Positive and Negative Expectations of Hopelessness as Longitudinal Predictors of Depression, Suicidal Ideation, and Suicidal Behavior in High-Risk Adolescents

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Abstract

The relationship between hopelessness and depression in predicting suicide-related outcomes varies based on the anticipation of positive versus negative events. In this prospective study of adolescents at elevated risk for suicide, we used two Beck Hopelessness Scale subscales to assess the impact of positive and negative expectations in predicting depression, suicidal ideation, and suicidal behavior over a 2-4 year period. In multivariate regressions controlling for depression, suicidal ideation, and negative-expectation hopelessness, positive-expectation hopelessness was the only significant predictor of depressive symptoms and suicidal behavior. Clinical interventions may benefit from bolstering positive expectations and building optimism.

Introduction

Suicide is the second leading cause of death for adolescents, ages 14-19, in the United States (Centers for Disease Control and Prevention, 2015). A recent nationally representative survey of high school students indicated that within the past year, 17.0% of students reported seriously considering suicide, 13.6% of students had made a suicide plan, 8.0% had made a suicide attempt, and 2.7% had made a suicide attempt necessitating treatment from a medical professional (Centers for Disease Control and Prevention, 2014). A study by Goldman-Mellor et al. (2014) indicated that suicide attempts prior to age 24 are associated with significant health (mental and physical), social, and occupational impairments in young adulthood. This persistence of suicide risk and impaired functioning highlights the need for identification and intervention with at-risk adolescents and young adults in order to improve long-term outcomes.

A number of risk factors across multiple domains have been identified for suicidal thoughts and behaviors in adolescence, and have been the subject of several reviews (e.g., Gould, Greenberg, Velting, & Shaffer, 2003). A substantive body of research implicates hopelessness as a key psychological factor in influencing suicide-related outcomes. Hopelessness is conceptualized as a set of cognitive schemas oriented toward negative

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views/expectations about the future (Beck, Weissman, Lester, & Trexler, 1974). Hopelessness has consistently been associated with and predictive of suicidal thoughts and behavior (e.g., Beck, Steer, Kovacs, & Garrison, 1985). Hopelessness and depression have both been examined and validated as predictors of future suicidal thoughts and behaviors (e.g., Brown, Beck, Steer, & Grisham, 2000). However, these constructs share overlapping components. For instance, hopelessness is characterized by a pessimistic view of the future, which is a key feature in the cognitive triad of depression (Beck, 1967), and may thus be considered a component or symptom of depression.

Theoretical differences in the conceptualized relationship between depression and hopelessness are accompanied by inconsistent empirical findings. Many longitudinal studies have examined depression and hopelessness as predictors of future depression, suicidal thoughts, and suicidal behavior. Studies have found hopelessness, but not depression, to predict suicide deaths in both community (e.g., Kuo, Gallo, & Eaton, 2004) and clinical samples (e.g., Beck et al., 1985). Additionally, studies have found hopelessness to be a stronger long-term predictor of repeat suicide attempts among previous attempters than depression (e.g., Groholt, Ekeberg, & Haldorsen, 2006). However, a study by Aglan and colleagues (2008) found that the long-term presence of major depression predicted deliberate self-harm over a 6-year period better than hopelessness within a sample of self-poisoning adolescents. Some studies focusing on high-risk psychiatric inpatient samples have found depression, but not hopelessness, to be a predictor of suicidal ideation, but neither depression nor hopelessness to be a predictor of suicidal behavior (Links et al., 2012; Prinstein et al., 2008). Additional longitudinal research is needed to clarify the relationship between hopelessness, depression, and suicide-related outcomes.

An important consideration in the examination of hopelessness is the potential difference between state hopelessness (i.e., influenced by current stressors or mood episode) and stable hopelessness (i.e., individual's baseline). For instance, Young et al. (1996) found that hopelessness did not predict future suicidal behavior among psychiatrically hospitalized adults who were depressed, but did predict future suicidal behavior among those who were not concurrently depressed. Furthermore, an experimental study by MacLeod and Cropley (1995) demonstrated that depressed individuals, compared to healthy controls, show a greater expectation for future negative events, but do not differ in expectations for future positive events. MacLeod and Cropley concluded that future thinking regarding negative events was heavily influenced by depression, whereas future thinking regarding positive events was heavily influenced by hopelessness. MacLeod and colleagues (1997) examined differences between positive and negative expectations about the future among those with and without histories of a suicide attempt and found the lack of positive expectancies to distinguish past attempters from non-attempters, whereas there were no significant differences between these groups in the expectation of negative events. Similarly, a longitudinal study by O'Connor et al. (2008) found that the lack of positive expectancies predicted future suicidal ideation, whereas negative expectancies and global hopelessness did not. Separating positive and negative expectations may be critical in distinguishing the overlapping influence between hopelessness and depression, particularly in the prediction of suicidal thoughts and behavior in clinical samples.

