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Functional domains as correlates of suicidality among psychiatric inpatients

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Abstract

Background—Suicide remains poorly understood and unpredictable. Addressing this challenge, this study examined the independent contributions of several research domain criteria (RDoC) constructs in relation to suicidality in patients hospitalized for acute suicide risk. Specifically, we examined anhedonia, anxiety/entrapment, and attachment disturbances, reflecting disturbances in reward processes, negative valence systems, and social processes, respectively.

Methods—Anhedonia, anxiety, entrapment, and fearful attachment, were assessed quantitatively in 135 adults hospitalized for suicidality. Current suicidality and suicidal history were assessed with the Columbia Suicide Severity Rating Scale. Bivariate analyses (with significance threshold of $p < 0.01$ to account for multiple comparisons) and multivariate models examined relationships between symptom dimensions and severity of suicidal ideation (SI). We also assessed differences between patients with a history of suicide attempt and those who exhibited only suicidal ideations.

Results—Using bivariate analyses all symptoms except for fearful attachment correlated robustly with SI ($r = 0.37$ – 0.50 , $p < 0.001$). However, when using multivariate analyses, only anhedonia ($\beta = 0.28$, $p = 0.01$) and entrapment ($\beta = 0.19$, $p = 0.03$) were independently associated with SI across the entire sample. No functional domain measures differed between patients with history of suicide attempt versus ideation only.

Limitations—The reliance on self-report data and a cross-sectional design.

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Conclusions—Disturbances in reward and threat processing may represent independent factors in the development of suicidal ideation in this high suicide risk cohort. Future studies should assess their role as risk factors.

Keywords

suicide; RDoC; entrapment; anhedonia; anxiety; attachment

Introduction

Suicide is a major public health concern ranking as the second leading cause of death among individuals ages 10–34 in the United States (CDC, 2015) and, globally, accounts for over 800,000 deaths each year (WHO, 2014). Despite ongoing efforts, suicide prevalence remains high and clinically challenging to predict (Turecki and Brent, 2015). The most prominent risk factors are prior suicide attempts (SA; Joiner et al., 2005) and the presence of a psychiatric condition, with mood disorders among those conferring highest risk (Harris and Barraclough, 1997). The observation that any psychiatric condition can be associated with suicide risk is most likely due to the nature of our classification system for psychiatric conditions, which categorizes disorders based on clusters of symptoms that overlap across disorders. Addressing this challenge, the Research Domain Criteria (RDoC) project was launched where systems based on cognitive, behavioral and neuronal mechanisms are the focus of investigation rather than a DSM classified psychiatric disorder (Cuthbert, 2015). Relatedly, several suicide studies from our laboratory and others have examined specific symptoms that reflect corresponding disturbances in functional domains, such as anhedonia (Bradley et al., 2015; Fawcett et al., 1990; Gabbay et al., 2015; Kollias et al., 2008; Nock and Kazdin, 2002; Spijker et al., 2010; Winer et al., 2014), anxiety/entrapment (Goldston et al., 1996; Goldston et al., 2006; Hendin et al., 2010; O'Connor et al., 2013; Ohring et al., 1996; Panagioti et al., 2012; Sareen et al., 2005a; Sareen et al., 2005b; Yaseen et al., 2012; Yaseen et al., 2014), and attachment disturbances (Adam et al., 1996; Grunebaum et al., 2010; Lessard and Moretti, 1998; Lizardi et al., 2011; Palitsky et al., 2013). In particular, anhedonia reflects disturbance in reward processing including reward motivation (Auerbach et al., 2015; Gold et al., 2013), attainment (Liu et al., 2016), and learning (Pizzagalli et al., 2008; Pizzagalli et al., 2005); entrapment reflects response to acute threat in the context of frustrative nonreward (Gilbert and Allan, 1998); state and trait anxiety reflect acute sensitivity to and chronic vigilance for threat, respectively (Bishop, 2009; Jusyte et al., 2015); finally, fearful attachment represents disturbance in the social systems involved in affiliation (Safran, 1990; Yaseen et al., 2016). However, many of these investigations assessed these symptoms categorically and/or were limited to one psychiatric condition (e.g. major depression, bipolar disorder, eating disorder, posttraumatic stress disorder). In addition, only a few studies involved an actively suicidal psychiatric group.

