Published in final edited form as:

Psychol Assess. 2014 December ; 26(4): 1205–1211. doi:10.1037/pas0000017.

The Clinical Utility of the MMPI-2-RF Suicidal/Death Ideation Scale

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Abstract

Suicide is a major public health concern with over 100 individuals dying by suicide per day in the United States alone. Therefore, suicide risk assessment is an essential aspect of mental health care. The MMPI-2-RF has a Suicidal/Death Ideation (SUI) scale consisting of 5 items that describe recent suicidal ideation or behaviors. Although this scale has clear face validity, few studies have examined the clinical utility of this scale. The purpose of the current study was to examine associations between the SUI scale and other established measures of suicidal ideation and behavior, including the Depressive Symptom Inventory Suicidality Subscale (DSI-SS), Beck Scale for Suicide Ideation (BSS), self-report of lifetime suicide attempts, and clinician ratings of suicide risk. Participants were 998 therapy- and assessment-seeking outpatients. Analyses indicated that the SUI scale was positively associated with other self-reported measures of suicidal ideation and behavior. Significant differences in SUI scale scores also emerged among the clinician rating categories of suicide risk. The SUI scale was able to predict previous suicide attempts over and above age, gender, and other MMPI-2-RF scales related to depression. Finally, relative risk ratios for suicide attempts indicate increased risk of suicidality with higher T-scores on the SUI scale. Overall, findings suggest that the MMPI-2-RF SUI scale may be a useful tool for identifying individuals at risk for suicidal ideation and behavior in clinical settings.

Keywords

MMPI-2-RF; Suicide Risk Assessment; Classifying Suicide Risk

Suicide is a major public health concern with over 100 individuals dying by suicide per day in the United States alone (McIntosh & Drapeau, 2012). It is well established that severe or persistent suicidal ideation increases the risk for future suicide attempts and death by suicide (e.g., Brown, Beck, Steer, & Grisham, 2000; Lewinsohn, Rohde, Seeley, 1994) and research has shown that many individuals who attempt suicide have received some type of medical or mental health care in the months prior to attempting (Luoma, Martin, & Pearson, 2002). Thus, identification of individuals at risk for suicide through thorough suicide risk assessments is an essential aspect of mental health care.

The family of Minnesota Multiphasic Personality Inventory (MMPI) assessments, which include the original MMPI, the MMPI-2, and the MMPI-2-Restructured Form (MMPI-2-RF), has been reported to be one of the most frequently used instruments in suicide risk assessment research (Johnson, Lall, Bongar, & Nordlund, 1999), with a surge of research examining suicidality and MMPI profiles from the late 1960's to the early 1980's (Johnson et al., 1999). However, most of the studies during this time period concluded that the MMPI was unable to differentiate between individuals who attempted or died by suicide and individuals with suicidal ideation alone or between individuals with or without suicidal ideation (Clopton & Baucom, 1979; Clopton & Jones, 1975; Clopton, Post, & Larde, 1983; Daigle, 2004; Kinsinger, 1973; Pallis & Birtchnell, 1977; Ravensborg & Floss, 1969; Sendbuehler, Kincel, Nemeth, & Oertel, 1979).