The Beck Hopelessness Scale (BHS; Beck et al., 1974) contains 20 True-False items and is the most commonly used measure of hopelessness. It contains 11 negative-expectation items (e.g., I don't expect to get what I really want) and 9 positive-expectation items (e.g., I can look forward to more good times than bad times). A response of 'true' to a negative-expectation item or a response of 'false' to a positive-expectation item counts as one point toward the total scale score, which ranges from 0-20. It may be that in samples with high rates of depression, the negative-expectation items from the BHS are disproportionately influenced by the current state of depression at the time of assessment. This would inhibit the predictive ability of the BHS and may explain the inconsistent findings in the literature regarding depression and hopelessness.

The primary aim of this longitudinal study is to evaluate the positive-expectation and negative-expectation items from the BHS as two separate subscales in predicting future depression, suicidal ideation, and suicidal behavior. We hypothesize that the positive-expectation subscale will be a stronger predictor of future depression, suicidal ideation, and suicidal behavior than Time1 depression, suicidal ideation, and the negative-expectation subscale.

Method

Participants

The study sample was comprised of 59 adolescents, ages 14-19 ($M = 17.6$; $SD = 1.6$), who had screened positive for elevated suicide risk at Time1 in an urban emergency department as part of an intervention study—Teen Options for Change Program (TOC; King, Gipson, Horwitz, & Opperman, 2014). Positive screens for elevated suicide risk were defined by a) recent suicidal ideation (any in the past two weeks), b) recent suicide attempt (any in the past month), or c) current elevated depressive symptoms with co-occurring drug or alcohol misuse. For full details regarding the screening sample and intervention processes, please see King et al. (2014).

Ninety former participants were eligible for inclusion in this follow-up study and fifty-nine (66%) consented and completed the 2-4 year follow-up assessment (Time2). One participant consented to participate but only completed a portion of the follow-up, 6 refused, 3 were incarcerated at the time of contact, and 2 were deceased. One death was classified as an accidental overdose, the cause of death for the other former participant is not currently known to authors. We were unable to schedule or locate the remaining 19 participants. The resulting study sample was 68% female and the racial composition was as follows: 49% White, 36% Black, 12% Multi-racial, and 3% Other. Thirty-one (53%) participants reported a lifetime history of at least one suicide attempt at the baseline assessment. Retention analyses found no differences in demographics (i.e., age, sex, race), severity of clinical presentation (e.g., depression, suicidal ideation, history of suicide attempt, hopelessness), or control/intervention assignment at baseline between those who completed and those who did not complete the follow-up assessment.

Measures

Depression (baseline)—The Reynold's Adolescent Depression Scale-2: Short Form (RADS-2:SF; Reynolds, 2008) was used to assess depressive symptoms at baseline. The RADS-2:SF has demonstrated strong psychometric properties similar to the full length RADS-2 (Milfont et al., 2008). Internal consistency for this scale in this study was $\alpha = .75$.

Depression (follow-up)—The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) was used to assess depressive symptoms at the follow-up assessment. The PHQ-9 has been validated as a screen of depression (Kroenke et al., 2001) and has strong convergent validity with clinician diagnosed depression (Löwe et al., 2004). Internal consistency for this scale in this study was $\alpha = .80$.

Suicidal ideation (baseline)—The Suicidal Ideation Questionnaire-Junior (SIQ-JR; Reynolds, 1987) was used to assess suicidal thoughts at the baseline assessment. The SIQ-JR has strong psychometric properties and has shown predictive validity for suicidal thoughts and attempts in adolescents following psychiatric hospitalization (King, Segal, Kaminski, & Naylor, 1995). Internal consistency for this scale in this study was $\alpha = .95$.

Suicidal thoughts and behaviors (baseline and follow-up)—The Columbia-Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011) is a semi-structured interview and was used to assess suicidal ideation and behavior at baseline and follow-up assessments. The C-SSRS has been used in many settings (Posner et al., 2011) and has predictive validity for adolescent suicide attempts (Gipson, Agarwala, Opperman, Horwitz, & King, 2015; Horwitz, Czyz, & King, 2015).

Hopelessness (baseline and follow-up)—The Beck Hopelessness Scale (BHS; Beck & Steer, 1988) was used to assess hopelessness at both assessments. The BHS has been associated with suicidal thoughts, attempts, and deaths and has demonstrated strong psychometric properties (Beck et al., 1985). Both the 9-item positive-expectation subscale ($\alpha = .76$) and the 11-item negative-expectation subscale ($\alpha = .80$) had strong internal consistency.

