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Coping Strategies that Reduce Suicidal Ideation: An Ecological Momentary Assessment Study

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Abstract

Background: While suicide-specific psychosocial interventions often teach coping skills to suicidal individuals, little is known about the strategies that individuals intuitively use on their own to cope with suicidal ideation in everyday life.

Aims: The present study used Ecological Momentary Assessment (EMA) to examine the effectiveness of specific coping strategies individuals use naturally to reduce the intensity of suicidal thinking.

Method: Fifty participants endorsing suicidal ideation with co-morbid mood disorder and borderline personality disorder completed one week of EMA. Real-time use, perceived effectiveness of 7 common coping strategies and intensity of suicidal ideation were assessed at 6 epochs (i.e., timepoints) each day.

Results: Participants reported using an average of 4 coping strategies per epoch. Factor analysis (FA) (exploratory followed by confirmatory FA) identified two coping factors: one that included distraction/positive activity-based strategies (i.e., *keeping busy*, *socializing*, *positive thinking*, and *doing something good for self*) and a second that contained mindfulness-oriented strategies (i.e., *finding perspective*, *calming self*, and *sitting with feelings until they pass*).

Although participants perceived all coping strategies as effective, only strategies in the first factor, distraction/positive activity-oriented strategies, lowered the intensity of suicidal thoughts

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in everyday life. Furthermore, baseline suicidal ideation was inversely related to overall use of coping strategies and particularly use of coping strategies that were found to lead to lowered suicidal ideation.

Conclusions: Distraction/positive activity based strategies are helpful in decreasing suicidal ideation in the short-term. These findings can help clinicians advise patients about strategies to use to cope with suicidal thoughts to prevent acting on them in a crisis and they also have the potential to inform development of psychosocial interventions to prevent suicide.

Introduction

Suicide is a major public health problem (World Health Organization, 2016). Suicide rates have increased by almost 30% over the past two decades (Xu et al., 2018). Suicidal ideation occurs far more frequently than suicide attempts and deaths; about 9.5 million U.S. adults experience serious thoughts of suicide, and 2.7 million make suicide plans every year (Park-Lee et al., 2018). Individuals' experiences of suicidal ideation show marked heterogeneity, with some people moving rapidly from thinking about suicide to manifesting suicidal behavior, while others contemplate suicidal behavior for long periods of time without acting on those thoughts (Glenn & Nock, 2014). As recently suggested by Mou, Kleiman and Nock (2020) and Stanley and Mann (2020), new approaches to suicide research are desperately needed, in part, because identifying risk and mitigation strategies have not had an impact on suicide rates.

Given that suicidal thoughts usually precede suicide attempts, decreasing suicidal ideation is considered a way of preventing suicidal behavior. Much work has been done developing strategies for helping patients mitigate suicidal ideation (Wilks et al., 2018), and at the same time, little is known about the strategies individuals intuitively employ to cope with suicidal ideation (Alexander et al., 2009). In an anonymous online retrospective study, participants reported using a range of strategies to reduce suicidal thinking. Among them, engaging in distracting and social activities were perceived as particularly effective (Simon et al., 2016). However, perceptions of what is effective can be inaccurate (Jeter & Brannon, 2016). To date, no study has assessed how these strategies perform prospectively and whether they, in fact, are effective (as opposed to perceived as effective).

Most suicide research has relied on single-point measures of suicidal ideation, usually involving retrospective assessment. Because this approach does not capture variations in suicidal ideation over short time periods, it is not well-suited to examine the actual use and effectiveness of strategies for coping with suicidal ideation in everyday life. Advances in smartphone-based ecological momentary assessment (EMA) tools make it possible to measure individuals' thoughts, emotions and behaviors in real time and in their natural context. EMA studies have successfully characterized the variability in suicidal thoughts over short periods of time (Hallensleben et al., 2018; Kleiman et al., 2018) and related them to daily life stressors (Husky et al., 2017), hopelessness (Kleiman et al., 2017), and affective instability (Rizk et al., 2019). An important next step toward understanding suicidal ideation in daily life is to examine the coping strategies individuals intuitively employ and to elucidate their effectiveness in mitigating suicidal ideation.