Although most previous studies have been unable to differentiate individuals with and without suicidality (suicidal ideation and behavior), some studies have found significant differences in MMPI profiles in these groups. However, these studies have been inconsistent in terms of which scales have discriminated among suicidal vs. control groups. For example, in samples comparing individuals who died by suicide to those who did not, higher scores have been observed on Scale 1 (Hypochondriasis; Leonard, 1977), Scale 2 (Depression; Leonard, 1977), Scale 5 (Masculinity/Femininity; Leonard, 1977; Simon & Gilberstadt, 1958; Watson, Klett, Walters, & Vassar 1984), Scale 6 (Paranoia; Watson, Klett, Walters, & Laughlin, 1983), and Scale 0 (Social Introversion; Leonard, 1977), and lower scores have been observed on the K scale (Defensiveness; Leonard, 1977). Other studies have reported that individuals who have attempted suicide differ significantly from control groups on nearly all MMPI scales (Daigle, 2004; Pallis & Birtchnell, 1976), including higher scores on F (Infrequency) and lower scores on K compared to control groups (Tarter, Templer, & Perley, 1975). Similar patterns have emerged when comparing individuals with and without suicidal ideation such that suicidal ideation (without attempts) has been associated with elevations on scales F, 1, 4 (Psychopathic Deviate), 5, 8 (Schizophrenia), and 9 (Hypomania) (Waters, Sandbuehler, Kineel, Boodoosingh, & Marchenko, 1982). Taken together, the above findings highlight that there is no identifiable pattern or MMPI profile configuration that clearly differentiates individuals with suicide attempts, ideation, a completed suicide, or non-suicidal controls. This is likely due to the fact that individuals who experience suicidality are a heterogeneous group in regards to their diagnoses and clinical presentations (Nock, Hwang, Sampson, & Kessler, 2010), and thus would likely differ significantly on their MMPI profiles. Additionally, the base rate for suicide is relatively low (Brown et al., 2000), which represents another reason why these behaviors are often difficult to predict.

A better approach to examine suicide risk with the MMPI may be through the critical suicide items which ask face-valid questions related to suicide. Although it is not a standard MMPI-2 scale or included in the MMPI-2 manual, the Suicidal Potential Scale (SPS) was developed by Glassmire and colleagues (2001) for the MMPI-2 and included six critical items related to suicidal behavior and suicidal intent (Glassmire, Stolberg, Greene, & Bongar, 2001). Results from Glassmire and colleagues (2001) indicated that participants were more likely to report suicidal ideation or behavior on the MMPI-2 than during a telephone intake interview and that the SPS was a reliable assessment of suicidal behavior.

Another scale no longer available on the MMPI-2-RF is the Suicidal Ideation (DEP4) content component scale that assessed recent suicidal ideation (Graham, 2006). To our knowledge, very limited research has been conducted on the usefulness of this scale, with one study finding associations between the DEP4 and a history of suicide attempts, depression, hopelessness, and worthlessness (Green, Handel, & Archer, 2006). With the publication of the MMPI-2-RF in 2008 (Ben-Porath & Tellegen, 2008/2011), one of the items on the SPS was deleted and the inclusion of the new Suicidal/Death Ideation (SUI) scale made the SPS and the DEP4 scale unnecessary for the MMPI-2-RF.

The SUI scale is a specific problem scale on the MMPI-2-RF that includes five face-valid items about recent suicidal ideation or behavior (Ben-Porath & Tellegen, 2008/2011). Although this scale appears to be face valid and thus potentially useful in assessing suicidality in clinical settings, few studies to date have actually examined the clinical utility of the SUI scale. The MMPI-2- RF technical manual indicates small to moderate correlations between the SUI scale and a history of suicide attempts in outpatient males ($r=0.27$) and females ($r=0.39$) (Tellegen & Ben-Porath, 2008). Additionally, high scores on the SUI scale were correlated with a preoccupation with death and suicide, feelings of helplessness and hopelessness, and being at risk for suicide attempts (Ben-Porath & Tellegen, 2008/2011). Finally, a recent study examining bariatric surgery candidates reported that the overall classification rate of the SUI scale to identify individuals who had a previous suicide attempt was 84% (Tarescavage, et al., 2013). Although this classification accuracy is promising, much more research is needed to examine the clinical utility of the SUI scale in psychiatric patients.

The purpose of the current study was to further establish the clinical utility of the SUI scale by examining associations between the SUI scale and other established measures of suicidal ideation and behavior, including the Depressive Symptom Inventory Suicidality Subscale (DSI-SS; Metalsky & Joiner, 1997), Beck Scale for Suicide Ideation (BSS; Beck, Steer, & Ranieri, 1988), self-report of lifetime suicide attempts, and clinician ratings of suicide risk. Additionally, we aimed to examine whether the SUI scale provided incremental validity in identifying individuals reporting past suicide attempts over and above other MMPI-RF scales associated with depression. The accurate assessment of suicide risk is crucial. Given that many clinicians already administer the MMPI during intake, the SUI scale may provide an efficient means of assessing or verifying suicide risk in clinical settings.