Another notable limitation concerns the study of distinct symptoms in isolation, as done in most investigations to date, versus concurrently. Such work can better distinguish the significant correlates for suicide since different functional domains often influence one another. Only a few studies carried out such an approach. For example, in a large, two-wave general population study, Spijker et al. (2010) reported that when entered together in one

model, categorical indices of anxiety and anhedonia each contributed independently to the prospective risk for suicidality. Another study that assessed 103 patients who were hospitalized following a suicide attempt, reported that the relationship between feelings of defeat and the severity of suicidal ideation was mediated by entrapment—the perception of being trapped and unable to escape from a stressful situation (Rasmussen et al., 2010); this was true even after controlling for depression and anxiety severity. In this same study, positive future thinking moderated the relationship between entrapment and suicidal ideation. These findings support our view that several dimensions may synergistically influence suicide risk.

Building upon these above observations, the current study sought to investigate several RDoC based constructs, assessed quantitatively, in concert, in relation to suicidality in patients hospitalized for acute suicide risk. Specifically, our aims were to examine simultaneously the relationships between suicide severity and disturbances in: a) reward processes/positive valence systems, as reflected by anhedonia; b) negative valence systems manifested as state/trait anxiety and entrapment; and c) social processes as indexed by fearful attachment. As presented above, we selected these particular correlates in light of the extensive evidence implicating each of these functions in suicidality separately, their critical role in day-to-day adaptation, their interrelated function, and our previous work. We hypothesized that each symptom would correlate with severity of suicidal ideation in univariate analyses. Further, we hypothesized that symptoms would contribute independently to the severity of suicidal ideation in multivariate analyses. Finally, we explored whether these clinical correlates differed between patients who had a history of suicide attempt compared to those without a history of suicide attempt. Our expectation was that symptoms in these domains would be more severe in the suicide attempter subgroup.

Methods

Participants and Consent Procedures

Participants were 135 adults hospitalized for suicidality. A full sample of 170 individuals were initially recruited at the Mount Sinai Beth Israel Hospital (MSBI) in New York City from 4/8/13–2/12/15, after presenting to the Emergency Room with a suicide attempt or with high suicidal risk necessitating hospitalization. Exclusionary criteria included homelessness, lack of collateral contacts, inability to understand the consent or research questions (e.g., due to mental retardation, cognitive impairment, or linguistic limitation), the presence of significant medical or neurological disease, possible delirium, or behavioral impairment that might interfere with participation. Of those recruited, 152 (89%) provided complete data and were included in the initial analysis. Seventeen subjects denied any past month suicidal ideation and were therefore excluded from further analysis, resulting in a final sample of 135 subjects.

Within 48 hours of admission, potential participants were approached and informed about the study. Those willing and able to provide informed consent were administered the study battery. The informed consent included permission to review the patient's medical record on the unit and to contact the patient in the future for follow-up assessment. Subjects were

compensated \$20 for their participation. The Mount Sinai Beth Israel institutional review board approved the study and procedures for obtaining informed consent.

Measures

The study team interviewed participants and administered a psychological test battery including measures of suicidal ideation, anhedonia, entrapment, state and trait anxiety, and attachment style within 48 hours of admission.

Suicidal ideation and behavior was assessed with the Columbia Suicide-Severity Rating Scale (C-SSRS; Posner et al., 2011). The C-SSRS is a structured clinical interview with scoring for level and intensity of suicidal ideation and behaviors. This instrument is currently considered a gold standard for assessing suicidality and is mandated by the FDA to be used in all clinical trials where suicide is assessed. Trained research assistants administered the C-SSRS, and the author ZSY supervised the scoring. From the C-SSRS, we extracted a measure of peak severity of suicidal ideation (SI) in the month prior to assessment, and used this as our outcome measure. Peak severity was defined as the sum of the 1 through 5 point scores on the following C-SSRS items: Intensity (level of planning and intent), Frequency, Duration, and Controllability of SI, and Deterrents to suicide (lower score for higher levels of deterrence), plus five additional points for the presence of “Preparatory acts or behavior” that “include anything beyond a verbalization or thought, such as assembling a specific method (e.g., buying pills, purchasing a gun) or preparing for one’s death by suicide (e.g., giving things away, writing a suicide note)” but which “fall short of initiating action that would be the proximal cause of death (taking pills, shooting self, *et cetera*)”. Cronbach’s alpha on the study sample was 0.61. Patients were classified as suicide attempters (SA subgroup) if they had any lifetime actual suicide attempts as defined by the C-SSRS: “potentially self-injurious acts *committed with at least some wish to die* as a result.”

