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Future Disposition and Suicidal Ideation: Mediation by Depressive Symptom Clusters

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Abstract

Background—In line with hopelessness theory, both increased negative expectancies and reduced positive expectancies for the future have been associated with suicidal ideation. This study evaluated two depression symptom clusters as mediators of the relationship between future disposition and suicide: subjective feelings of depression and self-blame.

Methods—Data from 140 undergraduate students with moderate to severe depression symptoms are presented who completed the Beck Scale for Suicidal Ideation, Beck Depression Inventory and the Future Disposition Inventory.

Results—On mediation analysis, subjective depression mediated the relationship between positive disposition and suicidal ideation. In contrast, the relationship between negative disposition and suicidal ideation was mediated by self-blame. The reverse of these relationships was not significant.

Limitations—This is a cross-sectional study of an undergraduate sample and results warrant replication in clinical samples with clinician-administered assessments.

Conclusions—Findings suggest two potential pathways to suicidal thoughts with implications for assessment and treatment. Depressed individuals with few positive expectations of the future

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DL assisted in the conceptualization of the study design, ran the statistical analysis, interpreted the results and edited the manuscript.

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may benefit from interventions focusing on subjective depression symptoms, such as sadness or anhedonia. For depressed individuals with negative expectations for the future, a clinical focus on negative attributions or self-blame may be warranted.

Keywords

Depression; Hopelessness; Suicidal Ideation

Introduction

Suicide is a significant public health concern and the third leading cause of death among adolescents and young adults (Centers for Disease Control and Prevention, 2013). A robust and consistent predictor of suicidal ideation is depressive symptoms (e.g., Garlow et al., 2008; Kisch, et al., 2005); however, the presence of depressive symptoms alone is not a reliable predictor of suicide risk. Thus, a better understanding of how and why depressed individuals become suicidal is critically needed. One promising area of study related to depression and suicidal ideation is the identification of maladaptive cognitions (Wenzel & Beck, 2008). Identification of maladaptive cognitive patterns associated with suicide has been proposed by the National Action Alliance for Suicide as a short-term research objective in the prevention of suicide in the United States (2014). Research into such patterns is instrumental in developing specific treatment targets for suicide-focused interventions.

Future-Oriented Cognitions

One extensively evaluated cognitive risk factor for suicide is hopelessness about the future. Individuals who endorse hopelessness tend to overestimate the probability that current stressors will remain or worsen while simultaneously underestimating the likelihood of relief from emotional, physical, or psychic pain (Chang et al., 2011). Moreover, hopelessness is characterized by both negative outcome and helplessness expectancies (Abramson, 1989), such that a person who is hopeless does not believe future events will turn out in his favor and feels unable to change this outcome. Hopeless individuals are more likely to endorse a negative attributional style (Joiner, 2001) or a way of explaining negative events that centers on an overestimation of: (a) their own causal role in the event; (b) the likelihood of negative events occurring in the future; and (c) the probability that negative events will occur across multiple areas of their lives (Seligman et al., 1979).

According to the hopelessness theory of suicide, negative attributional styles increase risk for future suicidal thoughts and behavior indirectly by increasing hopelessness cognitions (Abramson et al., 1998). This theory, originally developed from theoretical work around depression (Abramson et al., 1998), has been supported in subsequent studies (Smith et al., 2006; Thompson et al., 2005), and has been integrated with the Interpersonal Theory of Suicide (Kleiman et al., 2014). Since this theory has been proposed, research has expanded into the variety of ways people consider the future. For example, MacLeod and colleagues have demonstrated that individuals with suicide behavior have reduced positive expectations for the future, rather than increased negative expectations for the future (1997); a subsequent analysis demonstrated that hopelessness more closely associated with reduced positive, rather than increased negative, thinking about the future in patients with a history of self-

harm (MacLeod et al., 2005). Similar findings have demonstrated that a lack of positive future expectancies is a better predictor of later suicidal ideation than hopelessness (O'Connor et al., 2008). Hope and optimism have also been investigated as protective factors for suicide thoughts and behaviors (O'Keefe & Wingate, 2013). To better investigate these constructs, Osman and colleagues developed a Future Disposition Inventory (FDI), which assesses both positive and negative orientation to the future for the purposes of assessing suicide risk (Osman et al., 2010) and has been shown to be an effective measure of hopelessness and optimism related to suicidal ideation (Bryan et al., 2013).

