in general is known to be more common in adolescents and young adults. Typical age of onset is around age 13 or 14 (Herpertz, 1995; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). In addition, self-injury occurs in about 20% of adult psychiatric patients and 40–80% of adolescent psychiatric patients (Briere & Gil, 1998; Darche, 1990; DiClemente, Ponton, & Hartley, 1991; Nock & Prinstein, 2004; Schoenleber & Berenbaum, 2012a). A study of ninth and tenth graders found that 46% had performed at least one self-injurious behavior within the past year (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). Similar numbers have been found for college students (Gratz, 2001; Whitlock et al., 2006). Recent studies suggest that nearly one-quarter of adolescents and young adults have engaged one or more episodes of self-harm (Lloyd-Richardson et al., 2007; Nixon, Cloutier, & Jansson, 2008).

Of note, NSSI was previously listed in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000)* as a symptom of borderline personality disorder. Currently, the *DSM-5* presents NSSI as a condition that requires further study (APA, 2013). Although a number of instruments are available to measure the frequency, severity, and functions of self-injury, such as the Functional Assessment of Self-mutilation (FASM; Lloyd, Kelley, & Hope, 1997) and the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmberg, Photos, & Michel, 2007), to our knowledge there are no published scales that measure self-injury as a maladaptive response to shame. Consequently, Osman et al. (2014) developed the items comprising the Maladaptive Behavior Tendency Scale to address this gap.

Shame and Fear of Social Consequences

Muehlenkamp, Walsh, and McDade (2010) noted that a majority of those engaging in NSSI indicate that they do not seek help for such problems. Common barriers to self-disclosure and help-seeking are shame, stigma, and fear of the consequences surrounding disclosure of the behavior (Fortune, Sinclair, & Hawton, 2008). Further, Rüscher et al. (2014) found that shame indirectly mediated the relationship between psychiatric symptoms and attitudes toward professional help-seeking, suggesting that an individual who recognizes his or her own psychiatric symptoms may have negative attitudes toward help-seeking due to self-stigma or fear of social stigma. Tucker et al. (2013) distinguished between self-stigma of mental illness and self-stigma of seeking professional help and found that both stigmata were significant predictors of shame and attitudes toward seeking psychological help. In sum, existing research suggests a link between the experience of shame and fear of social consequences, with potentially adverse impacts on help-seeking behaviors in at-risk

individuals. Here again, Osman et al. (2014) noted the lack of published measurement instruments designed to assess this clinically relevant construct, and the researchers developed the Fear of Social Consequences Scales to address this unmet need.

Brief Overview of the Construction of the MSRI-21

The foregoing discussion highlights the critical need for a standalone inventory that combines measures of negative self-evaluation with measures of maladaptive and risk-enhancing internal and external behaviors. Recently, Osman et al. (2014) developed and conducted preliminary analyses on the MSRI-21 scales, in response to the concerns noted above. The major motivation underlying the development of the MSRI-21 was to tap into the contexts in which internal and external shame-related responses are expressed by the individual. In particular, the MSRI-21 was designed because of (a) limitations of existing self-report measures of shame, and (b) the call for measures that would enhance our understanding of the dimensions or components of shame-related responses, including negative self-evaluation and self-injurious behaviors (see Evans, Hawton, & Rodham, 2005; Luyten, Fontaine, & Corveleyn, 2002; Muehlenkamp et al., 2010; Nock, 2010).

Osman et al. (2014) conceptualized the MSRI-21 as a statement-based instrument with specific contexts. A comprehensive report of the steps involved in the construction of and initial validation of the inventory is presented in the unpublished manual and conference poster presentations (Brown, Pirani, Lopez, & Osman, 2015; Pinnock, Joseph, Sagastume, Gonzalez, & Osman, 2014; Pirani, Garcia, Acosta, & Osman, 2016). The researchers conducted a comprehensive review of the shame, suicide, self-harm, and general psychological distress literatures to identify dimensions of the shame-related response construct. Based on an inductive approach, they hypothesized three dimensions. The *negative self-evaluation* dimension was defined to include items that assess internal distress experienced in response to shame (“When I experience feelings of shame, I usually feel awful or terrible inside”). The *fear of social consequences* dimension (i.e., help-seeking avoidance) was operationalized to include items that assess shame-related responses due to fear of being negatively evaluated by others (“Because of fear of being shamed, it is unlikely that I would ever seek support for thoughts of harming myself if I had them”). The *maladaptive behavior tendency* dimension was defined to assess at-risk behavioral tendencies (thoughts, feelings, actions) due to the experience of shame (“Harming myself physically and on purpose helps me escape from intense feelings of shame”).

Researchers used multiple sources (e.g., reviews of existing shame measures, empirical literature, undergraduate students, clinical experiences of team members) to generate relevant and representative items for each dimension. Following the content validation processes (e.g., expert ratings for dimensionality, items being reworded to enhance clarity), they conducted a series of exploratory factor analysis (EFA) and item response theory (IRT) modeling pilot investigations, ultimately retaining 24 candidate items (see, e.g., Costello & Osborne, 2005; Meijer & Baneke, 2004; Reise & Waller, 2009; Thomas, 2011). In a subsequent pilot study involving incremental validity analysis, a final set of 21 items was retained for the instrument.

Overview of Objectives and Analyses

We conducted two new studies, in new samples, to replicate and extend results of the previous investigations. One limitation of previous investigations is that they did not evaluate the dimensionality and factorial validity of the MSRI-21 using a contemporary approach to structural equation modeling (SEM). Accordingly, in Study 1, we conducted exploratory structural equation modeling (ESEM) with data obtained from a large sample of college-age young adults ($N = 743$). Furthermore, previous research did not examine whether a total score could be calculated for the MSRI-21, or whether each scale should be scored separately. Consequently, in Study 1, we estimated a bifactor ESEM and computed bifactor-specific fit indices to assess viable scoring for the MSRI-21. We also evaluated the internal consistency reliability of scores on each scale within the study sample. Another limitation of previous research is that factorial invariance of the scores was not evaluated. Accordingly, in Study 2, we examined factorial invariance across gender using multigroup confirmatory factor analysis (CFA). We also examined associations of the MSRI-21 scale scores with scores on an extensive set of concurrent measures in order to assess evidence for convergent and discriminant validity. Because the extant literature suggests the presence of maladaptive shame-related responses in nonclinical young adults, we selected college-age, nonclinical samples for each of the current investigations.

Study 1

Method

Objective—The specific goals of Study 1 were to examine evidence for the multidimensionality and factorial validity of scores on the MSRI-21 using contemporary methods, and to assess evidence of internal consistency reliability.

Participants and procedure—For Study 1, invitations went out to 1,528 undergraduate students taking introductory-level psychology courses during spring of 2015. Researchers explained to participants that the aim of the study was to evaluate the performance of a new questionnaire measuring shame-related responses. After obtaining written informed consent, participants completed the questionnaire packet in a classroom setting, supervised by trained graduate students and senior undergraduates. Responses from each individual were reviewed for completeness during the data collection process. Packets missing more than two responses across the battery of instruments were excluded from the data pool. We obtained $N = 743$ completed questionnaire packets, indicating a completion rate of 48.6%. Participation was voluntary and participants were awarded course credit in exchange for participation in the study. The university's Institutional Review Board approved all procedures.

Participants included 262 male (35.3%) and 481 female (64.7%) undergraduates enrolled in psychology classes at a public university in the Southwestern United States. The mean age of participants was 21.92 years. The ethnic makeup of the sample was 47.8% ($n = 355$) Hispanic/Latino American, 28.1% ($n = 209$) White/European, 8.3% ($n = 62$) African American/Black, 7.7% ($n = 57$) Asian American, 4.4% ($n = 33$) Biracial/Multiethnic, 1.5% ($n = 11$) Middle Eastern, and 0.3% ($n = 2$) American Indian/Indigenous Alaskan. The ethnic

composition of the sample was largely representative of the broader region in which the university is situated. Although women appear to be oversampled, we note that women are typically overrepresented in samples drawn from undergraduate psychology courses.

Measure—The MSRI-21 consists of three scales: *Negative Self-Evaluation* (NSE; seven items), tapping shame-related cognitions and negative affect; *Maladaptive Behavior Tendency* (MBT; seven items), tapping shame-related motivations and functions of self-injury; and *Fear of Social Consequences* (FSC; seven items); tapping shame-related help avoidance. Each item is rated on a 5-point Likert-type format ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Data analytic strategy—Results of pilot investigations suggested that a three-factor model would provide the best fit to the sample data. In order to test this model against competing models, ESEM was conducted within the full sample, specifying 1-factor and 3-factor models, in which all factor loadings were freely estimated. In addition, in order to obtain information that would enable us to assess viable scoring for the MSRI-21 scales, we estimated an ESEM bifactor model. ESEM models include components of EFA and CFA. In particular, ESEM adopts a rigorous exploratory factor analytic procedure (allowing all MSRI-21 items to load on all factors) within a SEM framework (Asparouhov & Muthén, 2009; Morin, Arens, & Marsh, 2016). Unlike CFA, in ESEM, items are not constrained to zero loadings on nontarget factors. Thus, ESEM usually does not result in inflated factor loadings or inflated interfactor correlations. As a consequence, the factors obtained within ESEM tend to be more distinct (see Table 1).

The Shapiro-Wilk and Kolmogorov–Smirnov statistics suggested that distributions for a majority of response items were non-normal. The normalized estimate of Mardia's coefficient was 184.74 ($p < .001$), indicating that the multivariate distribution of scores was also non-normal, thus advising the need for a robust estimation method. In order to account for the multivariate non-normal distribution of our data, which can affect the accuracy of parameter estimates, standard errors, and model fit statistics, we chose a maximum likelihood estimator with robust standard errors and fit statistics (MLR). Estimation was conducted using Mplus 7.11 (Muthén & Muthén, 1998–2013). This program has the advantage of reporting robust fit indices that are useful for comparing competing solutions. Because we expected moderate correlations among the potential factor scale scores, we selected a direct oblimin rotation for first-order models. An oblique bi-geomin rotation was used for the bifactor model (Mansolf & Reise, 2016). For the comparative fit index (CFI) and the Tucker-Lewis non-normed fit index (TLI), values $.90$ indicated acceptable fit to the observed correlation matrix, whereas for the root mean square error of the approximation (RMSEA), values $.08$ indicated acceptable fit (Bowen & Guo, 2012; Marsh, Hau, & Wen, 2004).