As a supplementary measure of suicidal ideation severity, the self-report Beck Scale for Suicidal Ideation (BSS) which captures past week suicidality was used (Beck and Steer, 1991). Cronbach’s alpha on the study sample was 0.86.

Anhedonia—Participants completed the self-report Beck Depression Inventory II (BDI; Beck et al., 1996; Steer et al., 2001). An anhedonia score was extracted from the BDI by summing the score on items 4 (loss of pleasure) and 12 (loss of interest in social relations). This approach to quantifying anhedonia has been used in our own as well as others’ investigations (Gabbay et al., 2012; Gabbay, 2013; Henderson et al., 2013; McMakin et al., 2012). Cronbach’s alpha on the study sample was 0.66. In addition, as a control for global depression severity, we calculated the BDI total score excluding anhedonia (items 4 and 12) and suicidal ideation (item 9).

State and trait anxiety—The self-report Spielberger State/Trait Anxiety Inventory (STAI), state and trait subscale scores, measured state and trait anxiety, respectively (Rule and Traver, 1983; Spielberger et al., 1970). The STAI includes 40 items rated on a 4-point scale, with higher scores indicating greater anxiety; 20 items assess trait anxiety (e.g., “I worry too much over something that really doesn’t matter”) and 20 items measure state

anxiety (e.g., “I am tense; I am worried”). Cronbach’s alpha on the study sample for the state and trait subscales were $\alpha = 0.94$ and $\alpha = 0.93$, respectively.

Fearful attachment—Participants completed the self-report Relationship Scales Questionnaire (RSQ; Griffin and Bartholomew, 1994). The scale includes 30 items, rated on a 5-point scale, 17 of which yield 4 subscales describing various attachment styles. The fearful subscale (4 items) was used in the current analyses. Cronbach’s alpha on the study sample was 0.74.

Entrapment—The Frantic Hopelessness (FH) subscale score of the self-report Suicide Trigger Scale (Yaseen et al., 2012; Yaseen et al., 2014) was used as a measure of entrapment intensity at its worst in the last 3 days. The FH subscale comprises 13 items probing feelings such as being trapped, being helpless to change, and being hopeless of improvement. In this study, a modified version of the STS was used with the response scale expanded from 0–3 (‘Not at all’ to ‘Very Much’) to 0–5 (‘Not at all’ to ‘Extremely’) to improve reliability (Lozano et al., 2008). Cronbach’s alpha for FH on the study sample was 0.95.

Clinical Assessment

Clinical diagnoses were made by the board certified attending psychiatrists of the inpatient units within an ACGME accredited teaching hospital. Diagnoses were extracted from the electronic medical records of the participating patients. These diagnoses were based on clinical judgement of fit with DSM-IV diagnostic criteria. While not based on research instruments, these procedures had the advantage of being based on several days of observation in hospital, commonly with recourse to collateral information collected about the patient, including family report and past medical records. Following our previously used methodology (Yaseen et al., 2012; Yaseen et al., 2014), primary psychiatric diagnoses were grouped into four mutually exclusive categories to maximize diagnostic reliability (Cheniaux et al., 2009; Lieberman and Baker, 1985; Warner and Peabody, 1995). DSM-IV Axis I diagnoses were coded as follows: 1) Psychotic disorders (comprising diagnoses of schizophrenia, schizoaffective disorder, and psychotic disorder not otherwise specified); 2) Bipolar mood disorders (comprising diagnoses of bipolar disorders, type I, II, or not otherwise specified); 3) Unipolar mood disorders (comprising diagnoses of major depressive disorder, major depressive episode, and depression not otherwise specified); or 4) All other disorders (mainly comprising diagnoses of adjustment disorder and mood disorder not otherwise specified). In addition, the presence or absence of a substance use disorder, which could be comorbid with the primary psychiatric diagnosis, was extracted from the electronic medical record.