Depressive Symptom Clusters

Understanding the role of depressive symptoms is integral to the evaluation of hopelessness and future orientation as a predictor of suicide risk. The cognitive theory of depression postulates that negative beliefs about oneself and the future lead to depressive symptoms (Beck et al., 1979), which in turn increases negative attributions (Abramson, 1989). A factor analysis of the widely used Beck Depression Inventory (BDI; Beck, et al., 1961) identified three symptom clusters of depression: (a) self-blame, characterized by feelings of failure, disappointment, guilt and self-criticism; (b) subjective depression, characterized by sadness, lack of satisfaction and anhedonia; and (c) somatic complaints, characterized by sleep and appetite changes (Grunebaum et al., 2005).

Evaluations of these depressive symptom clusters have demonstrated a differential association to suicide risk. The self-blame symptom cluster has been associated with suicide attempt history, and both the self-blame and subjective depression clusters have been associated with suicidal ideation in cross-sectional analyses (Grunebaum et al., 2005; Kelip et al., 2012). These symptom clusters have also been used as outcome measures of "suicidal depression" in a post-hoc analysis of a clinical trial of paroxetine compared to bupropion (Grunebaum et al., 2013), as well as measures of depression severity in a positron emission tomography (PET) study (Milak et al., 2010). These studies provide limited, but compelling, evidence that depressive symptom clusters offer unique information over the unidimensional construct of depression.

The Current Study

Given the robust hopelessness literature and newer evidence on specific depressive symptom clusters, an evaluation of hopelessness theory through the lens of these symptom clusters may provide valuable information about the development of suicidal ideation among depressed individuals. Specifically, the relation between future disposition and suicidal thoughts may be mediated by distinct depression symptom clusters, such that positive and negative future orientations predict suicidal ideation through distinct pathways. Such a relationship would suggest two potential mechanisms for explaining suicidal ideation and, if replicated, could suggest specific treatment targets for subgroups of suicidal patients.

Thus, the current study was undertaken to evaluate the association among future disposition, depressive symptom clusters, and suicidal ideation. We hypothesized that both positive and negative future dispositions would predict suicidal ideation. In line with hopelessness theory, we hypothesized that the link between negative future disposition and suicidal

ideation would be mediated by self-blame, as this cluster is characterized by the “cognitive” aspects of depression. In contrast, we expected that the relationship between decreased positive future disposition and suicidal ideation would be mediated by subjective depression, rather than negative maladaptive cognitions.

To evaluate these hypothesized relationships, we examined symptoms of future disposition, depressive symptom clusters, and suicidal ideation in a sample of undergraduate students. We limited the sample to students reporting moderate to severe depression in order to approximate a sample with clinical relevance. Suicidal ideation was used as an outcome, due to its relationship to both depression and later suicidal behavior (ten Have et al, 2009; Kuo et al., 2001). Mediation models were used to evaluate the role of self-blame and subjective depression in the relationship between future disposition and suicidal ideation.

Methods

Participants

Data were collected from 1200 undergraduate psychology students at a large southeastern university. For the purposes of the current study, only students who reported moderate to severe depression ($N = 140$), as determined by a score of 20 or more on the Beck Depression Inventory – II (BDI-II; Beck et al., 1996) were included. Participants were between the ages of 18 and 26 years (M age = 20.09, $SD = 1.69$), and 77.9% ($n = 109$) were female. The majority described their race/ethnicity as Caucasian ($n = 90$, 64.3%), followed by African American ($n = 18$, 12.9%), Hispanic/Latino ($n = 10$, 7.1%), Asian American ($n = 7$, 5.0%), Native American ($n = 4$, 2.9%), and an additional 7.9% ($n = 11$) of the sample indicated “other” for race/ethnicity. The sample consisted of freshmen ($n = 46$, 32.9%), sophomores ($n = 42$, 30.0%), juniors ($n = 23$, 16.4%) and seniors ($n = 29$, 20.7%). Eighty-three (59.3%) of the students reported they were not in a relationship, and 74.3% ($n = 104$) reported living with a roommate. Of the students who participated in the study, 20.0% ($n = 28$) indicated that they were a member of a social fraternity or sorority.

Measures

Covariates—In addition to age, gender, race, roommate (yes/no), sorority/fraternity affiliation (yes/no), year in school, and relationship status (not in a relationship vs. in a relationship), a measure of social desirability was also included as a covariate given that it has been found to be associated with suicide ideation (Miotto & Preti, 2008).

The Marlowe-Crowne Social Desirability Scale-Form B (MCSD-B; Reynolds, 1982) was used to measure the tendency of making socially desirable responses. The instrument consists of 12 true-false items and was developed from the original Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). Sample items include “No matter who I’m talking to, I’m always a good listener” and “I have never deliberately said something that hurt someone’s feelings.” Previous research (e.g., Loo & Thorpe, 2000) regarding the MCSD-B has demonstrated adequate internal consistency and validity. The internal consistency estimate in the current sample was 0.56.