In the current study, we used EMA to determine which strategies (distracting vs. Mindfulness-oriented) individuals use naturally to cope with suicidal ideation, how these strategies cluster within individuals, and their perceived and actual effectiveness in reducing suicidal ideation over the short-term.

Methods

Participants and Procedure

Fifty participants enrolled in an intervention trial comparing psychotherapy and medication for suicidal behavior and non-suicidal self-injury (NSSI) completed assessments for this study as part of their baseline procedures. All procedures in this study were performed prior to randomization to treatment condition. Study procedures were approved by the New York State Psychiatric Institute Institutional Review Board, and all participants provided written informed consent. Recruitment and selection procedures have been described elsewhere (Chaudhury et al., 2017). Briefly, participants met the following inclusion criteria: a diagnosis of borderline personality disorder (BPD); current suicidal ideation; and previous episodes of NSSI and/or suicide attempts (at least one episode within the past six months and another within the past year). Individuals were excluded if they had a psychotic disorder, bipolar I disorder, intellectual disability or any condition that required priority acute care, had received a skill-based psychotherapy (e.g. Dialectical Behavior Therapy (DBT), Cognitive Behavioral Therapy (CBT)) and could not be treated on an outpatient basis. Following an in-person baseline assessment, participants completed one week of mobile EMA assessing suicidal ideation and coping strategies prior to randomization to treatment condition.

Baseline Assessments

Trained Master's-level psychologists conducted all assessments. Diagnoses were determined using the *Structured Clinical Interviews for DSM-IV-TR* (First et al., 2002) and the *Structured Clinical Interviews for DSM-IV Axis II Disorders* (First et al., 1997). Reliability was high (ICC=0.864) for Axis I and II disorders. The *Columbia Suicide History Form* (Oquendo et al., 2003) was used to assess suicide attempt and NSSI history, and the Beck Scale for Suicidal Ideation (SSI) (Beck et al., 1979) was used to measure suicidal ideation. Ideation measures had very high reliability (ICC>.90). Depression severity was assessed using the Beck Depression Inventory (BDI) (Beck et al., 1961) and the Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960) which had high reliability (ICC=.96). We also measured several clinical characteristics: aggression was measured with the Brown-Goodwin Aggression Scale (BGAS) (Brown et al., 1979), hopelessness using the Beck Hopelessness Scale (BHS) (Beck et al., 1974), hostility with the Buss-Durkee Hostility Inventory (BDHI) (Buss & Durkee, 1957), impulsivity using the Barratt Impulsiveness Scale (BIS) (Patton et al., 1995), emotion dysregulation with the Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004) and affective lability using the Affective Lability Scale (ALS) (Harvey et al., 1989).

Ecological Momentary Assessment

During a seven-day response period held before the initiation of the intervention trial, participants carried a personal digital assistant (PDA) device and were prompted to complete EMA 6 epochs/day spaced randomly within 2-hour blocks over the 12-hour wake period (further technical detail has been provided elsewhere) (Chaudhury et al., 2017). In each epoch, we assessed suicidal thoughts and coping strategies. EMA suicidal ideation items were adapted from the SSI (Beck et al., 1979). Participants were asked to rate how strongly they experienced each of the following since the last epoch on a 5-point (0 to 4) Likert scale: *a wish to live; a wish to die; a wish to escape; thoughts about dying; thoughts about suicide; urge to die by suicide; thoughts about hurting self; urges to hurt self*; and whether they had *reasons for living*. To measure coping strategies, participants reported whether or not they used each of the following seven strategies to cope since the last epoch: *keeping busy; socializing; positive thinking; doing something good for self; calming self; finding perspective; and sitting with feelings until they passed*. In addition, participants rated the extent to which they considered the coping strategies they used to be effective in reducing distress on a 5-point Likert scale. These specific coping strategies were selected to cover a range of healthy emotion- and problem-focused strategies likely to be used in daily life (Simon et al., 2016). Information on affect and daily life stressors was also collected at each epoch and has been reported in detail elsewhere (Chaudhury et al., 2017). In addition, participants endorsed self-harm behaviors if they occurred during the epoch being rated. They also rated whether each behavior had suicide intent or not.