Statistical analysis

Statistical analyses were computed using SPSS, version 21. Each parametric analysis was preceded by a test of its underlying assumptions. We assessed distribution normality using the Shapiro-Wilk test. Where assumptions were violated, non-parametric analogs were used. To evaluate between-groups comparisons of individual variables, we used Student’s *t*, Mann-Whitney’s *U*, and Chi-squared tests as appropriate. Pairwise relations between dimensional

variables were assessed using Pearson product-moment or Spearman rank correlations, as appropriate.

Linear regression analysis assessed multivariate relationships between symptom measures and peak SI. The model controlled for global depression severity, the presence of actual or interrupted suicide attempt leading to admission, primary diagnosis (using dummy variables for each category), substance use comorbidity, as well as any demographic variables showing statistically significant associations with peak SI (e.g., age, sex, race, ethnicity). To assess model behavior, we examined the distribution of residuals and their correlation with the outcome measure rather than attempting to rescale skewed variables. We chose this approach as the study sample comprised a high-risk subset of the population of individuals with suicide risk, and thus skewed samples of what might otherwise be normal distributions were not unexpected. To assess relationships to suicide severity over the past week, multivariate regression analysis was repeated using the BSS score as the outcome variable.

T-tests and Mann-Whitney U tests, as appropriate, examined whether suicidal attempters (SA group; $n = 96$) differed from those who only exhibited suicidal ideations (SI group; $n = 39$) on measures of anhedonia, entrapment, state and trait anxiety, and attachment style. Given multiple comparisons, we applied a Bonferroni correction for these analyses, setting our significance level at $p = .01$. We next ran a logistic regression analysis to assess prediction of group membership (SA group versus SI group). Predictor variables in this model were the same as those used in the linear regression model (described above), with the addition of SI severity.

Results

Demographic and clinical features

Demographic and clinical characteristics are summarized in Table 1. Among dimensional measures, only SI severity, and state anxiety were normally distributed (Shapiro-Wilk statistic $p > 0.05$). All clinical variables demonstrated a full range of scores. Of the demographic variables tested (age, sex, race, ethnicity), only race was significantly associated with SI severity such that Black individuals had lower SI scores compared to non-Blacks; we ran regression analyses with and without inclusion of this variable (dummy coded as Black versus non-Black) as a covariate, and findings were unchanged. Therefore, we present data from analyses that did not include this covariate. No clinical or demographic variables differed significantly between suicidal behavior subgroups.

Relations between symptom dimensions and SI

Pairwise relations between symptom dimensions and SI in the whole sample

—Past month peak SI was most strongly correlated with anhedonia (Spearman $r = 0.50$, $p < 0.001$), followed by trait anxiety (Spearman $r = 0.45$, $p < 0.001$), entrapment (Spearman $r = 0.39$, $p < 0.001$), and state anxiety (Pearson $r = 0.37$, $p < 0.001$). Fearful attachment was not associated with SI (Spearman $r = .09$, $p = 0.32$). All symptom dimensions were significantly intercorrelated (see Table 2).

Multivariate relations between symptom dimensions and SI in the whole sample

Table 3 presents the results of hierarchical linear regression analysis. Each block except the first (comprising categorical clinical variables) significantly improved prediction of SI, as evidenced by significant changes in R-square. Furthermore, after the addition of the five symptom dimensions to the model, global depression severity was no longer a significant independent predictor. In the overall model, of the symptoms dimensions included, only entrapment and anhedonia significantly predicted peak SI [$R^2 = 0.35$, $F(11,123) = 6.01$, $p < 0.001$]. Residuals were normally distributed and uncorrelated with predicted values.