Independent Variable—UTSA Future Disposition Inventory-24 (FDI-24; Osman et al., 2010) is a 24-item self-report measure of future-related thoughts and feelings that is based on the cognitive-behavioral conceptualization of hopelessness. Items on each of the three 8-item scales are rated on a 5-point scale (1 = “not at all true of me”, 5 = “extremely true of me”). Scores on the inventory have been shown to have strong psychometric properties (see Bryan et al., 2013). This instrument measures one protective factor (positive focus) and two risk factors (negative focus and suicide orientation). In the current study, the positive and negative focus scales were examined as independent variables in separate models and demonstrated good internal consistency with reliability estimates of .86 and .89, respectively.

Potential Mediators—Beck Depression Inventory-II (BDI-II). The BDI-II (Beck et al., 1996) is a widely used 21-item self-report measure of the severity of depressive symptoms. The items (groups of specific statements) are scored from 0 to 3 to assess an individual’s level of symptom severity, yielding a summed minimum score of 0 and a maximum score (indicative of high depressive symptomology) of 63. In the current study, only participants with a total score of 20 or above were included in the analyses. An example of an item on the BDI-II is “Sadness,” with response options being 0 (I do not feel sad), 1 (I feel sad much of the time), 2 (I am sad all of the time), and 3 (I am so sad or unhappy that I can’t stand it). Good estimates of internal consistency and concurrent validity have been demonstrated in clinical and non-clinical samples (Bisconer & Gross, 2007; Naragon-Gainey et al., 2009). Previous researchers (Keilp et al., 2012) have found that suicidal ideation may be more closely associated with certain clusters of depressive symptoms than to overall severity. In a study examining the factor structure of the BDI, Grunebaum and colleagues (2005) demonstrated that the suicide item from the BDI did not load on any single factor, but was most closely associated with the *subjective depression* (sadness, pessimism, lack of satisfaction, loss of interest, indecisiveness, appearance, work inhibition, tiredness, loss of libido) and *self-blame* (sense of failure, guilt, feeling of punishment, sense of disappointment, self-criticism) factors (item/subscale correlations of .46 and .44, respectively), rather than *somatic complaints* (disturbed sleep, appetite loss, weight loss; item/subscale correlation of .19). Thus, in the current study, only the subjective depression and self-blame subscales, with Cronbach alpha’s of .84 and .82, respectively, were examined as potential mediators.

Dependent Variable—The Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991) is a 21-item self-report measure assessing individual’s thoughts, attitudes and intentions regarding suicide over the past week, including attitudes toward living and dying, expected reactions to these thoughts, and frequency of past suicidal behavior. The first 19 items consist of three options assessing the intensity of the suicidal thoughts and are summed to yield a total score indicative of suicide risk, which ranges from 0 to 38 (Brown, 2000). The items provide participants with three response options (e.g., “I have no wish to die”, “I have a weak wish to die”, or “I have a moderate to strong wish to die”) and are rated on a scale from 0 to 2, based on intensity. The BSS has been shown to be valid and reliable across various populations (Healy et al., 2006; Miller et al., 2001), demonstrating excellent internal

consistency reliability in recent studies of college students (Cukrowicz et al., 2011). In the current study, the internal consistency reliability estimate was .90.

Procedure

Following formal approval of the research protocol by the university institutional review board, we used a secure on-line survey format to recruit all the study participants. College students voluntarily completed the survey outside of class time in return for extra credit in their psychology course. Data collection was conducted over the course of three semesters, with approximately equal numbers of participants completing the study during each of the semesters. Participants provided written informed consent prior to completing the study self-report instruments and did not include personal or identifying information on any of the questionnaires. Participants completed a demographic survey and the study measures, which were presented in a randomized order.

Analysis Strategy

Correlations were analyzed to determine the bivariate relations among the study's variables after controlling for several relevant covariates. Mediated paths and total effects were tested as the product of coefficients in separate saturated path models estimated in Mplus v.7.0 (Muthén & Muthén, 2012), using the software's facility for maximum likelihood estimation in the context of missing data. The model was a conventional three-variable mediation system, as described in any standard treatment of indirect effects (MacKinnon, 2008; MacKinnon & Tofighi, 2013), with the addition of the suite of covariates. The null hypothesis is that the sum of the two indirect paths—from the predictor (positive/negative focus) to the mediators (subjective depression, self-blame) and from the mediators to the outcome (suicidal ideation)—is equal to zero, indicating no indirect effect.