Statistical Analyses

EMA data were inspected for possible outlier values; none were found. The scores on the nine EMA suicidal ideation items were summed into a time-varying suicidal ideation score (range: 0–36). To determine whether participants' baseline characteristics were associated with differential use of coping strategies, we modeled the odds of using each coping strategy (i.e., some use vs. no use at each time point) using separate mixed effects logistic regression models, with baseline demographics and clinical measures as predictors in separate models. Additionally, we modeled the number of different coping strategies used by a mixed effect Poisson regression model, with the number of coping strategies used (range: 0–7) at a given time interval as the outcome, and the same baseline variables as predictors. A Benjamini-Hochberg correction for false discovery rate was applied to these results to control significance levels for multiple testing.

To understand how coping strategies clustered within and across subjects, we conducted an Exploratory Factor Analysis (EFA) for repeated measures data (also known as multilevel factor analysis) using 80% ($n = 40$) of the EMA data on the seven coping strategies and then tested the model on the remaining 20% ($n = 10$) of EMA data using Confirmatory Factor Analysis (CFA). While it is generally recommended that EFA be performed on a minimum of 50 subjects, for multilevel factor analysis the number of observations is many times the sample size. Our primary interest was in the within-subject factors, and the number of observations in our analysis was comparable to most studies of multilevel factor analysis according to a review of reporting practices (Kim et al., 2016). Mplus Version 7.11 (Muthen, 1998) was used to fit these models. EFA simultaneously derives two factor structures for

repeated data. The between-subject factors are those that explain the differences between subjects in average coping strategy use (average across all time points), similar to those from a traditional factor analysis. Within-subject factors explain variability in coping strategy use over time within the subject and are based on the extent to which coping strategies are used more together at each time point by the same subject. The optimal number of factors for the EFA was derived based on model fit indices. Factor structures were fit for all combinations of 1–3 within-subject factors and 1–2 between-subject factors. The most parsimonious model with good fit was then tested on the remaining 20% of the EMA data using CFA.

Change in suicidal ideation at a given time t was measured as the difference in total ideation score at time t and the interval immediately preceding it ($t-1$), as long as both observations occurred within the same day. We assessed the effect of time-varying coping strategies, and the within-subject coping factors derived, on the momentary, time-varying change in suicidal ideation using mixed effects regression models, fit with suicidal ideation change as outcome, and time-varying coping strategy use as predictor, with subject-specific random intercepts. Both single-predictor and multi-predictor models were fit with all strategies, or all factors, respectively, as joint predictors, to assess both the marginal and the adjusted effects of each strategies and each factor. In case of the coping factors, the model was also adjusted in separate analyses for the between-subject factors, and results were compared to those from the unadjusted models. The number of coping strategies used at each time point (0–7) was also tested as a predictor of ideation reduction.