In addition to comparing competing solutions by means of fit statistics, we assessed the overall interpretability of each factor solution using the following criteria for first-order models: (a) items loaded strongly on one factor ($\lambda \geq .50$) with minimal cross-loadings ($\lambda < .32$); (b) each factor contained at least five strongly loading items; and (c) factor intercorrelations did not exceed $.80$. For the bifactor model, we computed bifactor-specific

statistics, including the explained common variance (ECV; Bentler, 2009; Reise, Moore, & Haviland, 2010) and the percentage of uncontaminated correlations (PUC; Reise, 2012). ECV is a measure of the relative strength of general to group factors, and is used as an index of dimensionality, with values $.90$ indicating that scores are “essentially unidimensional” (i.e., justifying the interpretation of a total score; Sijtsma, 2009; ten Berge & So an, 2004). ECV values $<.70$ strongly indicate a sufficient degree of multidimensionality to warrant calculating and interpreting scale scores rather than a total score (Quinn, 2014). We also calculated the PUC, which is the ratio of non-dimension-specific (“uncontaminated”) correlations to unique correlations in the matrix. When ECV and PUC are both high, unidimensionality is strongly indicated. Note, however, that if PUC is below $.80$, an ECV benchmark of $.60$ should be considered when evaluating dimensionality (e.g., Reise, Scheines, Widaman, & Haviland, 2013).

We used direct latent variable modeling within Mplus 7.11 to derive point estimates for internal consistency reliability (coefficient- α)¹ of the MSRI-21 scale scores (Raykov & Marcoulides, 2015). All estimates were computed on the individual scales with uncorrelated error terms. We also computed bootstrapped confidence intervals (CI 95%) with 2,000 sample iterations, in addition to the average interitem correlation (AIC) for items comprising each scale. Cicchetti and Sparrow (1994) provided empirical guidelines for interpreting coefficient- α estimates. Estimates below $.70$ are considered unacceptable; those between $.70$ and $.79$ are interpreted as fair. Estimates between $.80$ and $.89$ are considered good, and estimates $.90$ are interpreted as excellent.

Results

Descriptive statistics—The means, standard deviations, skewness (Sk), and kurtosis (Ku) of the MSRI-21 and all concurrent measures are displayed in Table 2, for Studies 1 and 2.

ESEM—The one-factor model ($\chi^2[228] = 3,178.06, p < .001$; CFI = $.53$; TLI = $.48$; RMSEA = $.15$) demonstrated inadequate fit to the sample data. Both the three-factor model ($\chi^2[150] = 449.89, p < .001$, CFI = $.95$, TLI = $.93$, RMSEA = $.05$) and the bifactor model ($\chi^2[132] = 630.24, p < .001$, CFI = $.96$, TLI = $.94$, RMSEA = $.07$) demonstrated adequate fit. The three-factor model featured (a) strong item-factor loadings (i.e., values $.50$ on only one factor); (b) good estimates of item-total correlation ($.70$) for response items composing each of the factors; and (c) all items loaded on their target factors, reproducing three scales composed of seven items. As expected, the latent variables featured moderate to high correlations (Maladaptive Behavior Tendency vs. Negative Self-Evaluation = $.31$; Maladaptive Behavior Tendency vs. Fear of Social Consequences = $.45$; and Negative Self-Evaluation vs. Fear of Social Consequences = $.59$).

ESEM fit indices indicated that the bifactor model provided adequate fit to the data. However, bifactor-specific fit indices were below established benchmarks (PUC = $.70$, ECV = $.50$), indicating that each scale comprising the MSRI-21 can be scored separately.

¹We also computed internal consistency using other estimators, yielding nearly identical results.

²Item-level data were not available for PFQ-2 Shame and Guilt scales, thus they were modeled as manifest variables.

Internal consistency reliability—We observed excellent internal consistency for scores on all three scales, with an internal consistency estimate of .93 (95% CI [.92, .94]) and an AIC of .68 for the Negative Self-Evaluation Scale scores. For the Maladaptive Behavior Tendency Scale scores, we observed an internal consistency estimate of .95 (95% CI [.93, .96]) and an AIC of .68. Finally, we observed an internal consistency estimate of .92 (95% CI [.91, .93]) and an AIC of .62 for scores on the Fear of Social Consequences Scale.

Study 2

The specific goals of Study 2 were (a) to test factorial invariance across gender of scores on the MSRI-21 scales and (b) to examine the convergent/discriminant validity of the MSRI-21 scales within a set of concurrent measures selected based on an extensive literature review.

Method

Participants and procedure—For Study 2, invitations went out to 819 undergraduate students taking introductory-level psychology courses during fall of 2015. Researchers explained to participants that the aim of the study was to evaluate the performance of a new questionnaire measuring shame-related responses. After obtaining written informed consent, participants completed the questionnaire packet in a classroom setting, supervised by trained graduate students and senior undergraduates. Responses from each individual were reviewed for completeness during the data collection process. Packets missing more than two responses across the battery of instruments were excluded from the data pool. We obtained $N = 540$ complete responses, for a completion rate of 48.6%. Participation was voluntary and participants were awarded course credit for participation in the study. The university's Institutional Review Board approved all procedures.

Participants included 163 male (30.2%) and 377 female (69.8%) undergraduate students enrolled in psychology classes at a public university in the Southwestern United States. The mean age of participants was 19.48 years ($SD = 3.32$). The ethnic makeup of the sample was 43.5% ($n = 235$) Hispanic/Latino American, 25.4% ($n = 137$) White/European, 13.9% ($n = 75$) African American/Black, 9.1% ($n = 49$) Asian American, 4.4% ($n = 24$) Biracial/Multiethnic, 1.7% ($n = 9$) Middle Eastern, 1.7% ($n = 9$) other, and 0.4% ($n = 2$) American Indian/Indigenous Alaskan. The ethnic composition of the sample was largely representative of the broader region in which the university is situated. With regard to the notable gender imbalance observed in the sample, here again we note that women are typically overrepresented in samples drawn from undergraduate psychology courses.

Concurrent measures—In addition to completing a brief demographic questionnaire and the MSRI-21 items, participants provided responses to five assessment inventories selected because of their clinical relevance and empirical significance. As in Study 1, all estimates of internal consistency reliability (coefficient- α) were computed using latent variable modeling with bootstrapped confidence intervals (2,000 iterations).

Functional Assessment of Self-Mutilation (FASM-23; Lloyd, Kelley, & Hope, 1997)—The FASM-23 is a measure of frequency, methods, and motivations of nonsuicidal self-mutilation, that was chosen to evaluate the frequency of engaging in various functions

of self-injury, including 22 different reasons and one “other” option (e.g., “to get attention”). Items are rated on a 4-point Likert-type scale from 0 (*never*) to 3 (*often*). For the current study, a total score was computed as the sum of all 22 items. Coefficient- α for the present study was .92 (95% CI [.90, .93]). Previous research has identified multiple functions of non-suicidal self-injury, including automatic and internal behaviors as well as external, interpersonal behaviors (e.g., Nock, 2010; Nock & Prinstein, 2004). Given the content of the items comprising the Maladaptive Behavior Tendency Scale, which tap self-injury as a shame-related response, we expected to observe a statistically significant relationship between scores on the latter scale and FASM-23.

Future Disposition Inventory (FDI-24; Osman et al., 2010a)—The FDI-24 was selected to assess attitudes toward the future, specifically in terms of suicidal thoughts and behaviors. Each item is rated on a 5-point scale from 1 (*not at all true of me*) to 5 (*extremely true of me*). Each of the three scales is scored as the sum of its items. Positive focus (PF) assesses protective factors such as optimism, life satisfaction, and having plans for the future (e.g., “I expect things to turn out better for me in life”). Suicide orientation (SO) evaluates suicide ideation and desire to die (e.g., “I sometimes think that by ending my life, all the problems ahead of me will go away”). Finally, negative focus (NF) measures risk factors including life dissatisfaction, worry, and cognitive rigidity (e.g., “I worry that things will never go well for me no matter what I do”).

Exploratory and confirmatory factor analyses have validated the three-factor structure with low to moderate interfactor correlations and acceptable internal consistency, with estimates of coefficient- α ranging from .86 to .92 (Osman et al., 2010a). Previous research also supports the adequacy of scale-level reliability estimates ($r > .80$; Ballard, Patel, Ward, & Lamis, 2015; Bryan, Ray-Sannerud, Morrow, & Etienne, 2013). Internal consistency reliability estimates for the current study ranged from .75 to .92 with a total 95% CI [.71, .94].

Because scores on all three MSRI-21 scales are conceptualized as risk-conferring factors, for the current analysis we included scores from the two FDI at-risk factors (i.e., suicide orientation and negative focus). Specifically, we expected to observe a statistically significant association between scores on the Maladaptive Behavior Tendency Scale and the FDI Suicide Orientation Scale, given research findings indicating that individuals who engage in NSSI are likely to have had past suicide attempts and current suicidal ideation (e.g., Lloyd-Richardson et al., 2007). In addition, we expected to observe a significant association between scores on the FDI Negative Factor Scale and MSRI Negative Self-Evaluation scores, given research linking negative self-evaluation to negative affect and maladaptive cognitions (e.g., Rizvi, 2010; Rüsç et al., 2007).

Suicide Anger Expression Inventory (SAEI-28; Osman et al., 2010b)—The SAEI-28 is a self-report measure that was selected to assess patterns of anger expression in conjunction with suicidality. The 28-item instrument is rated on a 5-point scale ranging from 1 (*not at all true of me*) to 5 (*extremely true of me*). Each scale is scored as the sum of its items. There are four scales with seven items each, including suicide rumination, which reflects thoughts of death and suicide behaviors (e.g., “I feel the urge or impulse to hurt

myself physically”); maladaptive expression, which measures negative responses to anger-invoking interpersonal encounters (e.g., “I usually do or say something to get back at someone”); adaptive expression, which assesses positive or constructive reactions to difficult situations (e.g., “I tend to focus on all sides of the situation before I do or say something”); and reactive distress, which reflects negative beliefs regarding a stressful interpersonal event (e.g., “It is because I feel unwanted or under-appreciated”). The psychometric properties of the SAEI-28 have been investigated in previous research; four-factor structure with good fit was obtained using exploratory and confirmatory factor analyses, and scale-level reliability estimates (as estimated by coefficient- ρ) were .83 in all studies (Osman et al., 2010b). Internal consistency for the current study as estimated by coefficient- α ranged from .84 to .94, with a total 95% CI [.81, .95].