Methods

Participants

The participants in the current study were outpatients seeking psychotherapy and assessment services from the psychology training clinic of a large, southeastern university from February 2004 to November 2011. The clinic serves the community and has minimal exclusionary criteria for obtaining services. Only individuals with unmanaged psychotic or manic symptoms that require hospitalization and individuals who are considered dangerous to self or others requiring immediate hospitalization are referred out. The final sample comprised 998 patients after excluding those described below in the exclusionary criteria section. The final sample included 543 females, 387 males, and 6 individuals who did not

specify gender. The average age of the sample was 26.87 (*SD* 9.95), with ages ranging from 18 to 65. See Table 1 for additional demographic information.

Measures

Descriptive statistics for all variables are reported in Table 2.

The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008/2011; Tellegen & Ben-Porath, 2008) is a 338-item true/false personality test designed to assess for psychopathology and individual personality characteristics. The MMPI-2-RF consists of six sets of scales: nine validity scales, three Higher-Order scales, nine Restructured Clinical (RC) scales, 23 Specific Problems Scales, two Interest scales, as well as a revised version of the Personality Psychopathology Five-Revised (PSY-5; Harkness, McNulty, & Ben-Porath, 1995). Psychometric properties and external correlates for all scales are available in the MMPI-2-RF technical manual (Tellegen & Ben-Porath, 2008). All analyses reported in the current study used the raw scores of the MMPI-2-RF scales. T-scores are also reported when applicable. As the current study was interested in studying scales related to suicidal behavior, the Suicidal/Death Ideation (SUI) scale was of primary interest. Additionally, other scales which were reported by the manual to be related to suicidal behavior were used as control variables in analyses. These scales included RCd (Demoralization), RC2 (Low Positive Emotions), Helplessness/Hopelessness (HLP), Self Doubt (SFD), Inefficacy (NFC), and Introversion-revised (INTR-r). Emotional/Internalizing Dysfunction (EID) was not included as a covariate due to item overlap with the SUI scale.

The **Suicide Potential Scale** (SPS; Glassmire et al., 2001) is a six question scale assessing suicidal behavior using questions from the MMPI-2. As indicated, this is not a standard scale on the MMPI-2 and is not included in the administration manual. Because our participants completed the MMPI-2 and the scores were transformed into RF scores, we were able to calculate the SPS scores. In the current sample, the SPS demonstrated adequate internal consistency ($\alpha=0.70$).

The **Depressive Symptom Inventory–Suicidality Subscale (DSI-SS; Metalsky & Joiner, 1991)** is a subscale from a larger scale of depression, the Hopelessness Depression Symptom Questionnaire. The DSI-SS is a four-item measure of the frequency and intensity of suicidal ideation and urges that have occurred during the past two weeks. Items are rated from 0 to 3, with higher scores reflecting greater severity of suicidal ideation. The DSI-SS demonstrated good internal consistency in the current sample ($\alpha=0.80$).

The **Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991)** is a 21-item scale used to assess suicidal ideation and desire to die by suicide in the past week. Responses are scored using a 3-point Likert scale where possible responses range from 0 to 2, with higher numbers representing higher levels of suicide risk. The BSS demonstrated excellent internal consistency in the current sample ($\alpha=0.97$).

Previous suicide attempts—On the application for therapeutic services, patients were asked to indicate the number of previous suicide attempts. For the purposes of this study, responses were dichotomized into ‘previous attempt=1’ or ‘no previous attempts=0.’