These models were repeated with self-reported ratings of perceived coping effectiveness (reported once at each time point) as the outcome and with all coping strategies and within-subject factors as predictors. The results from these model and the models for suicidal ideation change were displayed in the same tables (one for individual strategies and one for the factors) to facilitate comparison. All models of suicidal ideation change and of perceived coping effectiveness were standardized by the SD of the response variable. Significance levels from single-predictor models were compared to a Bonferroni-adjusted .05/7 cutoff. Missing data occurred primarily because a participant did not respond to prompts. If a participant started a survey, missingness occurred in less than 1% of answers. To account for the fact that subsequent observations were unequally spaced, due to the random nature of the prompts, and delayed or declined prompts, we conducted sensitivity analyses by including time since last prompt as a covariate in the longitudinal regression models. The aim was to see whether significance of the effects of interest was influenced by the time between prompts. For models where it made a difference, we planned to present both results and discuss their difference. However, the time lag between answered prompts never had a significant effect on the outcome, nor did it adjust the coefficient of the predictor(s) of interest in a way that their significance was altered; these results were thus omitted.

Results

The sample was predominantly female (86%) and Caucasian (56%), with average age of 30.6 ± 11.0 years. All participants had high school degrees, and 46% were college graduates. Most were never married (82%). All participants had a history of mood disorders: 84%

($n=42$) major depressive disorder, 8% ($n=4$) bipolar II disorder and 8% ($n=4$) depressive disorder not otherwise specified. All participants had a history of non-suicidal self-injury [and/or] suicide attempt. Eighty percent ($n=40$) had a history of a suicide attempt, with a median of two attempts per person. Eighty-eight percent ($n=44$) reported having engaged in lifetime NSSI, with a median of 42 lifetime episodes per person. At baseline, participants expressed suicidal ideation, as measured by the SSI, and were moderately depressed as assessed by the HDRS and the BDI (Table 1). Clinical trait assessments indicated significant impulsivity, aggression, affective lability, and emotion dysregulation (Table 1).

EMA Responses

The expected number of responses per person, based on prompts, was 42, corresponding to 6 prompt per day for 7 days. We obtained 1448 observations, or 29/person, equivalent to 70% compliance rate. During the weeklong EMA reporting period, 92% of epochs had non-zero level of suicidal ideation indicated, 5 participants reported 1 suicide attempt (Mean=0.16; SD=0.62); 21 participants reported 1 NSSI episode (Mean=1.94; SD=3.24), none of which resulted in inpatient hospitalization.

Use of Individual Coping Strategies

Participants reported using 0–7 coping strategies per epoch with a mean of 4.2 ± 1.6 /epoch. Participants employed both distraction/positive activity-based coping strategies (i.e., *keeping busy*: 79%, *positive thinking*: 58%, *socializing*: 56%, and *doing something good for self*: 50%) and mindfulness-oriented strategies (i.e., *finding perspective*: 60%, *sitting with feelings until they pass*: 53%, and *calming self*: 49%).

Relationship between Baseline Clinical Measures and Coping Strategies

Baseline suicidal ideation as measured by the SSI was inversely related to the number of coping strategies used during EMA, indicating efforts to cope with distress. Specifically, participants with higher SSI scores were less likely to use *keeping busy*, *socializing*, *positive thinking*, *doing something good for self* and *finding perspective* as coping strategies but not *sitting with feelings* and *calming self*. With respect to other clinical measures, those with greater emotion dysregulation (DERS) and hopelessness (BHS) used fewer coping strategies overall per epoch, and were less likely to use *socializing* (DERS), *positive thinking* (DERS and BHS), *doing something good for self* (DERS), and *calming self* (DERS) (Table 2). Baseline subjective depression scores (BDI) were not significantly related to coping strategies used but those who were less depressed perceived that the coping strategies were effective. Other clinical measures were not related to strategies used or their perceived effectiveness.

Factor Analysis of Coping Strategies

The most parsimonious model with good fit (RMSEA<0.05, CFI>0.9, TLI>0.9) had two within-subject factors and one between-subject factor. This model found that participants did not differ in how their average coping use was distributed among the strategies (i.e., participants who used more coping generally used more of all the strategies, rather than some participants using more of one set of strategies, and other participants using more

of a different set of strategies). But on the epoch level, within-subjects, there were two groups of coping strategies that tended to cluster together in usage. The two within-subject factors had the following structure: (1) the first factor (i.e., *distraction/positive activity-based coping*) had greater weights for *keeping busy*, *socializing*, *positive thinking*, and *doing something good for self*; and (2) the second factor (i.e., *mindfulness-oriented coping*) had greater weights for *calming self*, *finding perspective*, and *sitting with feelings until they pass*. CFA testing this model on the remaining 20% of the EMA data yielded adequate fit (RMSEA=0.095, CFI=0.92, TLI=0.87), and factor scores were extracted.