Because scores on all three MSRI-21 scales are conceptualized as risk-conferring factors, for the current study we included scores from the three SAEI-28 risk factors (i.e., suicide rumination, maladaptive expression, and reactive distress). SAEI suicide rumination was selected as a potential correlate of maladaptive behavior tendency, given previous research linking ruminative thoughts of suicide to self-injury (e.g., Miranda & Nolen-Hoeksema, 2007; O’Connor & Noyce, 2008). Of particular interest for the Negative Self-Evaluation Scale were the SAEI maladaptive expression and reactive distress scales, in light of previous findings linking shame to internalized and externalized anger (e.g., Tangney, Wagner, Fletcher, & Gramzow, 1992).

Suicidal Behaviors Questionnaire Revised (SBQ-R; Osman et al., 2001)—The SBQ-R is a four-item self-report instrument, selected as a measure of suicide-related behaviors, including lifetime ideation, attempts, threats, and future likelihood. The SBQ-R has demonstrated adequate internal consistency in past studies (Gutierrez, Osman, Barrios, & Kopper, 2001; Osman, Kopper, Barrios, Gutierrez, & Bagge, 2004; Osman et al., 2002). Coefficient- α for the present study was .80 (95% CI [.76, .83]). This instrument was selected for inclusion as a measure of past and future suicidal ideation and behaviors, which have been empirically linked to nonsuicidal self-injury and self-harm in general (e.g., Wester, Ivers, Villalba, Trepal, & Henson, 2016). An association between scores on SBQ-R and maladaptive behavior tendency was expected based on previous research linking scores on SBQ-R with measures of self-harm (Gutierrez et al., 2001; Manca, Presaghi, & Cerutti, 2014). In addition, given the content of items comprising the maladaptive behavior tendency scale, we expected scores on the latter scale to clearly discriminate scores on measures of self-harm cognitions (i.e., SAEI suicide rumination and FDI suicide orientation) and NSSI (i.e., FASM-23) from scores on the SBQ-R, which measures past history and future probability of suicide attempts. We also expected to observe a significant association between scores on SBQ-R and the Negative Self-Evaluation Scale, given previous research showing a relationship between negative self-evaluation and suicide (e.g., Kölves et al., 2011; Lester, 1998).

Personal Feelings Questionnaire-2 (PFQ-2; Harder & Zalma, 1990)—The PFQ-2 is a 16-item adjective-based measure of shame- (10 items) and guilt-proneness (six items). This measure was chosen to measure the frequency with which shame- (e.g.,

“embarrassment,” “feeling humiliated”) or guilt- (e.g., “regret,” “remorse”) related internal experiences present themselves in social-interpersonal situations. Each item is rated on a 5-point Likert-type scale from 0 (*never*) to 4 (*continuously*). Internal consistency reliability estimates (coefficient- α) for the current study were .78 for guilt and .84 for shame with a total 95% confidence interval of .74 to .86. Allan, Gilbert, and Goss (1994) found that scores across multiple measures of shame were significantly linked with feelings of distress, including severe depression and social dysfunction, which prompted the current study to examine the relationship between PFQ-2 Shame and negative self-evaluation scores. Additionally, the item content of PFQ-2 Shame is similar to that of the Negative Self-Evaluation Scale, in that both refer to internalized shame-related emotions. Further, in support of the discriminant validity of Maladaptive Behavior Tendency and Fear of Social Consequences Scales as measures of *external responses*, we expected to observe small associations of the latter two scales with PFQ-2 Shame. The PFQ-2 Guilt Scale was also included to assess the discriminant validity of scores on the MSRI-21. In particular, we expected the Negative Self-Evaluation Scale to evidence stronger associations with shame than with guilt.

PID-5-BF (Personality Inventory for the DSM-5 Brief Form; Krueger, Derringer, Markon, Watson, & Skodol, 2013)—The PID-5-BF is a self-report instrument with 25 items scaled from 0 (*very false or often false*) to 3 (*very true or often true*). This measure was chosen to assess five dimensions of maladaptive personality traits, including detachment, disinhibition, psychoticism, antagonism, and negative affectivity. A recent review of the PID-5 noted that reliability estimates for both the brief and long forms of the PID-5 were acceptable across a range of studies (Al-Dajani, Gralnick, & Bagby, 2016). Scale-level internal consistency reliability estimates for the current study ranged from .70 to .81 with a total 95% CI [.65, .83]. The PID-5-BF was included as a general trait-based measure of mental health symptoms, and was expected to evidence significant associations with Negative Self-Evaluation Scores. In addition, the PID-5-BF Detachment Scale was expected to evidence an association with scores on the Fear of Social Consequences Scale, given previous research linking interpersonal detachment to feelings of shame and social stigma (Luyten et al., 2002).

Data analytic strategy—Factorial invariance testing was conducted in two steps. In the first step, separate CFAs were estimated to test the multidimensional structure of the MSRI-21 in each gender. In the second step, multigroup CFA was used to test for factorial invariance across gender using the backward sequential method (Chou & Bentler, 2002). Using this method, researchers begin with the most highly constrained CFA model; factor loadings, item intercepts, error variances, and factor variances/covariances are constrained to equality across groups. If fit statistics and modification indices suggest non-invariance of parameters, equality constraints are freed one parameter at a time until an acceptable fit is achieved. After conducting factorial invariance testing using this method, we also compared latent means across gender, based on a *Z* test with robust standard errors (Satorra & Bentler, 2001). Because no directional mean differences were hypothesized, two-tailed tests were performed.

Because uncorrected measurement error can adversely affect regression or path coefficients when scale scores are treated as manifest variables (Cole & Preacher, 2014), convergent and discriminant validity of the MSRI-21 scales were assessed using latent variable SEM within Mplus 7.11, which allows for correction of measurement error. The three MSRI-21 scales and 14 concurrent scales, including the SBQ-R; PID-5-BF; SAEI maladaptive expression, reactive distress, and suicide rumination; PFQ-2 shame and guilt;² FDI negative focus and suicide orientation; and the FASM-23, were modeled as latent variables. Response items (indicator variables) were allowed to load on target factors only, with cross loadings constrained to zero. Error terms were uncorrelated. Further, each latent variable was scaled by constraining the loading of its first indicator to a value of 1.

Consistent with the results of Study 1, Negative Self-Evaluation, Maladaptive Behavior Tendency, and Fear of Social Consequences Scales were specified as correlated exogenous variables with direct paths to all concurrent measures, generating 32 path coefficients. Residual error terms among the criterion latent variables were uncorrelated. In addition, standardized parameter estimates were computed to facilitate comparison of path coefficients. Taking into account the multivariate non-normality of the data (normalized estimate of Mardia's coefficient = 214.17, $p < .001$), the statistical significance of the standardized parameter estimates was assessed using robust standard errors.

Standardized path coefficients for direct effects in SEM are similar to standardized beta weights (β) in multiple regression and can be interpreted similarly (Durlak, 2009). In particular, the former represent the unique variance predicted by an independent variable after controlling for other associations in the model. We assessed the magnitude of path coefficients using the following guidelines: below .20 = small, .20 to .49 = moderate, .50 or greater = large. Differences in magnitude between path coefficients were tested for statistical significance using the methodology described by Cheung (2009). This method involved imposing nonlinear constraints within Mplus to estimate magnitudes and standard errors of differences between pairs of path coefficients, which were then tested for statistical significance on a two-tailed Z test. A conventional cutoff value of $Z = 1.96$ ($p = .05$) was selected to assess statistical significance.

Results

Separate CFAs by gender—As shown in Table 3, MLR fit indices indicated that the three-factor CFA model provided an acceptable fit to the data for each gender. For men ($n = 163$), $\chi^2(186) = 304.42$, $p < .001$, CFI = .93, TLI = .92, and RMSEA = .05. For women ($n = 377$), $\chi^2(186) = 454.17$, $p < .001$, CFI = .92, TLI = .91, and RMSEA = .06. For the full sample ($N = 540$), $\chi^2(186) = 444.43$, $p < .001$, CFI = .94, TLI = .94, and RMSEA = .05. These results indicated that the three-factor model provided an acceptable fit to the data in each gender, as well as in the combined sample.

Multigroup CFA—MLR fit indices suggested a good fit for the fully constrained two-group model: $\chi^2(414) = 809.22$, $p < .001$, CFI = .92, TLI = .92, RMSEA = .06. The strength of the fit indices with all parameters constrained to equality suggested that invariance of factor loadings, item intercepts, error variances, and factor variances/covariances was

tenable. Moreover, modification indices did not indicate any viable changes to equality constraints. Having achieved full factorial invariance, no further multigroup models were estimated.³

Latent mean comparison—We compared latent variable means across gender within the fully constrained model (i.e., all parameters held invariant). No statistically significant differences were observed in the latent means of men and women on Negative Self-Evaluation ($Z = 0.87, p = .384$), Fear of Social Consequences ($Z = 0.60, p = .547$), or Maladaptive Behavior Tendency Scales ($Z = -0.60, p = .552$).

Latent variable SEM—Model estimation terminated normally. All response items featured moderate to strong factor loadings ($\lambda = .38$ to $.94, p < .001$). In addition, Pearson correlations among the exogenous latent variables were as follows: Maladaptive Behavior Tendency vs. Negative Self-Evaluation = $.41$; Negative Self-Evaluation vs. Fear of Social Consequences = $.67$; Maladaptive Behavior Tendency vs. Fear of Social Consequences = $.42$. Goodness-of-fit was below conventional benchmarks: $\chi^2(5, 951) = 12,887.26, p < .001$, CFI = $.77$, TLI = $.76$, RMSEA = $.05$. Although modification indices indicated that removing nonsignificant structural paths and introducing correlated error terms would result in improved fit, it is known that correlating residuals can adversely affect structural parameter estimates (Tomarken & Waller, 2003). Further, since the objective of the analysis was not to develop an explanatory model, but rather to obtain reliable structural parameter estimates and to compare their magnitudes, the original model with all 36 structural paths was retained.