Clinician Ratings of Suicide Risk—Clinicians rated each patient's suicide risk based on the framework outlined in Joiner, Walker, Rudd, & Jobes (1999). Patients were rated as *low* if they had no identifiable suicidal symptoms, were a multiple attempter with no other risk factors, or were a non-multiple attempter with suicide ideation of limited intensity and duration (e.g., fleeting thoughts of death). Patients were rated as *moderate* if they were a multiple attempter with other risk factors (e.g., any current stressor, low social support, psychiatric diagnosis, hopelessness, low feelings of belongingness), a non-multiple attempter with moderate to severe symptoms of resolved plans and preparation for suicide, or a non-multiple attempter with moderate to severe symptoms of suicidal ideation. Patients were rated as *severe* if they were a multiple attempter with other notable findings or with severe symptoms and resolved plans and preparation.

Exclusionary Criteria

MMPI scale scores were analyzed to determine validity. Based on Ben-Porath & Tellegen (2008/2011), protocols which met the following criteria were excluded from the final dataset: F-r scale T-scores ≥ 120 , Fp-r (Infrequent Psychopathology Responses) T-scores ≥ 100 , VRIN-r (Variable Response Inconsistency) Scale T-scores of 80 or above, TRIN-r (True Response Inconsistency Scale) T-scores of 80 or above, and Cannot Say (?/CS) raw scores of 18 or greater missing responses. Two profiles were excluded due to invalid CS score, 12 were excluded due to high VRIN scores, 27 were excluded due to TRIN, 37 were excluded due to high F-r scores, and 34 were excluded due to high Fp-r scores. Excluded and included participants did not significantly differ on level of education, gender, or Global Assessment of Functioning (GAF) scores. Excluded clients had significantly higher mean age [$F(1,1074) = 16.19, p < .001$]. The exclusionary criteria reduced our total sample size from 1,110 to 998.

Procedure

Data for this study were obtained through an ongoing data collection at the psychology training clinic of a large, southeastern university. At the first intake appointment, each participant consented to have their anonymized data archived for future study. Each participant completed an MMPI-2 and filled out all self-report symptom measures at intake, prior to initiation of any treatment or being assigned a therapist. MMPI-2 scores were transformed into MMPI-2-RF scores.

Data Analyses

All data analyses were conducted using SPSS version 19. Bivariate correlations were used to examine the relationship between the SUI scale and other self-report measures of suicidality, including the DSI-SS total score, the BSS total score, and the Suicide Potential Scale (SPS). An analysis of covariance (ANCOVA) was conducted to examine associations between the clinician ratings of suicide risk categories and SUI scale scores. Specifically, the SUI scale was entered as the dependent variable, the suicide risk category (low, moderate, severe) was

entered as the independent variable and age and gender were entered as covariates. Post-hoc tests of pair-wise comparisons were used to compare the groups (i.e., suicide risk categories) on SUI scale scores.

In order to examine the association between the mean scores on the SUI scale and self-report of lifetime suicide attempts, over and above gender, age, and other MMPI-2-RF scales related to depression and suicidal ideation, two logistic regression analyses were conducted. In the first regression, the outcome variable was self-reported suicide attempts and the SUI scale, age, gender, Demoralization (RCd), and Low Positive Emotions (RC2) were entered as predictors. Demoralization has been linked to current suicidal ideation and previous suicide attempts, possibly due to the influence of helplessness and hopelessness within demoralization (Ben-Porath, 2012). High scores on RCd indicate that the individual is likely dissatisfied with his/her life circumstances and suicidal ideation is an empirical correlate of this scale (Ben-Porath & Tellegen, 2008/2011). High scores on RC2 suggest that the individual is reporting a lack of positive emotional experiences and high scores may suggest that the individual is at risk for suicidal ideation (Ben-Porath & Tellegen, 2008/2011). Due to the relationship between depression and suicide, these scales were chosen as covariates to determine if the SUI scale can identify individuals reporting a previous suicide attempt over and above these scales related to depression and suicidal ideation. Due to the hierarchical structure of the MMPI-2-RF, there is item overlap between the Restructured Clinical (RC) scales, the Specific Problem scales, and the PSY-5 scales. Therefore, a second regression was conducted, controlling for the Specific Problem and PSY-5 scales reported to be associated with demoralization, depression, and suicidality.