Procedure

Adolescents were recruited and screened for suicide risk, regardless of presenting complaint, from an urban general emergency department in a Midwestern region of the U.S. between Nov 2009 and Oct 2010. Among those approached, 80% consented to participate in the suicide risk screening. Eligible participants were contacted 2-4 years following their baseline assessment; the average time to completed follow-up was 3.03 years (SD = 0.75). Participants who completed the follow-up assessment onsite were compensated with $55; participants who no longer resided in the area received $30 for completing the survey online and over-the-phone. All procedures for the original and follow-up studies were approved by the local IRB.

Data Analysis

A series of t-tests and chi-square analyses were utilized to examine univariate associations between baseline demographic (e.g., age, race, sex) and clinical (e.g., depression, suicidal ideation, history of suicide attempt) variables with outcome variables (depression, suicidal ideation, suicidal behavior) at the 2-4 year follow-up. Suicidal behavior was broadly defined by having endorsed a suicide attempt, an aborted suicide attempt, an interrupted suicide attempt, or preparatory behavior (e.g., collected pills).

Three multivariate regression analyses examined baseline depression, suicidal ideation, positive-expectation hopelessness, and negative-expectation hopelessness simultaneously as predictors of depression (linear), suicidal ideation (logistic), and suicidal behavior (logistic). Given the strong correlation between the hopelessness subscales ($r = .67$), collinearity diagnostics were examined for all four predictors. The tests indicated that multicollinearity was not a concern and that collinearity assumptions were met (VIF < 2.5 for all covariates). Because age, sex, race, and suicide attempt history did not have univariate associations with the outcome variables, and due to power considerations, these variables were not included as covariates in the multivariate regression analyses. Exploratory analyses examined "I feel happy," from the RADS-2:SF as a distinct variable in the regressions to control for general positivity.

Results

Univariate Associations between T1 Predictors and T2 Outcomes

Depression—The correlation matrix for Time1 depression, suicidal ideation, positive-expectation hopelessness, negative-expectation hopelessness, and Time2 depression is presented in Table 1. At Time2, the sample's mean PHQ-9 depression score was 9.58 ($SD = 5.68$); 47% of the sample had depression scores above 10, which indicate moderate levels of depression.

Suicidal ideation—At follow-up, 36% (n=21) of participants endorsed thoughts of suicide within the past month (dichotomized as a score of 1+ on the C-SSRS severity scale). Positive-expectation hopelessness [M(SD): 4.23(3.0) vs. 2.64(2.2)] was significantly higher at Time1for those who endorsed Time2 suicidal ideation [$t(57) = -2.32$, $p = .024$; Cohen's $d = .60$]. However, Time 1 scores of negative-expectation hopelessness, suicidal ideation, depression, and history of suicide attempt did not significantly predict suicidal thoughts at Time2.

Suicidal behavior—Over the 2-4 year follow-up period, 34% (n=20) of participants engaged in suicidal behavior and were categorized by their most severe behavior as thirteen with suicide attempts, four with aborted suicide attempts, and three with suicide attempt preparations. Average time to suicidal behavior was 1.21 years (SD 1.07). Time1 scores of positive-expectation hopelessness [M(SD): 4.49(2.8) vs. 2.55(2.3)] significantly predicted which adolescents went on to engage in suicidal behavior [$t(57) = -2.88$, $p = .006$; Cohen's $d = .76$], whereas scores of negative-expectation hopelessness, suicidal ideation, depression,

and history of suicide attempt did not significantly predict suicidal behavior during the follow-up period.

Multivariate Models Predicting T2 Depression, Suicidal Ideation, and Suicidal Behavior

Depression—A multiple linear regression was used to predict depressive symptoms at Time2. Time1 depression, positive-expectation hopelessness, negative-expectation hopelessness, and suicidal ideation were examined as predictors in the model (see Table 2), $F(4,54) = 3.32$, $p = .017$, $R^2 = .138$. The positive-expectation hopelessness subscale was the only statistically significant independent predictor of Time2 depression.

Suicidal ideation—A binary logistic regression was used to predict the absence or presence of suicidal ideation at the follow-up assessment. Time1 depression, positive-expectation hopelessness, negative-expectation hopelessness, and suicidal ideation were examined as predictors in the model, $\chi^2 (4) = 5.67$, $p = .225$., pseudo-$R^2 = .106$. None of the variables were significant independent predictors for past month suicidal ideation at the follow-up assessment.