Standardized path coefficients with robust 95% confidence intervals and p values are shown in Table 4. Negative Self-Evaluation featured moderate to strong associations with all concurrent measures, and was a particularly strong predictor of SAEI Reactive Distress ($\beta = .76$ [.62, .89]), PID-5-BF Negative Affect ($\beta = .70$ [.57, .83]), PFQ-2 Shame ($\beta = .69$ [.57, .82]), and FDI Negative Focus ($\beta = .59$ [.43, .76]). Negative Self-evaluation also featured strong associations with PID-5-BF Psychoticism ($\beta = .56$ [.39, .74]) and SAEI Maladaptive Expression ($\beta = .55$ [.37, .73]), as well as moderate associations with the remaining concurrent measures, (β s = $.23$ to $.43$, total 95% CI [.06, .59]). Of note, Negative Self-Evaluation was a significantly stronger predictor of PFQ-2 Shame than PFQ-2 Guilt ($Z = 7.94, p < .001$).

Maladaptive Behavior Tendency was a strong predictor of SAEI Suicide Rumination ($\beta = .71$, [.60, .81]), FDI Suicide Orientation ($\beta = .61$ [.49, .73]), and FASM (Self-mutilation; $\beta = .53$ [.41, .65]). Of note, Maladaptive Behavior Tendency evidenced stronger associations with the aforementioned three scales than with all other concurrent measures (Z s = $4.41, p$ s < $.001$). In addition, Maladaptive Behavior Tendency performed significantly better than the remaining MSRI-21 scales as a predictor of SAEI Suicide Rumination, FDI Suicide Orientation, and FASM Self-Mutilation (Z s = $2.67, p$ s < $.01$). Further, Maladaptive Behavior Tendency was moderately associated with SBQ-R ($\beta = .43$ [.31, .55]) and PID-5-BF

³We also estimated a series of models using forward sequential constraint imposition (Dimitrov, 2010), reaching substantively the same result—full factorial invariance.

Detachment ($\beta = .27$ [.15, .39]), and weakly associated with FDI Negative Focus ($\beta = .17$ [.05, .28]) and PFQ-2 Guilt ($\beta = .11$ [.01, .22]). The remaining path coefficients for Maladaptive Behavior Tendency were small and/or nonsignificant.

Fear of Social Consequences was moderately associated with PID-5-BF Detachment ($\beta = .35$ [.26, .55]). The remaining associations of Fear of Social Consequences were small and/or nonsignificant.

General Discussion

The aim of this project was to evaluate evidence for the factor structure, internal consistency reliability, factorial invariance, and convergent/discriminant validity of scores on the MSRI-21. In Study 1, direct latent variable modeling of coefficient- α provided excellent point estimates of internal consistency reliability ($>.90$). In addition, bootstrapping with 2,000 replicates yielded strong lower bound estimates (95% CI) exceeding .90 for scores on all three scales. These results provide strong evidence for the internal consistency reliability of MSRI-21 scale scores. Results of ESEM demonstrated that an oblique 3-factor model provided an adequate fit to the data, as indicated by acceptable CFI, TLI, and RMSEA estimates, strong item loadings on target factors, and low cross-loadings. Although a bifactor model demonstrated adequate fit to the data as indicated by ESEM fit statistics, examination of bifactor-specific fit indices (i.e., PUC and ECV) indicated that each scale can be scored and interpreted separately. Taken together, these results provide compelling evidence for the internal consistency, factorial validity, and viable scoring of the MSRI-21.

Results of factorial invariance testing (Study 2) provide empirical support for the use of the MSRI-21 scales in clinical and research applications with both men and women. In addition, the means of each latent construct did not differ significantly between men and women, suggesting that researchers can make valid comparisons of the computed MSRI-21 scale scores across gender. In view of the latter result, we suggest that MSRI-21 is relevant to the literature investigating gender differences in the experience of shame and stigma relating to mental illness. Some studies have found that men and women differ in their scores on measures of stigma associated with mental illness, including psychological openness, help-seeking propensity, and indifference to stigma, suggesting that women are more open and willing to engage in help-seeking behaviors than men (MacKenzie, Knox, Gekoski, & Macaulay, 2004). Other studies have found contradictory evidence. For instance, Hampton and Sharp (2014) reported that men and women had similar, moderate levels of external (i.e., community shame/stigma and family shame/stigma), internal, and reflective (i.e., family reflective and self-reflective) shame regarding mental health issues. The current findings in support of factorial invariance of the MSRI-21 suggest that men and women share similar interpretations of the constructs measured by the inventory. Thus, the MSRI-21 could be used in future investigations as a viable measure of shame-related responses in both men and women.

Results from SEM validity analysis (Study 2) showed that scores on the Negative Self-Evaluation Scale predicted a wide range of distressing symptoms, with an emphasis on negative internal experiences. In particular, Negative Self-Evaluation strongly predicted

scores on measures of negative affect, negative cognitions concerning self-harm, rumination, shame-proneness, and psychoticism. Further, scores on each of the aforementioned measures clearly differentiated Negative Self-Evaluation from the other MSRI-21 scales. Our results also suggested that scores on the Negative Self-Evaluation scale clearly discriminate between shame-proneness and guilt-proneness as measured by the PFQ-2.⁴ Taken together, these results indicate that the Negative Self-Evaluation Scale could be useful for assessing levels of shame-related internal distress, perhaps in conjunction with existing measures of state- or trait-shame.

The Maladaptive Behavior Tendency Scale was found to be a strong, specific predictor of scores on instruments measuring self-injury cognitions and behaviors, including suicide ideation, suicide orientation, and nonsuicidal self-injury. In addition, the Maladaptive Behavior Tendency Scale clearly discriminated between these constructs and other measures, including suicide threats and attempts as measured by SBQ-R. These results suggest that the Maladaptive Behavior Tendency Scale is relevant to ongoing research examining shame as a motivator of nonsuicidal self-injury. For instance, Schoenleber, Berenbaum, and Motl (2014) found that endorsement of shame regulation functions was positively associated with the frequency of NSSI among women with a history of NSSI. Moreover, higher levels of shame-proneness were associated with more frequent NSSI, even after taking into account broader personality dimensions, such as proneness to general negative affect. A further study examined the contributions of shame, anger, and childhood abuse to self-mutilating behavior in women with a history of involvement with the criminal justice system. The authors found that shame and anger scores were significantly higher for those scoring high on measures of self-harm (Milligan & Andrews, 2005).

Our Fear of Social Consequences Scale was a moderate predictor of scores on social detachment, and clearly discriminated between this construct and other concurrent measures. This finding is consistent with previous research linking shameful experiences to social isolation. For instance, Wicker, Payne, and Morgan (1983) found that undergraduates asked to reflect on prior shameful experiences endorsed feelings of rejection, inferiority, a desire to hide, and a subjective decrease in status and power. Notably, reflecting on shameful experiences elicited a greater desire to punish others than did reflecting on experiences of guilt. Similarly, Tangney, Miller et al. (1996) found that participants perceived greater social isolation and a stronger perception that others were angry with them when they felt ashamed, versus embarrassed or guilty.

The Fear of Social Consequences Scale may be useful to current research programs examining the relationship between shame and seeking help from professionals. For instance, shame has been shown to mediate the relationship between mental health symptoms and views surrounding professional help-seeking, suggesting that an individual who recognizes his or her own psychiatric symptoms may have negative attitudes toward seeking help due to fear of social consequences (Rüsch et al., 2014). Other research suggests

⁴Concerning the discriminant validity of the Maladaptive Behavior Tendency and Fear of Social Consequences scales as measures of *external responses* to shame, we note their small associations with PFQ-2 Shame.

that shame is directly associated with attitudes toward seeking psychological help (Tucker et al., 2013).

Limitations and Directions for Further Research

The present studies should be interpreted in light of several limitations. We used a convenience sample of undergraduates from a single university in the Southwestern United States. Gender differences in the comprehension of the MSRI-21 items are likely to vary across a range of characteristics with limited representation in our samples, including race, ethnicity, age, educational attainment, and geographic location. Of note, previous research has found differences among ethnic groups in their propensity to experience shame. For instance, Hampton and Sharp (2014) found that Latinos scored highest on internal shame, followed by Caucasians and Asian Americans. Further, a recent study of ethnic differences in attitudes toward mental illness found that, compared with Europeans, Asians reported greater stigma toward and desired greater social distances from individuals with depression (Shamblaw, Botha, & Dozois, 2015). The relative homogeneity of our samples precluded evaluation of the potential influence of such differences on participants' interpretations of the constructs tapped by the MSRI-21, and on observed scores for each of the scales. Consequently, the present findings are not generalizable to dissimilar populations. Additional research with diverse populations is strongly warranted. In particular, studies are needed to investigate the factorial invariance of the MSRI-21 across a range of demographic characteristics, including race, ethnicity, age, and education.

When new instruments are developed, there are numerous ethical and clinical factors that need to be considered. Although infrequently investigated by researchers, an important consideration associated with any new measure is its incremental validity over alternative measures available to assess the same construct (Haynes & Lench, 2003). Newly developed instruments intended to be used in applied settings should demonstrate an ability to add to the prediction of outcomes beyond what is possible with the best currently available assessments (Hunsley & Meyer, 2003). Specifically, in addition to evidence for convergent and discriminant validity, a new psychological test intended for applied use must demonstrate evidence of incremental validity. One limitation of the current studies was that the incremental validity of scores on the MSRI-21 was not evaluated. Accordingly, future research should examine the increase in predictive value contributed by the MSRI-21 with respect to existing measures of shame, such as the PFQ-2, the TOSCA-3, the ESS, and the ISS.

Another potential limitation of the current studies is that all data were from nonclinical samples. Consequently, the current findings are not generalizable to clinical populations. Future research should explore the psychometric properties of the MSRI-21 in clinical samples, and assess evidence of factorial invariance across clinical status. The current studies also did not examine the unidimensionality of MSRI-21 scale scores or item-level measurement properties, such as item discriminativeness and severity parameters. Thus, future research should assess unidimensionality, as well as item-level properties using suitable statistical techniques (e.g., bifactor IRT). We also note that measurement invariance at the item level was not assessed by the current project. Further research is needed to

examine scores on the MSRI-21 for evidence of differential item functioning (DIF) across gender, clinical status, race, ethnicity, and other groupings. Researchers may also want to investigate the clinical utility of “bundling” the individual MSRI-21 scales with other instruments. For instance, the Negative Self-Evaluation Scale might potentially prove useful in conjunction with measures of state or trait shame in assessing future risk of maladaptive responses.