In the second regression, the outcome variable was self-reported suicide attempts and the SUI scale, Helplessness/Hopelessness (HLP), Self-Doubt (SFD), Inefficacy (NFC) and Introversion-Revised (INTR-r) were entered as predictor variables. High scores on the HLP scale indicates a belief that the individual cannot change or overcome problems and has feelings of despair, high scores on the SFD scale suggest a lack of confidence and feelings of uselessness, high scores on NFC indicates that the individual is reporting feelings of indecisiveness and the belief that s/he is incapable of coping, and high scores on the INTR-r scale are associated with depression and a lack of positive emotional experiences (Ben-Porath & Tellegen, 2008/2011). Finally, relative risk ratios were calculated using the binary (yes/no) outcome variable of previous suicide attempts and the five possible T-scores of the SUI scale. Each possible T-score was compared to the lowest possible T-score, 45T. A T-score of 66 was compared to 45, 79T was compared to 45T, 91T was compared to 45T, and 100T was compared to 45T. This calculation demonstrated the risk of having a suicide attempt as the T-score of the SUI scale increases.

Results

Associations between the MMPI-2-RF SUI scale and self-report measures of suicidality

The bivariate correlations between the SUI scale and other self-report measures of suicidality are presented in Table 3. As expected, the SUI scale was significantly associated with the DSI-SS total score, BSS total score, and the SPS (Suicide Potential Scale).

Associations between the MMPI-2-RF SUI scale and clinician ratings of suicide risk

ANCOVA revealed significant differences between the clinician ratings of suicide risk categories and SUI scale scores while controlling for age and gender ($F(2,758) = 158.925$, $p < .001$, $\eta_p^2 = .295$). Post-hoc analyses indicated that each of the three groups were significantly different from one another. Specifically, patients who were rated as being at low risk for suicide obtained mean T-scores on the SUI scale of 49.26 ($SD=10.74$), those rated as moderate risk obtained a mean T-score of 69.73 ($SD=19.08$), and those rated as severe risk obtained a mean T-score of 86.29 ($SD=20.11$) (Figure 1).

Associations between the MMPI-2-RF SUI scale and self-reported suicide attempts

While controlling for RCd (Demoralization), RC2 (Low Positive Emotions), gender and age, the SUI scale was significantly associated with history of past suicide attempts ($\beta = .370$, $SE = .085$, Wald = 18.90, $p < .01$). Furthermore, these results were consistent while controlling for HLP (Helplessness/Hopelessness), SFD (Self-Doubt), NFC (Inefficacy), and INTR-r (Introversion-revised), with higher SUI scale scores associated with presence of suicide attempts ($\beta = .364$, $SE = .084$, Wald = 18.70, $p < .01$) (Table 4).

Relative risk ratios of suicide attempts as the SUI scale T-score increases

Finally, relative risk ratios (RRs) were calculated to identify the increased risk of suicide attempts among individuals with elevated scores on the SUI scale relative to individuals with low scores on the SUI scale (i.e., $T=45$) (see Table 5). The relative risk ratios for the SUI scale were significant at each T-score with the exception of $T=79$. The risk of suicide attempts among individuals with a T-score of 66 was 2.29 times the risk of attempts among individuals with a T-score of 45. The risk of suicide attempts among individuals with a T-score of 91 was 2.42 times the risk of attempts among individuals with a T-score of 45. The risk of suicide attempts among individuals with a T-score of 100 was 3.47 times the risk of attempts among individuals with a T-score of 45.

Discussion

The findings from the current study support the use of the MMPI-2-RF SUI scale in the assessment of suicide risk. Specifically, we found that the SUI scale was highly correlated with other, self-reported measures of suicidality and was associated with clinician ratings of suicide risk. Additionally, individuals who reported a previous history of suicide attempts obtained higher scores on the SUI scale than those without a reported history, over and above age, gender, and MMPI-2-RF scales assessing depression, demoralization, and suicidality.