Within-Subject Coping Factors and Reductions in Suicidal Ideation

Table 3 summarizes the results of all within-subject analyses estimating the two factors' effectiveness at lowering subsequent suicidal ideation. When analyzed individually, both within-subject coping factors were associated with reductions in ideation, with the effect size of the association twice as large for *distraction/positive activity-based coping* ($b=-0.08$) compared to *mindfulness-oriented coping* ($b=-0.03$). In the multipredictor model, only *distraction/positive activity-based coping* remained significantly associated with reduction in ideation ($b=-0.12$). These results did not change after adjusting for the between-subject coping factor.

Individual Coping Strategies and Reductions in Suicidal Ideation

Table 4 displays the results of single and multi-predictor models testing the association between the use of coping strategy and momentary change in suicidal ideation. Of the seven strategies listed, four were associated in single-predictor models with reductions in suicidal ideation: (*keeping busy* ($p=0.003$), *socializing* ($p=0.021$), *positive thinking* ($p=0.001$) and *doing something good for self* ($p=0.003$)), and three were not (*calming self* ($p=0.205$), *finding perspective* ($p=0.919$) and *sitting with feelings until they passed* ($p=0.298$)). Additionally, the number of coping strategies used during each specific time interval correlated positively with reduction in suicidal ideation, with each additional coping strategy used associated with a 0.14 (SE=0.07) point reduction in suicidal ideation score ($t=-2.13$, $df=1191$, $p=0.003$).

In addition, participants with higher EMA average ideation also reported using fewer coping strategies in each epoch ($r=-0.45$, $t=-3.33$, $df=44$, $p=0.0018$), and reported more non-suicidal self-injurious behavior (Spearman $r=0.41$, $p=0.0042$). Because of the small number of suicide attempts, we cannot determine the relationship between coping strategies and suicidal behavior.

Perceived Effectiveness of Coping Strategies

Participants were asked to rate their perception of overall effectiveness of the strategies used since the last prompt. Average effectiveness reported was 2.7 ± 1.2 on a 5-point Likert scale. In assessing the extent to which participants perceived the within-subject coping factors as effective, factor analyses revealed that both factors were associated with greater perceived effectiveness, both in single-predictor and multi-predictor models, with a nearly ten-times larger effect size for *distraction/positive activity-based coping* ($b=0.39$) in comparison to *mindfulness-oriented coping* ($b=0.04$) in the multipredictor model (Table 3). Adjustment by

the between-subject coping factor did not alter these estimates. Similarly, all seven strategies were associated with higher *perceived* effectiveness as opposed to actual effectiveness in reducing suicidal ideation in single-predictor and multi-predictor models (Table 4).

Discussion

This is the first study using EMA to explore which coping strategies people use on their own, naturally, to effectively reduce suicidal ideation. A primary goal of suicide-specific psychosocial interventions is to enhance an individual's ability to cope with suicidal thoughts and urges before acting on them (Stanley et al., 2009; Stanley et al., 2012). Remarkably, this therapeutic development has proceeded in the face of little understanding of the coping strategies individuals intuitively use in everyday life to help reduce suicidal ideation. We find that individuals adopt a variety of strategies to reduce suicidal thoughts on a day-to-day basis; participants in this study reported using, on average, nearly four different coping strategies per epoch.