Finally, we suggest that a future study should assess the validity of the MSRI-21 scales, particularly the Fear of Social Consequences Scale, in a more extensive set of concurrent measures. In Study 2, Fear of Social Consequences was found to have a significant association with scores on only one concurrent measure: PID-5-BF Detachment. Further, this association did not clearly differentiate Fear Social Consequences from the remaining MSRI-21 scales. Future studies should include more specific measures relating to mental health stigma and help-seeking behavior as potential correlates of the Fear of Social Consequences Scale.

Conclusion

Despite the aforementioned limitations, the current studies provide evidence for the internal consistency, factor structure, factorial invariance across gender, and convergent/discriminant validity of scores on the MSRI-21. Further, the constructs assessed by the MSRI-21 are relevant to areas of active investigation, including nonsuicidal self-injury, self-harm, mental health stigma, and professional help-seeking. The clinical utility afforded by combining measures of Negative Self-Evaluation, Maladaptive Behavior Tendency, and Fear of Social Consequences within a single inventory commend the use of the MSRI-21 for use in applied settings, especially when a brief assessment instrument is indicated.

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References

- Al-Dajani N, Gralnick TM, Bagby RM. A psychometric review of the Personality Inventory for *DSM-5* (PID-5): Current status and future directions. *Journal of Personality Assessment*. 2016; 98:62–81. <http://dx.doi.org/10.1080/00223891.2015.1107572>. [PubMed: 26619968]
- Allan S, Gilbert P, Goss K. An exploration of shame measures—II: Psychopathology. *Personality and Individual Differences*. 1994; 17:719–722. [http://dx.doi.org/10.1016/0191-8869\(94\)90150-3](http://dx.doi.org/10.1016/0191-8869(94)90150-3).
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 4. Washington, DC: American Psychiatric Association; 2000. text rev
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 5. Arlington, VA: American Psychiatric Publishing; 2013.
- Andover MS, Pepper CM, Ryabchenko KA, Orrico EG, Gibb BE. Self-mutilation and symptoms of depression, anxiety, and borderline personality disorder. *Suicide & Life-Threatening Behavior*. 2005; 35:581–591. <http://dx.doi.org/10.1521/suli.2005.35.5.581>. [PubMed: 16268774]

- Andrews B, Qian M, Valentine JD. Predicting depressive symptoms with a new measure of shame: The Experience of Shame Scale. *British Journal of Clinical Psychology*. 2002; 41:29–42. <http://dx.doi.org/10.1348/014466502163778>. [PubMed: 11931676]
- Asparouhov T, Muthén B. Exploratory structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*. 2009; 16:397–438.
- Averill PM, Diefenbach GJ, Stanley MA, Breckenridge JK, Lusby B. Assessment of shame and guilt in a psychiatric sample: A comparison of two measures. *Personality and Individual Differences*. 2002; 32:1365–1376. [http://dx.doi.org/10.1016/S0191-8869\(01\)00124-6](http://dx.doi.org/10.1016/S0191-8869(01)00124-6).
- Ballard ED, Patel AB, Ward M, Lamis DA. Future disposition and suicidal ideation: Mediation by depressive symptom clusters. *Journal of Affective Disorders*. 2015; 170:1–6. <http://dx.doi.org/10.1016/j.jad.2014.08.029>. [PubMed: 25217757]
- Baumeister RF. Masochism as escape from self. *Journal of Sex Research*. 1988; 25:28–59. <http://dx.doi.org/10.1080/00224498809551444>.
- Bentler PM. Alpha, dimension-free, and model-based internal consistency reliability. *Psychometrika*. 2009; 74:137–143. <http://dx.doi.org/10.1007/s11336-008-9100-1>. [PubMed: 20161430]
- Bowen, NK., Guo, S. *Structural equation modeling*. New York, NY: Oxford University Press; 2012.
- Briere J, Gil E. Self-mutilation in clinical and general population samples: prevalence, correlates, and functions. *American journal of Orthopsychiatry*. 1998; 68:609–620. [PubMed: 9809120]
- Brown MZ, Comtois KA, Linehan MM. Reasons for suicide attempts and nonsuicidal self-injury in women with borderline personality disorder. *Journal of Abnormal Psychology*. 2002; 111:198–202. <http://dx.doi.org/10.1037/0021-843X.111.1.198>. [PubMed: 11866174]
- Brown MZ, Linehan MM, Comtois KA, Murray A, Chapman AL. Shame as a prospective predictor of self-inflicted injury in borderline personality disorder: A multi-modal analysis. *Behaviour Research and Therapy*. 2009; 47:815–822. <http://dx.doi.org/10.1016/j.brat.2009.06.008>. [PubMed: 19596223]
- Brown, S., Pirani, S., Lopez, I., Osman, A. The structure and evaluation of the Multidimensional Shame Response Inventory and its relationship to other psychological factors. Poster presented at the 15th Annual Biomedical Research Conference for Minority Students; Chicago, IL. 2015 Nov.
- Bryan CJ, Ray-Sannerud B, Morrow CE, Etienne N. Guilt is more strongly associated with suicidal ideation among military personnel with direct combat exposure. *Journal of Affective Disorders*. 2013; 148:37–41. <http://dx.doi.org/10.1016/j.jad.2012.11.044>. [PubMed: 23232420]
- Cheung MWL. Constructing approximate confidence intervals for parameters with structural equation models. *Structural Equation Modeling*. 2009; 16:267–294. <http://dx.doi.org/10.1080/10705510902751291>.
- Chou CP, Bentler PM. Model modification in structural equation modeling by imposing constraints. *Computational Statistics & Data Analysis*. 2002; 41:271–287. [http://dx.doi.org/10.1016/S0167-9473\(02\)00097-X](http://dx.doi.org/10.1016/S0167-9473(02)00097-X).
- Cicchetti DV. Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*. 1994; 6:284–290.
- Cohen TR, Panter AT, Turan N. Guilt proneness and moral character. *Current Directions in Psychological Science*. 2012; 21:355–359. <http://dx.doi.org/10.1177/0963721412454874>.
- Cole DA, Preacher KJ. Manifest variable path analysis: Potentially serious and misleading consequences due to uncorrected measurement error. *Psychological Methods*. 2014; 19:300–315. <http://dx.doi.org/10.1037/a0033805>. [PubMed: 24079927]
- Cook, DR. Empirical studies of shame and guilt: The Internalized Shame Scale. In: Nathanson, DL., editor. *Knowing feeling: Affect, script, and psychotherapy*. New York, NY: Norton; 1996. p. 132–165.
- Costello AB, Osborne JW. Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*. 2005; 10:1–9.
- Covert MV, Tangney JP, Maddux JE, Heleno NM. Shame-proneness, guilt-proneness, and interpersonal problem solving: A social cognitive analysis. *Journal of Social and Clinical Psychology*. 2003; 22:1–12. <http://dx.doi.org/10.1521/jscp.22.1.1.22765>.
- Darche MA. Psychological factors differentiating self-mutilating and non-self-mutilating adolescent inpatient females. *Psychiatric Hospital*. 1990; 21:31–35.

- de Hooge IE, Breugelmans SM, Zeelenberg M. Not so ugly after all: When shame acts as a commitment device. *Journal of Personality and Social Psychology*. 2008; 95:933–943. <http://dx.doi.org/10.1037/a0011991>. [PubMed: 18808269]
- DiClemente RJ, Ponton LE, Hartley D. Prevalence and correlates of cutting behavior: Risk for HIV transmission. *Journal of the American Academy of Child & Adolescent Psychiatry*. 1991; 30:735–739. [PubMed: 1938787]
- Dimitrov DM. Testing for factorial invariance in the context of construct validation. *Measurement & Evaluation in Counseling & Development*. 2010; 43:121–149. <http://dx.doi.org/10.1177/0748175610373459>.
- Durlak JA. How to select, calculate, and interpret effect sizes. *Journal of Pediatric Psychology*. 2009; 34:917–928. <http://dx.doi.org/10.1093/jpepsy/jsp004>. [PubMed: 19223279]
- Evans E, Hawton K, Rodham K. In what ways are adolescents who engage in self-harm or experience thoughts of self-harm different in terms of help-seeking, communication and coping strategies? *Journal of Adolescence*. 2005; 28:573–587. <http://dx.doi.org/10.1016/j.adolescence.2004.11.001>. [PubMed: 16022890]
- Fortune S, Sinclair J, Hawton K. Help-seeking before and after episodes of self-harm: A descriptive study in school pupils in England. *BMC Public Health*. 2008; 8:369. <http://dx.doi.org/10.1186/1471-2458-8-369>. [PubMed: 18947435]
- Gilbert, P. What is shame? Some core issues and controversies. In: Gilbert, P., Andrews, B., editors. *Shame: Interpersonal behavior, psychopathology, and culture*. New York, NY: Oxford University Press; 1998. p. 3-38.
- Gratz KL. Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. *Journal of Psychopathology and Behavioral Assessment*. 2001; 23:253–263. <http://dx.doi.org/10.1023/A:1012779403943>.
- Gratz KL, Roemer L. Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*. 2004; 26:41–54. <http://dx.doi.org/10.1023/B:JOBA.0000007455.08539.94>.
- Gutierrez PM, Osman A, Barrios FX, Kopper BA. Development and initial validation of the Self-harm Behavior Questionnaire. *Journal of Personality Assessment*. 2001; 77:475–490. http://dx.doi.org/10.1207/S15327752JPA7703_08. [PubMed: 11781034]
- Hampton NZ, Sharp SE. Shame-focused attitudes toward mental health problems: The role of gender and culture. *Rehabilitation Counseling Bulletin*. 2014; 57:170–181. <http://dx.doi.org/10.1177/0034355213501722>.
- Harder DH, Zalma A. Two promising shame and guilt scales: A construct validity comparison. *Journal of Personality Assessment*. 1990; 55:729–745. <http://dx.doi.org/10.1080/00223891.1990.9674108>. [PubMed: 2280336]
- Haynes SN, Lench HC. Incremental validity of new clinical assessment measures. *Psychological Assessment*. 2003; 15:456–466. <http://dx.doi.org/10.1037/1040-3590.15.4.456>. [PubMed: 14692842]
- Heatherton TF, Baumeister RF. Binge eating as escape from self-awareness. *Psychological Bulletin*. 1991; 110:86–108. <http://dx.doi.org/10.1037/0033-2909.110.1.86>. [PubMed: 1891520]
- Herpertz S. Self-injurious behaviour. Psychopathological and nosological characteristics in subtypes of self-injurers. *Acta Psychiatrica Scandinavica*. 1995; 91:57–68. <http://dx.doi.org/10.1111/j.1600-0447.1995.tb09743.x>. [PubMed: 7754789]
- Hunsley J, Meyer GJ. The incremental validity of psychological testing and assessment: Conceptual, methodological, and statistical issues. *Psychological Assessment*. 2003; 15:446–455. <http://dx.doi.org/10.1037/1040-3590.15.4.446>. [PubMed: 14692841]
- Kamphuis JH, Ruyling SB, Reijntjes AHA. Testing the emotion regulation hypothesis among self-injuring females: Evidence for differences across mood states. *Journal of Nervous and Mental Disease*. 2007; 195:912–918. <http://dx.doi.org/10.1097/NMD.0b013e3181593d89>. [PubMed: 18000453]