Findings that the SUI scale was significantly associated with other self-report measures of suicidality and differentiated participants classified as being a low, moderate, or severe risk of death by suicide by clinicians using the framework outlined in Joiner et al. (1999), support the clinical utility of the SUI scale. Because clinicians were trained to follow the Joiner et al. (1999) instructions to classify risk, there was not an issue of criterion contamination, as the clinicians did not use the MMPI-2-RF in the classification of risk level. Participants who were rated as being at low risk for suicide obtained the lowest mean

T-scores, those rated as moderate risk obtained moderate mean T-scores, and those rated as severe risk obtained the highest mean T-scores. This finding is consistent with the clinical cut-scores for this scale, as individuals who obtain a T-score greater than 65 reported a history of suicidal ideation or attempts and are at increased risk for suicide (Ben-Porath & Tellegen, 2008/2011). Indeed, each of these groups was significantly different from one another on the SUI scale. This is an important finding, because it demonstrates that the SUI scale was not only able to identify those at risk for severe suicidal behavior but also able to classify the participants into the three groups of risk.

Furthermore, the SUI scale was associated with past suicide attempts over and above age, gender, and the MMPI-2-RF scales related to depression and hopelessness. This is an important finding, as the scales used as covariates in these analyses including RCd, RC2, HLP, SFD, NFC, and INTR-r, have been shown to be related to suicidality but assess a wider range of symptoms rather than just suicidality (Ben-Porath, 2012). These results indicate that the SUI scale may be the most beneficial for clinicians to focus on when determining suicide risk

As the SUI scale score increases, so does the likelihood of one reporting a previous suicide attempt. More specifically, relative risk ratios indicated that a person obtaining a SUI score of 100T is nearly three and a half times more likely to have made a suicide attempt than someone obtaining a SUI score of 45T. This is important and clinically-relevant information, as individuals with a history of prior suicide attempts are at greater risk for future attempts (Joiner et al., 1999).

To our knowledge, the present study is among the first on the utility of the MMPI-2-RF SUI scale in the assessment of suicide risk. Findings were consistent with what Miller and colleagues (2011) have presented regarding the utility of using the MMPI-2-RF scales in assessing suicidal ideation and behavior in veterans at a recent conference (Miller, Ben-Porath, & Arbisi, 2011). Findings from this presentation indicated that the SUI scale predicted previous suicide attempts, a suicide plan, and suicidal ideation over and above relevant demographic factors (Miller et al., 2011). In 2012, Miller presented on a sample of 430 veterans with a primary diagnosis of depression and included roughly equal groups of individuals with suicidal ideation, previous suicide attempts, and controls. Findings from this presentation included that the SUI scale significantly differentiated the three groups, with those who had made a suicide attempt scoring the highest and the control group scoring the lowest (Miller, 2012). The SUI scale also significantly differentiated individuals who had made a suicide attempt from those who had experienced ideation only and this scale significantly differentiated between the controls from those with attempts or ideation (Miller, 2012). Miller's findings, coupled with the results of the current study support the use and further study of the SUI scale in suicide risk assessment.

Importantly, some research has indicated that patients are more forthcoming about suicidal ideation on self-report measures than during clinical interviews (Burchett, Glassmire, Gomez, Owens-Oas, & Martinez, 2013; Glassmire et al., 2001; Joiner, Rudd, & Rajab, 1999; Kaplan, Asnis, Sanderson, Keswani, De Lecuona, & Joseph, 1994). Thus, it may be advantageous to include a self-report measure in addition to a clinical interview as part of

the routine assessment of suicide risk. Given that many clinicians already administer the MMPI as part of routine intake assessments, the SUI scale may be a useful tool for accurate assessment of suicide risk.

Acknowledgments

This study was supported, in part, by National Institute of Mental Health grant T32 MH93311. The content of this paper is the sole responsibility of the authors and does not necessarily represent the official views of the funding agency.