Using factor analysis, we found two within-subjects factors: distraction/positive activity-oriented strategies (*keeping busy, socializing, positive thinking and doing something good for oneself*) and mindfulness-oriented strategies (*calming self, finding perspective, and sitting with feelings until they pass*). The distraction/positive activity-oriented strategies as a group resulted in subsequent reductions in suicidal ideation, whereas the mindfulness-oriented strategies did not. This finding may help explain the observed variation across individuals in responses to suicidal ideation (Glenn & Nock, 2014). Future research can explore whether these factors map onto suicide phenotypes (Bernanke et al., 2017).

Notably, participants engaging in mindfulness-type strategies that did not involve explicit behavioral activation or positive thinking (i.e., *calming self, trying to find perspective, and sitting with feelings until they pass*) did not experience a similar improvement in suicidal thoughts. These results may have important clinical implications regarding interventions that resemble such strategies, such as mindfulness-based interventions (MBI). Although prior research supports the use of MBI to target suicidal ideation (Chesin et al., 2018), it seems plausible that the effective use of meditative strategies to cope with suicide depends on proper training and technique. Our findings are in line with previous research recommending moderation when encouraging mindfulness coping skills in untrained individuals (Baer et al., 2019). Nevertheless, training in mindfulness is considered acceptable and feasible by people at high suicide risk (Chesin et al., 2018).

Participants perceived that all coping strategies used were effective in reducing suicidal ideation indicating a disconnect between perceptions and actual effectiveness. Only distraction/positive activity-based strategies led to reductions. Thus, there is a marked discrepancy between what is perceived to be effective by suicidal individuals in mitigating their suicidal crises and what is actually effective in reducing suicidal ideation. Our results provide preliminary evidence suggesting that clinicians working with suicidal individuals should recommend prioritizing distraction/positive activity-based coping strategies, as they were both perceived as effective and actually effective.

Importantly, individuals with higher baseline suicidal ideation scores used fewer coping strategies overall during EMA and, more specifically, were less likely to use activity-based/distractive strategies which are particularly effective in reducing suicidal ideation. Similarly, individuals with higher suicidal ideation scores during the EMA period (as opposed to baseline) used fewer strategies than those with lower EMA ideation scores. Similarly, individuals with higher suicidal ideation scores during the EMA period relative to baseline used fewer strategies than those with lower EMA ideation scores. This is consistent with prior research indicating that suicidal individuals are less prone to using coping skills overall (Bazrafshan et al., 2014). These findings are important when considering psychosocial interventions that may help suicidal individuals manage their suicidal ideation and prevent suicidal behavior. The finding that effective strategies are more activity-based, often serving as a distraction from the suicidal crisis by promoting behavioral activation, pleasure, and a sense of mastery, is in line with approaches encouraged in brief interventions for preventing suicide, such as the Safety Planning Intervention (Stanley et al., 2012) as well as long-term psychotherapeutic interventions for suicide, such as Cognitive Behavior Therapy for Suicide Prevention (Stanley et al., 2009). In fact, distraction as a coping strategy has been found to have a buffering effect on the activity of the hypothalamic-pituitary-adrenal axis (Janson & Rohleder, 2017).

It is not surprising that individuals with higher baseline scores of hopelessness and emotion dysregulation used fewer coping strategies overall. This finding is in line with previous research indicating that adopting more coping strategies predicts better adjustment to stressors in non-suicidal individuals (Heffer & Willoughby, 2017). Individuals with higher depression scores were less likely to use socialization as a coping strategy. This finding suggests that psychotherapies that increase social support, such as Interpersonal Psychotherapy (Weissman, 2020), may be particularly helpful for this population. Hopelessness may result in a sense of inertia in calling up and using coping strategies. Finally, individuals with higher emotion dysregulation scores were less likely to use almost all the individual strategies. Poorer capacity to regulate emotions de facto indicates that fewer coping strategies are used. This finding may explain in part why individuals with high emotion dysregulation are at risk for suicidal behavior. Psychotherapies that stress coping skill acquisition, such as CBT and DBT, may be particularly helpful for this group of individuals.