- Kim S, Thibodeau R, Jorgensen RS. Shame, guilt, and depressive symptoms: A meta-analytic review. *Psychological Bulletin*. 2011; 137:68–96. <http://dx.doi.org/10.1037/a0021466>. [PubMed: 21219057]
- Klonsky ED, Muehlenkamp JJ. Self-injury: A research review for the practitioner. *Journal of Clinical Psychology*. 2007; 63:1045–1056. <http://dx.doi.org/10.1002/jclp.20412>. [PubMed: 17932985]
- Klonsky ED, Oltmanns TF, Turkheimer E. Deliberate self-harm in a nonclinical population: Prevalence and psychological correlates. *The American Journal of Psychiatry*. 2003; 160:1501–1508. <http://dx.doi.org/10.1176/appi.ajp.160.8.1501>. [PubMed: 12900314]
- Kölves K, Ide N, De Leo D. Marital breakdown, shame, and suicidality in men: A direct link? *Suicide & Life-Threatening Behavior*. 2011; 41:149–159. <http://dx.doi.org/10.1111/j.1943-278X.2011.00021.x>. [PubMed: 21470294]
- Krueger, RF., Derringer, J., Markon, KE., Watson, D., Skodol, AE. *The Personality Inventory for DSM-5—Brief Form (PID-5-BF)—Adult*. Washington, DC: American Psychiatric Association; 2013.
- Lacey JH. Self-damaging and addictive behaviour in bulimia nervosa. *A catchment area study*. *The British Journal of Psychiatry*. 1993; 163:190–194. [PubMed: 8075910]
- Laye-Gindhu A, Schonert-Reichl KA. Nonsuicidal self-harm among community adolescents: Understanding the “whats” and “whys” of self-harm. *Journal of Youth and Adolescence*. 2005; 34:447–457. <http://dx.doi.org/10.1007/s10964-005-7262-z>.
- Leith KP, Baumeister RF. Empathy, shame, guilt, and narratives of interpersonal conflicts: Guilt-prone people are better at perspective taking. *Journal of Personality*. 1998; 66:1–37. <http://dx.doi.org/10.1111/1467-6494.00001>.
- Lester D. The association of shame and guilt with suicidality. *The Journal of Social Psychology*. 1998; 138:535–536. <http://dx.doi.org/10.1080/00224549809600407>. [PubMed: 9664867]
- Lewis, M. *Shame: The exposed self*. New York, NY: Simon and Schuster; 1995.
- Lloyd, EE., Kelley, ML., Hope, T. Self-mutilation in a community sample of adolescents: Descriptive characteristics and provisional prevalence rates. Poster presented at the Annual Meeting of the Society for Behavioral Medicine; New Orleans, LA. 1997 Apr.
- Lloyd-Richardson EE, Perrine N, Dierker L, Kelley ML. Characteristics and functions of non-suicidal self-injury in a community sample of adolescents. *Psychological Medicine*. 2007; 37:1183–1192. <http://dx.doi.org/10.1017/S003329170700027X>. [PubMed: 17349105]
- Luby J, Belden A, Sullivan J, Hayen R, McCadney A, Spitznagel E. Shame and guilt in preschool depression: Evidence for elevations in self-conscious emotions in depression as early as age 3. *Journal of Child Psychology and Psychiatry*. 2009; 50:1156–1166. <http://dx.doi.org/10.1111/j.1469-7610.2009.02077.x>. [PubMed: 19490311]
- Lutwak N, Panish J, Ferrari J. Shame and guilt: Character-ological vs. behavioral self-blame and their relationship to fear of intimacy. *Personality and Individual Differences*. 2003; 35:909–916.
- Luyten P, Fontaine JRJ, Corveleyn J. Does the Test of Self-Conscious Affect (TOSCA) measure maladaptive aspects of guilt and adaptive aspects of shame? An empirical investigation. *Personality and Individual Differences*. 2002; 33:1373–1387. [http://dx.doi.org/10.1016/S0191-8869\(02\)00197-6](http://dx.doi.org/10.1016/S0191-8869(02)00197-6).
- Mackenzie C, Knox VJ, Gekoski WL, Macaulay HL. An adaptation and extension of the Attitudes Towards Seeking Professional Psychological Help Scale. *Journal of Applied Social Psychology*. 2004; 34:2410–2435. <http://dx.doi.org/10.1111/j.1559-1816.2004.tb01984.x>.
- Manca M, Presaghi F, Cerutti R. Clinical specificity of acute versus chronic self-injury: Measurement and evaluation of repetitive non-suicidal self-injury. *Psychiatry Research*. 2014; 215:111–119. <http://dx.doi.org/10.1016/j.psychres.2013.10.010>. [PubMed: 24210667]
- Mansolf M, Reise SP. Exploratory bifactor analysis: The Schmid-Leiman Orthogonalization and Jennrich-Bentler analytic rotations. *Multivariate Behavioral Research*. 2016; 51:698–717. <http://dx.doi.org/10.1080/00273171.2016.1215898>. [PubMed: 27612521]
- Marsh HW, Hau KT, Wen Z. In search of golden rules: Comment on hypothesis testing approaches to setting cutoff values for fit indexes and dangers of overgeneralizing Hu and Bentler’s (1999) findings. *Structural Equation Modeling*. 2004; 11:320–341. http://dx.doi.org/10.1207/s15328007sem1103_2.

- Meijer RR, Baneke JJ. Analyzing psychopathology items: A case for nonparametric item response theory modeling. *Psychological Methods*. 2004; 9:354–368. <http://dx.doi.org/10.1037/1082-989X.9.3.354>. [PubMed: 15355153]
- Michl P, Meindl T, Meister F, Born C, Engel RR, Reiser M, Hennig-Fast K. Neurobiological underpinnings of shame and guilt: A pilot fMRI study. *Social Cognitive and Affective Neuroscience*. 2014; 9:150–157. <http://dx.doi.org/10.1093/scan/nss114>. [PubMed: 23051901]
- Milligan R, Andrews B. Suicidal and other self-harming behaviour in offender women: The role of shame, anger and childhood abuse. *Legal and Criminological Psychology*. 2005; 10:13–25. <http://dx.doi.org/10.1348/135532504X15439>.
- Miranda R, Nolen-Hoeksema S. Brooding and reflection: Rumination predicts suicidal ideation at 1-year follow-up in a community sample. *Behaviour Research and Therapy*. 2007; 45:3088–3095. <http://dx.doi.org/10.1016/j.brat.2007.07.015>. [PubMed: 17825248]
- Morin AJ, Arens AK, Marsh HW. A bifactor exploratory structural equation modeling framework for the identification of distinct sources of construct-relevant psychometric multidimensionality. *Structural Equation Modeling*. 2016; 23:116–139. <http://dx.doi.org/10.1080/10705511.2014.961800>.
- Muehlenkamp JJ, Walsh BW, McDade M. Preventing non-suicidal self-injury in adolescents: The signs of self-injury program. *Journal of Youth and Adolescence*. 2010; 39:306–314. <http://dx.doi.org/10.1007/s10964-009-9450-8>. [PubMed: 19756992]
- Muthén, L., Muthén, B. *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén; 1998–2013.
- Nixon MK, Cloutier P, Jansson SM. Nonsuicidal self-harm in youth: A population-based survey. *Canadian Medical Association Journal*. 2008; 178:306–312. <http://dx.doi.org/10.1503/cmaj.061693>. [PubMed: 18227450]
- Nock MK. Self-injury. *Annual Review of Clinical Psychology*. 2010; 6:339–363. <http://dx.doi.org/10.1146/annurev.clinpsy.121208.131258>.
- Nock MK, Holmberg EB, Photos VI, Michel BD. Self-Injurious Thoughts and Behaviors Interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment*. 2007; 19:309–317. <http://dx.doi.org/10.1037/1040-3590.19.3.309>. [PubMed: 17845122]
- Nock MK, Joiner TE Jr, Gordon KH, Lloyd-Richardson E, Prinstein MJ. Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. *Psychiatry Research*. 2006; 144:65–72. <http://dx.doi.org/10.1016/j.psychres.2006.05.010>. [PubMed: 16887199]
- Nock MK, Prinstein MJ. A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology*. 2004; 72:885–890. [PubMed: 15482046]
- O'Connor RC, Noyce R. Personality and cognitive processes: Self-criticism and different types of rumination as predictors of suicidal ideation. *Behaviour Research and Therapy*. 2008; 46:392–401. <http://dx.doi.org/10.1016/j.brat.2008.01.007>. [PubMed: 18308293]
- Osman A, Bagge CL, Gutierrez PM, Konick LC, Kopper BA, Barrios FX. The Suicidal Behaviors Questionnaire-Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*. 2001; 8:443–454. <http://dx.doi.org/10.1177/107319110100800409>. [PubMed: 11785588]
- Osman A, Barrios FX, Gutierrez PM, Wrangham JJ, Kopper BA, Truelove RS, Linden SC. The Positive and Negative Suicide Ideation (PANSI) inventory: Psychometric evaluation with adolescent psychiatric inpatient samples. *Journal of Personality Assessment*. 2002; 79:512–530. http://dx.doi.org/10.1207/S15327752JPA7903_07. [PubMed: 12511018]
- Osman, A., Freedenthal, S., Bagge, CL., Gutierrez, PM., Wong, JL. The Multidimensional Shame-Related Response Inventory-21 (MSRI-21): Construction and psychometric properties. Unpublished manual. San Antonio, TX: Department of Psychology, The University of Texas at San Antonio; 2014.
- Osman A, Gutierrez PM, Barrios F, Wong JL, Freedenthal S, Lozano G. Development and initial psychometric properties of the University of Texas at San Antonio Future Disposition Inventory. *Journal of Clinical Psychology*. 2010a; 66:410–429. [PubMed: 20120012]
- Osman A, Gutierrez PM, Wong JL, Freedenthal S, Bagge CL, Smith KD. Development and psychometric evaluation of the Suicide Anger Expression Inventory—28. *Journal of Psychopathology and Behavioral Assessment*. 2010b; 32:595–608. <http://dx.doi.org/10.1007/s10862-010-9186-5>.