When we repeated these analyses using the BSS as the outcome variable, excluding those who scored zero, the findings were replicated with small differences in effect sizes (supplementary table 1). When all patients were included, only anhedonia was an independent predictor.

Lifetime Suicide Attempters versus Non-attempters—None of the five symptom dimensions differed significantly between the SA and SI patient subgroups (all p-values > 0.01). In addition, no other clinical or demographic variable differed significantly between groups (all p-values > 0.01 ; Table 1). We next ran a logistic regression analysis to examine whether the five symptom dimensions predicted subgroup membership (SA and SI) controlling for the same demographic, clinical, and depression severity variables described above. When entered together in the last step of the model, no symptom dimension was found to predict subgroup membership.

Discussion

In this cross-sectional study of patients at high suicide risk, all symptom domains had a full severity range distribution, with SI exhibiting a normal distribution. This finding further highlights the importance of dimensional analyses in psychiatric research to account for inter-subject variability in symptom severity. As hypothesized we documented that, anhedonia, entrapment, state anxiety, and trait anxiety, were each significantly correlated with SI severity. Further, anhedonia and entrapment, reflecting disturbances in reward processing and threat response, respectively, were independently associated with SI severity. However, our expectation that these disturbances should be associated with suicide attempt itself was not supported, as no measures differed between lifetime attempters and non-attempters. We discuss these findings below.

Our finding that anhedonia, entrapment, state anxiety, and trait anxiety, were each significantly correlated with SI severity is consistent with multiple studies looking at each of these symptoms separately (Apter et al., 1993; O'Connor et al., 2013; Panagioti et al., 2012; Sareen et al., 2005a; Spijker et al., 2010; Winer et al., 2014). However, when entered together into a regression model, our analyses confirmed independent roles only for anhedonia and entrapment. Past studies have also documented associations between anhedonia and suicidal behaviors in adults and youth with diverse psychiatric conditions (Bradley et al., 2015; Fawcett et al., 1990; Kollias et al., 2008; Nock and Kazdin, 2002; Spijker et al., 2010; Winer et al., 2014). Similarly, imaging studies report abnormalities

within the reward circuitry in suicide behavior (Gifuni et al., 2015; Kim et al., 2015; Wagner et al., 2011). To date, only one study in adolescents examined distinct reward processes in relationship to suicide (Auerbach et al., 2015). Authors reported lower effort expenditure for uncertain rewards among adolescent suicide attempters compared to ideators. This could be attributable to differences in risk assessment and/or reward valuation. Thus, future work might be helpful in delineating the specific alterations in reward processes associated with suicide such as reward motivation, valuation or attainment.

The finding that entrapment is an independent correlate of SI severity in this high-risk sample also is consistent with the literature linking acute states of entrapment to suicidality (Hendin et al., 2010; O'Connor et al., 2013; Panagioti et al., 2012; Rasmussen et al., 2010; Teismann and Forkmann, 2015). Moreover, this association is supported clinically by arrested flight-based models of suicidality where the suicidal act serves as an escape from a state of entrapment (de Leon et al., 2015; Gilbert and Allan, 1998; Rasmussen et al., 2010; Williams and Pollock, 2008). Other negative valence system deficits, state and trait anxiety, were also found to be correlates of suicidality in bivariate analyses, consistent with past work (Goldston et al., 1996; Goldston et al., 2006; Ohring et al., 1996; Sareen et al., 2005a; Sareen et al., 2005b); however, these were no longer significant when entered into the multivariate model. Nonetheless, it should be noted that state anxiety contributed to the model very nearly as much as entrapment, highlighting the importance of acute negative valence system activity in acute suicidality. Our results may suggest that entrapment, compared to other constructs under the negative valence system domain, plays a distinct role in suicide ideation. It is also possible that the association between anxiety and suicide, reported by us and others (Goldston et al., 1996; Goldston et al., 2006; Ohring et al., 1996; Sareen et al., 2005a; Sareen et al., 2005b), is mediated by entrapment. This is similar to the report by Rasmussen and colleagues who documented that entrapment mediated the association of defeat and suicidality (Rasmussen et al., 2010). Indeed, there is evidence for the involvement of threat processing circuits (e.g., amygdala, hypothalamus, and orbitofrontal cortex) in association with suicide (Ballard et al., 2014; Monkul et al., 2007; Pan et al., 2013; van Heeringen et al., 2014). Thus, neural circuits involved in both reward and threat processing may interact to increase suicide risk.