We tested for the significance of indirect (mediated) effects using the percentile bootstrap with 3,000 draws to generate empirical confidence intervals for the products of the coefficients composing the mediated paths, one of the methods recommended for specific indirect effects. Bootstrapping, a nonparametric resampling technique, has been shown to be robust against violations of normality and leading methodological theorists strongly recommend bootstrapping over casual step approaches to mediation (MacKinnon, 2008). Further, bootstrapping procedures demonstrate higher estimates of statistical power, greater control over Type I error rates, and are less sensitive to specification errors (MacKinnon et al., 2002; Schumacker & Lomax, 2010). Overall, the current statistical procedures employed allow researchers to test for the presence of mediation using a more powerful and statistically appropriate method when compared to more traditional approaches of detecting mediation.

Results

Descriptive statistics and two-tailed correlations among the primary study variables are presented in Table 1. All bivariate correlations were significant in the expected direction with the exception of the association of positive focus with self-blame and suicide ideation. We further tested the predictive relations among study constructs in the context of the

mediational model adjusting for sociodemographic covariates, which were modeled as exogenous predictors of the study variables. As recommended by MacKinnon and colleagues (MacKinnon, 2008; MacKinnon et al., 2012), we chose to examine subjective depression and self-blame as mediators in separate models given the high correlation ($r = .44$) between the two variables. The models are diagrammed in Figures 1 and 2, with standardized coefficients shown. Contrary to hypotheses, the path coefficients between lower positive focus and suicidal ideation were not significant in either model (see Figure 1). The path coefficient between low positive focus and subjective depression was significant ($b = -0.14$, 95% CI: $-0.28, -.02$); however, the path coefficient between positive focus and self-blame was not significant. The path coefficients between subjective depression and suicide ideation ($b = 0.31$, 95% CI: $0.03, .63$) and self-blame and suicide ideation ($b = 0.63$, 95% CI: $0.28, .99$) were both significant.

Given that neither self-blame nor suicide ideation was significantly associated with positive focus, we did not examine the mediator effect of self-blame on the positive focus-suicide ideation relation. However, we did test subjective depression as a potential mediator in the association between positive focus and suicide ideation. The potential presence of indirect effects in the absence of a significant direct effect has been documented by Shrout and Bolger (2002). Results revealed that the relation between positive focus and suicide ideation was significantly mediated by subjective depression, $ab = -0.05$, 95% CI: $-0.155, -.003$. The confidence interval excluded zero, indicating a significant indirect effect of positive focus on suicide ideation via subjective depression, supporting the mediation hypothesis. Furthermore, the standardized effect size for the indirect effect was 0.04, indicating that suicidal ideation decreased by 0.04 standard deviations for every 1-SD increase in positive focus indirectly via reductions in subjective depression, after accounting for several important covariates. In the model testing subjective depression as a potential mediator in the association between negative focus and suicide ideation (Figure 2), the direct effect of negative focus on suicidal ideation was positive and significant, with a point estimate of 0.24, 95% CI: $0.08, .42$, standardized estimate of 0.25. However, this effect was not significantly mediated by subjective depression. Similarly, in the model testing the indirect effect of self-blame on the negative focus-suicide ideation link (Figure 2), the direct effect of negative focus on suicidal ideation was positive and significant, with a point estimate of 0.20, 95% CI: $0.04, .36$, standardized estimate of 0.21. Consistent with hypothesis, this effect was significantly mediated by self-blame, $ab = 0.09$, 95% CI: $0.01, 0.19$, and revealed a medium effect size for the indirect effect (Fritz, et al., 2012; Preacher & Hayes, 2011). Furthermore, the standardized effect size for the indirect effect was 0.09, indicating that suicidal ideation increased by 0.09 standard deviations for every 1-SD increase in negative focus indirectly via self-blame.

Discussion

In the current study, we found that positive and negative future dispositions were differentially associated with suicidal ideation via distinct depressive symptom clusters among a sample of moderately to severely depressed undergraduate students. Whereas subjective depression explained the link between positive future disposition and suicidal ideation, self-blame explained the association between negative future disposition and

suicidal ideation. Moreover, the reverse of these relationships (positive disposition via self-blame; negative disposition via subjective depression) was not significant. These findings suggest potential mechanisms through which positive or negative thinking about the future can lead to suicidal thoughts.