- Osman A, Kopper BA, Barrios F, Gutierrez PM, Bagge CL. Reliability and validity of the Beck depression inventory—II with adolescent psychiatric inpatients. *Psychological Assessment*. 2004; 16:120–132. <http://dx.doi.org/10.1037/1040-3590.16.2.120>. [PubMed: 15222808]
- Pinnock, N., Joseph, K., Sagastume, A., Gonzalez, A., Osman, A. Validation of scores on the Multi-Dimensional Shame-related Response Inventory. Poster presented at the 14th Annual Biomedical Research Conference for Minority Students; San Antonio, TX. 2014 Nov.
- Pirani, S., Garcia, AF., Acosta, M., Osman, A. The Multidimensional Shame-related Response Inventory-21 (MSRI-21): Development and Psychometric Properties. Poster presented at the 28th Annual Convention of the Association for Psychological Science; Chicago, IL. 2016 May.
- Quinn, HOC. Doctoral dissertation. The University of North Carolina; Chapel Hill: 2014. Bifactor models, explained common variance (ECV), and the usefulness of scores from unidimensional item response theory analyses.
- Raykov T, Marcoulides GA. A direct latent variable modeling method for point estimation of coefficient alpha. *Educational and Psychological Measurement*. 2015; 75:146–156. <http://dx.doi.org/10.1177/0013164414526039>.
- Reise SP. The rediscovery of bifactor measurement models. *Multivariate Behavioral Research*. 2012; 47:667–696. <http://dx.doi.org/10.1080/00273171.2012.715555>. [PubMed: 24049214]
- Reise, SP., Moore, TM., Haviland, MG. Applying unidimensional item response theory models to psychological data. In: Geisinger, K., editor. *APA handbook of testing and assessment in psychology*. Washington, DC: American Psychological Association; 2010. p. 109-119.
- Reise SP, Scheines R, Widaman KF, Haviland MG. Multidimensionality and structural coefficient bias in structural equation modeling: A bifactor perspective. *Educational and Psychological Measurement*. 2013; 73:5–26. <http://dx.doi.org/10.1177/0013164412449831>.
- Reise SP, Waller NG. Item response theory and clinical measurement. *Annual Review of Clinical Psychology*. 2009; 5:27–48. <http://dx.doi.org/10.1146/annurev.clinpsy.032408.153553>.
- Rizvi SL. Development and preliminary validation of a new measure to assess shame: The Shame Inventory. *Journal of Psychopathology and Behavioral Assessment*. 2010; 32:438–447. <http://dx.doi.org/10.1007/s10862-009-9172-y>.
- Rodham K, Hawton K, Evans E. Reasons for deliberate self-harm: Comparison of self-poisoners and self-cutters in a community sample of adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2004; 43:80–87. <http://dx.doi.org/10.1097/00004583-200401000-00017>. [PubMed: 14691363]
- Rüsch N, Corrigan PW, Bohus M, Jacob GA, Brueck R, Lieb K. Measuring shame and guilt by self-report questionnaires: A validation study. *Psychiatry Research*. 2007; 150:313–325. <http://dx.doi.org/10.1016/j.psychres.2006.04.018>. [PubMed: 17320971]
- Rüsch N, Müller M, Ajdacic-Gross V, Rodgers S, Corrigan PW, Rössler W. Shame, perceived knowledge and satisfaction associated with mental health as predictors of attitude patterns towards help-seeking. *Epidemiology and Psychiatric Sciences*. 2014; 23:177–187. <http://dx.doi.org/10.1017/S204579601300036X>. [PubMed: 23866069]
- Satorra A, Bentler PM. A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*. 2001; 66:507–514. <http://dx.doi.org/10.1007/BF02296192>.
- Schmitz TW, Kawahara-Baccus TN, Johnson SC. Metacognitive evaluation, self-relevance, and the right prefrontal cortex. *NeuroImage*. 2004; 22:941–947. <http://dx.doi.org/10.1016/j.neuroimage.2004.02.018>. [PubMed: 15193625]
- Schoenleber M, Berenbaum H. Shame regulation in personality pathology. *Journal of Abnormal Psychology*. 2012a; 121:433–446. <http://dx.doi.org/10.1037/a0025281>. [PubMed: 21895346]
- Schoenleber M, Berenbaum H. Aversion and proneness to shame in self- and informant-reported personality disorder symptoms. *Personality Disorders*. 2012b; 3:294–304. <http://dx.doi.org/10.1037/a0025654>. [PubMed: 22452760]
- Schoenleber M, Berenbaum H, Motl R. Shame-related functions of and motivations for self-injurious behavior. *Personality Disorders*. 2014; 5:204–211. <http://dx.doi.org/10.1037/per0000035>. [PubMed: 24364497]

- Shamblaw AL, Botha FB, Dozois DJA. Accounting for differences in depression stigma between Canadian Asians and Europeans. *Journal of Cross-Cultural Psychology*. 2015; 46:597–611. <http://dx.doi.org/10.1177/0022022115575076>.
- Sijtsma K. On the use, the misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika*. 2009; 74:107–120. <http://dx.doi.org/10.1007/s11336-008-9101-0>. [PubMed: 20037639]
- Smith RH, Webster JM, Parrott WG, Eyre HL. The role of public exposure in moral and nonmoral shame and guilt. *Journal of Personality and Social Psychology*. 2002; 83:138–159. <http://dx.doi.org/10.1037/0022-3514.83.1.138>. [PubMed: 12088123]
- Stuss DT, Levine B. Adult clinical neuropsychology: Lessons from studies of the frontal lobes. *Annual Review of Psychology*. 2002; 53:401–433. <http://dx.doi.org/10.1146/annurev.psych.53.100901.135220>.
- Stuss, DT., Picton, TW., Alexander, MP. Consciousness, self-awareness, and the frontal lobes. In: Salloway, SP, Malloy, PF., Duffy, JD., editors. *The frontal lobes and neuropsychiatric illness*. Arlington, VA: American Psychiatric Publishing; 2001. p. 101-109.
- Tangney JP. Assessing individual differences in proneness to shame and guilt: Development of the Self-Conscious Affect and Attribution Inventory. *Journal of Personality and Social Psychology*. 1990; 59:102–111. <http://dx.doi.org/10.1037/0022-3514.59.1.102>. [PubMed: 2213483]
- Tangney JP. Situational determinants of shame and guilt in young adulthood. *Personality and Social Psychology Bulletin*. 1992; 18:199–206. <http://dx.doi.org/10.1177/0146167292182011>.
- Tangney, JP., Dearing, RL., Wagner, PE., Gramzow, R. *The Test of Self-Conscious Affect-3 (TOSCA-3)*. Fairfax, VA: George Mason University; 2000.
- Tangney JP, Miller RS, Flicker L, Barlow DH. Are shame, guilt, and embarrassment distinct emotions? *Journal of Personality and Social Psychology*. 1996; 70:1256–1269. <http://dx.doi.org/10.1037/0022-3514.70.6.1256>. [PubMed: 8667166]
- Tangney JP, Niedenthal PM, Covert MV, Barlow DH. Are shame and guilt related to distinct self-discrepancies? A test of Higgins's (1987) hypotheses. *Journal of Personality and Social Psychology*. 1998; 75:256–268. <http://dx.doi.org/10.1037/0022-3514.75.1.256>. [PubMed: 9686463]
- Tangney JP, Wagner P, Fletcher C, Gramzow R. Shamed into anger? The relation of shame and guilt to anger and self-reported aggression. *Journal of Personality and Social Psychology*. 1992; 62:669–675. [PubMed: 1583590]
- Tangney JP, Wagner PE, Hill-Barlow D, Marschall DE, Gramzow R. Relation of shame and guilt to constructive versus destructive responses to anger across the lifespan. *Journal of Personality and Social Psychology*. 1996; 70:797–809. <http://dx.doi.org/10.1037/0022-3514.70.4.797>. [PubMed: 8636899]
- ten Berge JMF, So an G. The greatest lower bound to the reliability of a test and the hypothesis of unidimensionality. *Psychometrika*. 2004; 69:613–625. <http://dx.doi.org/10.1007/BF02289858>.
- Thomas ML. The value of item response theory in clinical assessment: A review. *Assessment*. 2011; 18:291–307. <http://dx.doi.org/10.1177/1073191110374797>. [PubMed: 20644081]
- Tomarken AJ, Waller NG. Potential problems with “well fitting” models. *Journal of Abnormal Psychology*. 2003; 112:578–598. <http://dx.doi.org/10.1037/0021-843X.112.4.578>. [PubMed: 14674870]
- Tucker JR, Hammer JH, Vogel DL, Bitman RL, Wade NG, Maier EJ. Disentangling self-stigma: Are mental illness and help-seeking self-stigmas different? *Journal of Counseling Psychology*. 2013; 60:520–531. <http://dx.doi.org/10.1037/a0033555>. [PubMed: 23815629]
- VanDerhei S, Rojahn J, Stuewig J, McKnight PE. The effect of shame-proneness, guilt-proneness, and internalizing tendencies on nonsuicidal self-injury. *Suicide & Life-Threatening Behavior*. 2014; 44:317–330. <http://dx.doi.org/10.1111/sltb.12069>. [PubMed: 24313627]
- Wester KL, Ivers N, Villalba JA, Trepal HC, Henson R. The relationship between nonsuicidal self-injury and suicidal ideation. *Journal of Counseling and Development*. 2016; 94:3–12. <http://dx.doi.org/10.1002/jcad.12057>.
- Whitlock J, Eckenrode J, Silverman D. Self-injurious behaviors in a college population. *Pediatrics*. 2006; 117:1939–1948. <http://dx.doi.org/10.1542/peds.2005-2543>. [PubMed: 16740834]

- Wicker FW, Payne GC, Morgan RD. Participant descriptions of guilt and shame. *Motivation and Emotion*. 1983; 7:25–39. <http://dx.doi.org/10.1007/BF00992963>.
- Xavier A, Gouveia JP, Cunha M. Non-suicidal self-injury in adolescence: The role of shame, self-criticism and fear of self-compassion. *Child and Youth Care Forum*. 2016; 45:571–586. <http://dx.doi.org/10.1007/s10566-016-9346-1>.