Contrary to our expectation, fearful attachment was not significantly associated with suicidality in this sample, both in univariate and in multivariate analyses. Fearful attachment represents a working expectation of negative and inadequate response from attachment figures (primary social supports) to appeals for relatedness (Safran, 1990). In contrast to our results, prior studies have linked insecure attachment styles, marked by high sensitivity to and low trust in close personal relationships, with both suicidal ideation and attempts (Adam et al., 1996; Grunebaum et al., 2010; Lessard and Moretti, 1998; Lizardi et al., 2011; Palitsky et al., 2013). Discrepant findings may be attributable to the fact that, unlike past studies, we examined a sample of inpatients who were hospitalized for suicidality, and therefore had greater overall severity; in this already suicidal sample, independent effects of attachment style might be less important.

Notably, our expectation that there would be group-wise differences in entrapment, anhedonia, or any other symptom dimension between attempters (present and past history)

and non-attempters was not supported. This lack of finding may be related to the small sample of non-attempters, as only a minority had never made an attempt. This is logical given that history of suicide attempt increases the likelihood of hospitalization in light of the known increased risk of suicide.

Limitations

We note several limitations. First, our anhedonia scale was derived from the BDI and was not a stand-alone assessment. However, this approach to quantifying anhedonia has been used in many other investigations in adults and youth (Gabbay et al., 2012; Gabbay, 2013; Henderson et al., 2013; McMakin et al., 2012). Second, this and some of the other measures used had only modest internal consistency. However, lower reliability is liable to increase risk of type II error rather than produce spurious results (Joiner et al., 2003). A third limitation is the cross-sectional design with findings derived from correlational analyses. Moreover, there is variation in the exact time-frame of state symptom dimension assessments, and it is unknown exactly what proportion of participants experienced their peak past month SI immediately preceding hospitalization. Detailed longitudinal studies are needed to understand any etiological role for anhedonia and entrapment in the development of suicidal ideation and action. In addition, it should be noted that we had clinical rather than standardized structured diagnostic assessments. Nonetheless, this limitation does not affect the interpretation of our findings given that in a clinical setting, suicide has been associated with nearly all psychiatric conditions. As such, our study, utilizing a dimensional approach that targets common symptoms across psychiatric conditions rather than specific psychiatric conditions, minimizes this limitation. The clinical severity of the sample, however, may have reduced variability, thus contributing to Type II error in multivariate analysis. Similarly, a contributing factor for not detecting differences between attempters and ideators (exploratory aim) is most likely due to a Type II error as the study cohort involved patients acutely hospitalized for suicide risk, of whom most had a history of suicide attempt. This is an expected phenomenon as past attempts are important factors in the determination of hospitalization for suicide risk.

Conclusions

Anhedonia and entrapment represent distinct functional domain disturbances that correlate independently with severity of suicidal ideation. These behavioral domains may be significant risk factors that should be monitored when assessing suicide risk. Further studies should examine underlying biological mechanisms involving reward and entrapment in relation to suicide.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- The simultaneous contributions of RDoC constructs to suicidality are assessed.
- In this high-risk sample, all symptom domains exhibited a full range of severity.
- Reward and negative valence system disturbances correlated with suicidality.
- Only anhedonia and entrapment were independently associated with suicidality.