Limitations

The study sample comprised a relatively homogeneous group of high-risk individuals with co-morbid mood disorders and BPD, the majority of whom were females. Thus, the generalizability of the results to different clinical as well as healthy populations remains to be demonstrated. In addition, although using EMA enhances our ability to measure real-life changes in suicidal thoughts and coping strategies, it has limitations. First, assessments were limited to daytime through random prompts approximately every two hours. Hence, we did not capture fluctuations in suicidal ideation during 12 night-time hours. Second, we did not obtain responses to roughly 30% of the prompts. This compliance rate, which is slightly lower than Husky et al. (2014), may have resulted in data that are skewed toward an over-representation of responses from specific phases (e.g., suicidal crises). It may also

imply less frequent assessments might have worked just as well and involved less subject burden. Also, the use of a 5-point Likert scale may limit the study's ability to detect variation, as compared to 4- or 6-point scales where respondents are not allowed a neutral middle category (Garland, 1991). The limited number of subjects may have influenced the between-subject part of the multilevel factor analysis, as only one between-subjects factor was kept in the best model; a larger study may discover additional between-subject factors. Finally, we included only positive coping strategies and, therefore, do not know how often maladaptive strategies (e.g. drug/alcohol use) were used.

Conclusion

Our findings suggest that distracting, activity-based coping strategies (i.e., *keeping busy, socializing, positive thinking, and doing something good for self*) effectively reduce suicidal ideation in everyday life, while mindfulness strategies (i.e., *calming self, finding perspective, and sitting with feelings until they pass*), employed without specific training, do not. The present study has important implications for clinical interventions in that it may inform prioritization of suggested coping strategies for use by suicidal individuals in everyday life.

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Table 1.

Baseline clinical characteristics

Clinical Measure	N	Mean \pm SD
<i>Scale for Suicidal Ideation (SSI)</i>	50	7.86 \pm 7.50
<i>Hamilton Depression Rating Scale (HDRS)</i>	50	17.08 \pm 7.15
<i>Beck Depression Inventory (BDI)</i>	49	27.98 \pm 11.26
<i>Beck Hopelessness Scale (BHS)</i>	47	11.83 \pm 5.99
<i>Affective Lability Scale (ALS)</i>	41	74.22 \pm 19.36
<i>Difficulties in Emotion Regulation Scale (DERS)</i>	46	126.24 \pm 24.51
<i>Brown-Goodwin Aggression Scale (BGAS)</i>	50	20.44 \pm 5.25
<i>Barratt Impulsivity Scale (BIS)</i>	49	77.55 \pm 13.98
<i>Buss-Durkee Hostility Inventory (BDHI)</i>	48	48.23 \pm 9.90

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Table 2.

Effects of baseline clinical characteristics on coping strategy use

Predictor	Keeping Busy		Socializing		Positive Thinking		Doing Something Good for Self		Calming		Finding Perspective		Sitting with Feeling Until They Pass		Number of Coping Strategies Used	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p	Rate Ratio (SE)	P
SSI (1 SD)	0.60 (0.44,0.83)	<0.001	0.59 (0.45,0.76)	<.001	0.63 (0.44,0.89)	0.01	0.63 (0.45,0.88)	0.01	0.72 (0.50,1.06)	0.09	0.57 (0.38,0.86)	0.01	0.93 (0.60,1.46)	0.79	0.88 (0.84,0.92)	<.001
BDI (1 SD)	0.76 (0.54,1.06)	0.11	0.74 (0.56,0.97)	0.30	0.86 (0.59,1.26)	0.44	0.81 (0.57,1.14)	0.22	0.95 (0.64,1.40)	0.78	0.84 (0.55,1.29)	0.43	1.14 (0.72,1.81)	0.57	0.96 (0.92,1.01)	0.09
BHS (1 SD)	1.15 (0.84,1.58)	0.39	0.85 (0.65,1.12)	0.40	0.61 (0.42,0.88)	0.01	0.71 (0.51,0.99)	0.04	0.64 (0.44,0.95)	0.03	0.62 (0.40,0.96)	0.03	0.69 (0.43,1.10)	0.12	0.91 (0.87,0.95)	0.01
DERSS (1 SD)	0.72 (0.50,1.03)	0.07	0.69 (0.52,0.92)	0.01	0.64 (0.44,0.93)	0.02	0.58 (0.41,0.83)	0.01	0.59 (0.40,0.87)	0.01	0.63 (0.40,0.98)	0.04	0.64 (0.40,1.02)	0.06	0.90 (0.86,0.94)	<.001