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Figure 1.
Association between Clinician Ratings of Suicide Risk and Mean SUI T-score

Table 1

Demographic Data

	N	Range	Mean (SD)
Age (years)	965	18-65	26.87 (9.95)
Education (years)	930	6-20	14.13 (1.98)

Race/Ethnicity	N	Percentage
African American	99	11.9%
Asian/Pacific Is.	25	2.7%
Caucasian	691	75.1%
Hispanic/Latino	82	8.8%
Native American	14	1.5%

Gender		
Female	5423	58.7%
Male	387	41.3%

Table 2

Sample Means on Relevant Clinical Variables

MMPI-2-RF scale (N=998)	Mean T-score (SD)
RCd (Demoralization)	62.44 (14.11)
RC2 (Low Positive Emotions)	58.58 (15.30)
HLP (Helplessness/Hopelessness)	53.55 (13.64)
SFD (Self Doubt)	58.87 (13.67)
NFC (Inefficacy)	57.33 (12.29)
INTR-r (Introversion)	53.96 (13.69)
SUI (Suicidal/Death Ideation)	52.58 (14.90)
Other Measures	Mean (SD)
Suicide Potential Scale (N=998)	0.50 (1.05)
DSI-SS total score (N=210)	0.90 (1.80)
BSS total score (N=732)	2.37 (5.27)

Clinician Rating of Suicide Risk (N=800)	Percent	N
Low	87.6%	701
Moderate	10.6%	85
Severe	1.8%	14

Previous Suicide Attempt (N=899)	Percent	N
Yes	18.6%	167
No	81.4%	732

Table 3

Correlations between the SUI scale and Other Measures of Suicidality

	1	2	3	4
1. SUI Scale	--	---	---	--
2. DSI-SS total score	.73**	---	---	--
3. BSS total score	.70**	.90**	--	--
4. Suicide Potential Scale	.88**	.69**	.71**	--

Notes: BSS=Beck Scale for Suicidal Ideation; DSI-SS= Depressive Symptom Inventory–Suicidality Subscale; SUI= Suicidal/Death Ideation

** Correlation is significant at $p=0.01$ (2-tailed).

Table 4

Association between Suicidal/Death Ideation (SUI) Scale and Previous Suicide Attempts

Variable	β	S.E.	Wald	df	p	Exp (B)
Regression 1						
SUI	.370	.085	18.899	1	<.001	1.448
Age	.024	.008	8.485	1	.004	1.024
Gender	.002	.007	0.088	1	.767	1.002
RCd	.020	.019	1.067	1	.302	1.020
RC2	-.016	.034	0.220	1	.639	0.984
Constant	-2.489	.297	70.440	1	<.001	0.083
Regression 2						
SUI	.364	.084	18.699	1	<.001	1.439
HLP	-.037	.078	0.229	1	.632	0.964
SFD	.079	.081	0.947	1	.330	1.082
NFC	.002	.045	0.002	1	.966	1.002
INTR-r	.009	.022	0.188	1	.665	1.009
Constant	-1.893	.204	85.852	1	<.001	0.151

Notes: Dependent variable in both logistic regressions: previous suicide attempt (yes/no); SUI=Suicidal/Death Ideation; RCd= Demoralization; RC2=Low Positive Emotions; HLP=Helplessness/Hopelessness; SFD=Self Doubt; NFC=Inefficacy; INTR-r=Introversion-revised.

Table 5

Relative risk ratios of SUI predicting suicide attempts

Sui Scale T score (each T-score compared to T-score =45)	Risk if elevated (%)	Risk if not elevated(T=45) (%)	Relative risk	95% CI
<i>T=66</i>	31.4%	14.4%	2.29 [*]	1.53-3.43
<i>T=79</i>	13.2%	14.4%	0.91	0.48-1.74
<i>T=91</i>	34.8%	14.4%	2.42 [*]	1.24-4.71
<i>T=100</i>	50.0%	14.4%	3.47 [*]	2.38-5.07

Note.

CI = confidence interval.

* 95% CI does not include 1.00; therefore, $p < .05$.