Table 1

Sample characteristics and distributions of study measures

Variable	Total sample (<i>n</i> =135)	SA (<i>n</i> =96)	Non-SA (<i>n</i> =39)
Age [mean ± SD] (range)	37.1 ± 14.1 (18–65)	37.5 ± 14.1 (18–65)	36.1 ± 14.2 (18–65)
Sex [female]	67 (49.6%)	49 (51.0%)	18 (46.2%)
Race			
Black	31 (23.0%)	22 (22.9%)	9 (23.1%)
White	52 (38.5%)	38 (39.6%)	14 (35.9%)
Other	52 (38.5%)	36 (37.5%)	16 (41.0%)
Ethnicity [Hispanic]	51 (37.8%)	35 (36.5%)	16 (41.0%)
Diagnostic Category			
Psychotic	16 (11.9%)	13 (13.5%)	3 (7.7%)
Bipolar	18 (13.3%)	12 (12.5%)	6 (15.4%)
Unipolar	59 (43.7%)	43 (44.8%)	16 (41.0%)
Other	42 (31.1%)	28 (29.2%)	14 (35.9%)
Substance use disorder	82 (60.7%)	63 (65.6%)	19 (48.7%)
General level of Depression ** [mean ± SD] (Range)	21.1 ± 10.6 (0–47)	22.4 ± 10.7 (0–47)	17.8 ± 9.8 (0–43)
SI severity * [mean ± SD] (Range)	20.2 ± 6.3 (3–35)	20.9 ± 6.7 (3–35)	18.6 ± 5.2 (9–32)
Symptom Dimension			
Anhedonia [mean ± SD] (Range)	2.4 ± 1.6 (0–6)	2.4 ± 1.6 (0–6)	2.1 ± 1.5 (0–6)
State Anxiety [mean ± SD] (Range)	51.0 ± 14.4 (20–80)	52.0 ± 13.4 (20–80)	48.8 ± 16.4 (20–80)
Trait Anxiety ** [mean ± SD] (Range)	54.0 ± 12.4 (20–80)	55.6 ± 11.9 (20–80)	50.1 ± 13.1 (24–74)
Fearful Attachment [mean ± SD] (Range)	13.0 ± 4.0 (4–20)	13.4 ± 3.8 (4–20)	12.1 ± 4.2 (–5–20)
Entrapment [mean ± SD] (Range)	30.2 ± 13.9 (0–52)	31.3.0 ± 13.0 (0–52)	27.4 ± 15.7 (1–52)

SA = individuals with history of suicide attempt; Non-SA = individuals with no history of suicide attempt.

* SI < SA, *p* = 0.06;** SI < SA, *p* < 0.05

Table 2
Pair-wise Correlations between Symptom Dimensions, Depression Severity, and Suicidal Ideation

	Anhedonia	State Anxiety	Trait Anxiety	Entrapment	Fearful Attachment	General Depression
Anhedonia	1					
State Anxiety	.388 ***	1				
Trait Anxiety	.468 ***	.572 ***	1			
Entrapment	.400 ***	.316 ***	.354 ***	1		
Fearful Attachment	.233 **	.222 **	.191 *	.225 **	1	
General Depression	.607 ***	.623 ***	.605 ***	.461 ***	.292 **	1
SI Severity	.498 ***	.367 ***	.446 ***	.391 ***	.087	.397 ***

SI = Suicidal Ideation,
* $p < 0.05$,
** $p < 0.01$,
*** $p < 0.001$

Table 3

Hierarchical Regression Analyses Predicting Suicidal Ideation Severity

Variable	B	SEB	β	p	R ²	R ²
Step 1: Clinical Variables						.08 [†]
Lifetime SA	2.68	1.20	.19	.03		
Substance use disorder	-2.62	1.12	-.20	.02		
Psychotic Disorder	.41	1.84	.02	.82		
Bipolar Disorder	.23	1.75	.01	.90		
Unipolar Disorder	1.18	1.26	.09	.35		
Step 2: Global depression severity	.24	.05	.39	<.001	.22	.14 ^{**}
Step 3: Functional Domain Symptoms					.35	.13 ^{**}
Anhedonia	1.13	.40	.28	.01		
Entrapment	.09	.04	.19	.03		
State Anxiety	.08	.05	.18	.09		
Trait Anxiety	.06	.05	.12	.25		
Fearful Attachment	-.17	.13	-.11	.17		

SA = suicide attempt;

[†] $p = .06$,* $p < .05$,

**

 $p < .001$; Note that in Step 1, Primary diagnosis group 4, "All other disorders", was entirely determined by the values of the other three categories and thus was excluded from the regression due to perfect collinearity.