Note: Significant after Benjamini-Hochberg adjustment in *italics*; SSI: Scale for Suicidal Ideation; BDI: Beck Depression Inventory; BHS: Beck Hopelessness Scale; Difficulties in Emotion Regulation Scale.

Table 3.

Coping factors as predictors of suicidal ideation change and perceived effectiveness in single and multipredictor models

	Suicidal Ideation Change				Perceived Effectiveness			
	Single predictor model		Multipredictor model		Single predictor model		Multipredictor model	
	Estimate	<i>p</i> -value	Estimate	<i>p</i> -value	Estimate	<i>p</i> -value	Estimate	<i>p</i> -value
Distraction/Positive Activity-Based Coping Factor	-0.08	<.001	-0.12	<.001	0.43	<.0001	0.36	<.001
Mindfulness-Oriented Coping Factor	-0.03	0.03	0.04	0.14	0.22	<.0001	0.04	0.01

Note. The Distraction/Positive Activity-Based Coping Factor had greater weights for Keeping Busy, Socializing, Positive Thinking, and Doing Something Good for Self. The Mindfulness-Oriented Coping Factor had greater weights for Calming Self, Finding Perspective, and Sitting with Feelings until they pass.

Table 4.

Individual coping strategies as predictors of suicidal ideation change and perceived effectiveness

Coping Strategy	Ideation Change (Single predictor model)		Ideation Change (Multipredictor model)		Perceived Effectiveness (Single predictor models)		Perceived Effectiveness (Multipredictor model)	
	Effect (Std β)*	<i>p</i> -value [§]	Effect (Std β)*	<i>p</i> -value	Effect (Std β)*	<i>p</i> -value [§]	Effect (Std β)*	<i>p</i> -value
Keeping Busy	-0.29 (-0.05)	0.01	-0.23 (-0.04)	0.01	0.39 (0.33)	<.001	0.19 (0.16)	<.001
Socializing	-0.24 (-0.04)	0.02	0.02 (0.00)	0.83	0.29 (0.24)	<.001	0.08 (0.07)	<.001
Positive Thinking	-0.38 (-0.07)	0.01	-0.34 (-0.06)	0.01	0.49 (0.40)	<.001	0.20 (0.17)	<.001
Doing Something Good for Self	-0.33 (-0.06)	0.01	-0.04 (-0.01)	0.71	0.40 (0.33)	<.001	0.15 (0.12)	<.001
Calming	-0.15 (-0.03)	0.21	-0.07 (-0.01)	0.57	0.39 (0.32)	<.001	0.07 (0.06)	<.001
Finding Perspective	-0.01 (-0.00)	0.92	0.23 (0.04)	0.03	0.38 (0.31)	<.001	0.10 (0.08)	<.001
Sitting with Feelings Until They Pass	0.11 (0.02)	0.30	0.15 (0.03)	0.11	0.23 (0.19)	<.001	0.08 (0.07)	<.001

Note.

* Unstandardized coefficient with Standardized coefficient in parentheses; Significant *p*-values after Bonferroni correction are denoted by italics for single predictor models.