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Public Significance Statement

This project evaluates a new self-report inventory (MSRI-21) that measures maladaptive responses to shame, including distress, self-injurious behaviors, and reluctance to seek professional help. The current results suggest that the MSRI-21 is a reliable and valid measure of shame-related responses, and is viable for research and clinical use.

Table 1

Factor Loadings From Exploratory Structural Equation Modeling (ESEM) of Scores on the Multidimensional Shame-Related Response Inventory-21, Study 1 (N = 743)

Item No.	Description	F ₁	F ₂	F ₃
Negative Self-Evaluation (NSE)				
4	When I experience feelings of shame, I usually feel awful or terrible inside.	.73	.05	.01
10	When I experience feelings of shame, I feel quite angry and unsure of myself.	.73	.14	-.02
1	When I experience feelings of shame, I often feel worse about myself.	.82	-.03	-.09
13	When I have feelings of shame, I feel extremely inferior to others.	.77	.04	.06
19	When I experience feelings of shame, I continuously dwell on my failures.	.80	-.01	.07
8	When I experience feelings of shame, I feel intensely like a failure.	.81	-.01	.09
16	When I have feelings of shame, I experience strong feelings of personal inadequacy.	.86	.00	.01
Maladaptive Behavior Tendency (MBT)				
3	When I experience feelings of shame, I react intensely by harming myself physically and on purpose (<i>no desire to die</i>).	.01	.83	-.01
6	Harming myself physically and on purpose (<i>no desire to die</i>), helps me take my mind off feelings of shame.	-.04	.84	.04
9	Harming myself physically and on purpose (<i>no desire to die</i>), helps me escape from intense feelings of shame.	-.06	.85	.05
18	When I have feelings of shame, I try to think of doing something to harm myself physically and on purpose (<i>no desire to die</i>).	.05	.85	-.05
21	Most of the time if I have feelings of shame, I deal with it by harming myself physically and on purpose (<i>no desire to die</i>).	-.05	.85	.02
12	When I experience feelings of shame, I feel a strong urge to harm or hurt myself physically and on purpose (<i>no desire to die</i>).	.01	.86	.02
15	When I experience feelings of shame, I think of different ways of harming myself physically and on purpose (<i>no desire to die</i>).	.08	.87	-.06
Fear of Social Consequences (FSC)				
2	Because of fear of being shamed, I do not see myself as ever relying on another person for help or support.	.21	.00	.49
5	Because of fear of being shamed, it is difficult for me to talk to someone about emotionally painful experiences or memories.	.29	.04	.52
17	Because of fear of being shamed, it is very unlikely that I would ever seek support for thoughts of harming myself if I had them.	.07	.07	.71
14	Because of fear of being shamed, it is unlikely that I would ever admit to experiencing an emotional breakdown if I had one.	.03	-.10	.82
7	I would feel considerable shame if I were to seek out support for a traumatic event.	.01	.02	.83
20	Because of fear of being shamed, it is very unlikely that I would ever seek help for an emotional breakdown if I had one.	-.02	-.02	.91
11	Because of fear of being shamed, it is very unlikely that I would ever seek support if I had a mental breakdown.	-.01	-.13	.94

Note. Direct oblimin rotation with robust maximum likelihood (MLR) estimation. Interfactor correlations were as follows: F1 (NSE), F2 (MBT) = .31; F1 (NSE), F3 (FSC) = .59; F2 (MBT), F3 (FSC) = .45. Items © Osman, Freedenthal, Bagge, Gutierrez, and Wong (2014). Factor loadings .40 are shown in boldface.

Table 2

Descriptive Statistics for Study 2 (N = 540)

	M	SD	Sk	Kur
MSRI-NSE	16.21	7.71	.65	-.50
MSRI-FSC	13.03	6.70	1.24	.80
MSRI-MBT	8.84	4.59	3.02	9.37
SAEI-ME	13.76	5.63	.95	.52
SAEI-RD	15.47	6.70	.68	-.29
SAEI-SR	8.89	4.40	3.18	11.10
SBQ-R	5.15	2.84	1.49	1.65
FASM	3.52	6.98	2.49	6.06
FDI-SO	10.79	5.83	2.82	8.11
FDI-NF	16.54	7.07	1.14	.97
PFQ-2 Shame	15.65	7.25	.42	-.02
PFQ-2 Guilt	7.16	4.41	.44	-.01
PID-5-BF-NAF	1.23	.77	.18	-.84
PID-5-BF-DTC	.63	.58	1.03	.73
PID-5-BF-ANT	.50	.56	1.36	1.45
PID-5-BF-DIS	.74	.64	.81	.00
PID-5-BF-PSY	.90	.75	.64	-.47

Note. MSRI = Multidimensional Shame Response Inventory-21; NSE = Negative Self-Evaluation; FSC = Fear of Social Consequences; MBT = Maladaptive Behavior Tendency; SAEI = Suicide Anger Expression Inventory-28; ME = Maladaptive Expression; RD = Reactive Distress; SR = Suicide Rumination; SBQ-R = Suicide Behaviors Questionnaire-Revised; FASM = Functional Assessment of Self-Mutilation; FDI = Future Disposition Inventory-24; SO = Suicide Orientation; NF = Negative Focus; PFQ = Personal Feelings Questionnaire-2; PID-5-BF = Personality Inventory for *DSM-5*-Brief Form; NAF = Negative Affect; DTC = Detachment; ANT = Antagonism; DIS = Disinhibition; PSY = Psychoticism.

Fit Indices for Oblique 3-Factor CFA Model of Scores on the MSRI-21 Items, Study 2 (N = 540)

Table 3

	N	χ^2	df	CFI	TLI	RMSEA	90% CI for RMSEA		
							LL	UL	UL
Men	163	304.42 *	186	.93	.92	.06	.05	.05	.08
Women	377	454.17 *	186	.92	.91	.06	.06	.06	.07
Full sample	540	444.43 *	186	.94	.94	.05	.05	.05	.06

Note. Maximum Likelihood Robust (MLR) estimator.

* $p < .001$.

Table 4
Standardized Path Coefficients With 95% Confidence Intervals From Latent Variable Modeling of Scores on the MSRI-21 and Concurrent Measures, Study 2 (N = 540)

IVs	MSRI-NSE		MSRI-MBT		MSRI-FSC	
	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
SAEI-ME	.55 [.37, .73]	.000	.06 [-.05, .18]	.307	-.08 [-.27, .11]	.411
SAELRD	.76 [.62, .89]	.000	-.03 [-.14, .08]	.566	.03 [-.12, .19]	.664
SAEI-SR	.25 [.09, .40]	.002	.71 [.60, .81]	.000	-.04 [-.21, .13]	.660
SBQ-R	.43 [.26, .59]	.000	.43 [.31, .55]	.000	-.06 [-.24, .12]	.505
FASM	.28 [.13, .44]	.001	.53 [.41, .65]	.000	-.13 [-.28, .02]	.098
FDI-SO	.25 [.09, .41]	.002	.61 [.49, .73]	.000	.01 [-.17, .18]	.916
FDI-NF	.59 [.43, .76]	.000	.17 [.05, .28]	.005	.06 [-.12, .24]	.498
PFQ-2 Shame	.69 [.57, .82]	.000	.02 [-.08, .12]	.705	-.05 [-.20, .10]	.513
PFQ-2 Guilt	.39 [.25, .53]	.000	.11 [.00, .22]	.042	.03 [-.11, .17]	.688
PID-5-BF-NAF	.70 [.57, .83]	.000	.02 [-.08, .11]	.731	.06 [-.10, .22]	.441
PID-5-BF-DTC	.33 [.14, .53]	.001	.27 [.15, .39]	.000	.35 [.17, .53]	.000
PID-5-BF-ANT	.23 [.06, .39]	.007	.12 [-.01, .26]	.065	.06 [-.12, .24]	.410
PID-5-BF-DIS	.38 [.20, .56]	.000	.00 [-.13, .13]	.986	.02 [-.14, .24]	.590
PID-5-BF-PSY	.56 [.39, .74]	.000	.06 [-.07, .19]	.383	.04 [-.14, .25]	.591

Note. Large effect sizes (.50) shown in boldface. Moderate effect sizes (.20 to .49) shown in italics. IVs = independent variables; DVs = dependent variables; MSRI = Multidimensional Shame Response Inventory; NSE = Negative Self-evaluation; FSC = Fear of Social Consequences; MBT = Maladaptive Behavior Tendency; SAEI = Suicide Anger Expression Inventory; SAEI-SR = Suicide Rumination; SAEI-RD = Reactive Distress; SAEI-ME = Maladaptive Expression; SBQ-R = Suicidal Behaviors Questionnaire-Revised; FASM = Functional Assessment of Self-mutilation; FDI = Future Disposition Inventory; SO = Suicide Orientation; NF = Negative Focus; PFQ-2 = Personal Feelings Questionnaire-2; PID-5-BF = Personality Inventory for DSM-5, Brief Form; NAF = Negative Affect; DTC = Detachment; ANT = Antagonism; DIS = Disinhibition; PSY = Psychoticism.