Positive future disposition can be best conceptualized as having hopeful or optimistic thoughts about the future (Osman et al., 2010). In our study, decreased positive thoughts about the future were associated with increased suicidal thoughts through the subjective depression cluster of symptoms. This cluster focuses on the affectively laden symptoms of depression, such as sadness, lack of satisfaction, anhedonia, fatigue, and indecisiveness. In line with the cognitive theory of depression (Beck et al., 1979), decreased positive thoughts about the future may be a risk factor for the development of depressive symptoms and subsequent suicidal ideation. The current findings suggest that decreased positive future disposition specifically increases subjective depression, leading to suicidal ideation, which may explain conflicting findings about hopelessness from the future disposition literature (O'Connor et al., 2008; MacLeod et al., 1997; Macleod et al., 2005).

The negative disposition, self-blame, and suicidal ideation relationship found in this study appears in line with hopelessness theory (Abramson, 1989). The self-blame depressive cluster on the BDI includes items assessing thoughts of failure, guilt, punishment, disappointment and self-criticism (Grunebaum et al., 2005). This finding suggests that individuals with negative perceptions about the future develop suicidal ideation through self-blame. As self-blame is a component of negative attributional style, it is likely that these individuals have a tendency to view the world pessimistically and that increased negative thoughts about the future increase their focus on their own role in experienced negative events. This finding is also supported by Beck's negative triad of depression (Beck et al., 1979), which postulates that negative thoughts about the future are related to negative thoughts about the self.

Clinical implications of these findings are myriad. For students reporting a lack of positive expectancies about the future, interventions focused on subjective feelings of depression, including psychopharmacology or increasing positive experiences through behavioral activation may reduce the likelihood of progression to suicidal ideation. The implications for students who have a generally optimistic perception of the future suggest that suicide risk can be significantly mitigated by early, brief interventions to return these individuals to their normal state. In particular, the application of positive psychology to suicide treatment and prevention (Huffman et al., 2014) may be an appropriate avenue for this type of treatment. In contrast, students endorsing greater levels of negative future orientation will likely respond to cognitive therapy focused on reducing negative attributions. As these individuals may have more stable and persistent cognitions, identification of negative disposition and self-blame allows for appropriate resource allocation to meet their needs. If replicated, these findings highlight the value of comprehensive assessment of future-oriented beliefs and depressive symptom clusters in choosing interventions to reduce suicide risk.

Despite these findings, the current study is not without limitations. The most significant limitation to these analyses is the use of a cross-sectional sample; evidence of true mediation

requires longitudinal data to establish temporal precedence. Thus, these results cannot provide information about how future disposition, depression, and suicidal ideation develop over time or how these individuals would respond to treatment. Second, we limited the sample to approximate a clinical population by only including students with a BDI-II score of 20 or above. Although this may provide more clinically relevant information, it does not fully capture the spectrum of risks for suicide among the overall college sample, which can occur outside of the context of depression. Further studies in this area should evaluate the roles of interpersonal difficulties and anxiety in relation to future disposition, depression, and suicidal ideation to more fully generalize to the larger college population. Lastly, while the BDI-II is a widely used self-report measure of depression and has strong predictive validity, it does not represent a clinician-obtained Major Depressive Disorder diagnosis.

The current study provides compelling evidence that individuals with suicidal ideation are heterogeneous and that upfront assessment of relevant future disposition and depressive symptoms can provide important information about suicidal thoughts. Clinicians can be overwhelmed with the multitude of symptoms that require treatment, and these results illuminate two potential pathways to suicidal thoughts through depressive symptoms. While these findings warrant replication, this analysis integrates current research in positive and negative future thinking, depressive symptom clusters, and suicidal ideation. These distinctions can lead to future research to identify specific treatment targets tailored to the needs of the client.

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Figure 1.

Model with standardized regression coefficients depicting subjective depression and self-blame as mediators in the relation between positive focus and suicide ideation.

Note. $N = 140$. Numbers in **bold** indicate the model with self-blame as the mediator.

* $p < .05$; ** $p < .01$.

Figure 2.

Model with standardized regression coefficients depicting subjective depression and self-blame as mediators in the relation between negative disposition and suicide ideation.

Note. $N = 140$. Numbers in **bold** indicate the model with self-blame as the mediator.

* $p < .05$; ** $p < .01$.

Table 1

Correlation Matrix, Means, and Standard Deviations of Study Measures

Variable	1	2	3	4	5
1. Positive Focus	--				
2. Negative Focus	-.11	--			
3. Subjective Depression	-.21*	.44**	--		
4. Self-Blame	.01	.45**	.43**	--	
5. Suicide Ideation	-.13	.27**	.27*	-.24**	--
Mean	27.39	23.53	11.50	6.92	6.45
SD	6.20	6.86	4.12	2.92	6.57

Note. N = 140. Tabled values are zero-order correlations.

* p < .05;
** p < .01.