Suicidal behavior—A binary logistic regression was used to predict the absence or presence of suicidal behavior between the Time1 assessment and the Time2 assessment. Time1 depression, positive-expectation hopelessness, negative-expectation hopelessness, and suicidal ideation were examined as predictors in the model (see Table 3), $\chi^2 (4) = 8.68$, $p = .070$, pseudo-$R^2 = .189$. Positive-expectation hopelessness was the only independent predictor of suicidal behavior, with each incremental point on the subscale associated with a 45% increase in likelihood for engaging in a suicidal behavior.

Exploratory Analyses Incorporating General Positivity

General positivity had significant correlations with Time1 suicidal ideation ($r = .30$), positive-expectations hopelessness ($r = .43$), and negative-expectations hopelessness ($r = .34$), but failed to reach significance for Time2 depression ($r = .24$, $p = .06$). In the regression models, general positivity was not a significant independent predictor of outcomes, whereas positive-expectations hopelessness remained a significant independent predictor of depression ($\beta = .353$) and suicidal behavior [OR(95% CI) = 1.45 (1.02, 2.06)] when controlling for general positivity.

Discussion

The current study sought to examine positive and negative expectations of hopelessness separately as longitudinal predictors of depression, suicidal ideation, and suicidal behavior in 59 adolescents who screened positive for elevated suicide risk at a baseline assessment. Consistent with the study hypothesis, the positive-expectation hopelessness subscale was a significant independent predictor of depression and suicidal behavior, controlling for baseline levels of depression, suicidal ideation, and negative-expectation hopelessness. While positive-expectation hopelessness was also hypothesized to predict suicidal ideation at follow-up, this association was not significant in the multivariate analyses. These findings suggest that lack of positive expectations, rather than presence of negative expectations,

account for the relationship between hopelessness and future depression and suicidal behavior among adolescents.

The results from this study provide longitudinal support for the lack of positive expectations as a predictor of future suicidal behavior, whereas previous studies had only linked lack of positive expectations with past suicide attempts (e.g., MacLeod et al., 1997). Positive-expectation hopelessness may be especially predictive of outcomes in clinical samples, whereby the influence of concurrent levels of depression increase negative expectations (e.g., MacLeod & Cropley, 1995) and potentially reduce the specificity of negative-expectation hopelessness measures/items. Careful consideration should be given to sample composition when depression and hopelessness are examined simultaneously as predictors of suicide-related outcomes.

While we were able to rule out general positivity as a potential mechanism between positive-expectations hopelessness and outcomes in the exploratory analyses, future studies should assess this potential overlap with better-specified measures. Scores on the positive-expectation hopelessness subscale may also reflect differences in underlying explanatory styles. For example, a study by Voelz et al. (2003) found that depressogenic attribution styles possess trait-like qualities, even in the context of significant changes in depressive symptomology among psychiatrically hospitalized youth. Alternatively, optimism, which partially moderates the relationship between hopelessness and suicidal ideation (Hirsch & Conner, 2006), may have influenced study findings. Additional research is needed to clarify potential underlying mechanisms for elevated positive-expectation hopelessness scores, which may ultimately identify constructs that should be more regularly incorporated into suicide risk assessments.

Findings from this study also illustrate the long-term difficulties associated with suicide risk for adolescents. Over one-third of these adolescents went on to engage in suicidal behavior over the course of the 2-4 year follow-up period. Additionally, over one-third had recent suicidal thoughts and nearly half endorsed clinically significant depressive symptoms at follow-up assessment. These outcomes add to the growing body of empirical investigations into the long-term difficulties in functioning associated with suicide risk onset in adolescence (e.g., Fergusson, Horwood, Ridder, & Beautrais, 2005; Goldman-Mellor et al., 2014).

Limitations

This study had a number of important limitations. Despite the high-risk status and rich clinical characterization of this sample, the smaller size (N = 59) limited our statistical power to examine additional covariates (e.g., age, sex, race) and to test potential interaction effects. Secondly, the relatively small count of suicide attempts precluded their examination as individual outcomes, requiring use of a broader definition of suicidal behavior that included aborted attempts and preparatory behavior. Thirdly, we measured depression using two different scales at the two assessment time points. Additionally, we did not use the SIQ-JR at the Time2 assessment and instead measured suicidal ideation dichotomously using the C-SSRS. Furthermore, our measure of general positivity was based on one item of happiness.

Clinical Implications and Future Directions

Should future studies replicate study findings, the lack of positive expectations regarding the future should be examined carefully when assessing suicide risk in depressed adolescents and monitored regularly. These expectations about positive events may distinguish which adolescents improve in functioning from those who experience prolonged periods of impairment and elevated suicide risk. The long-term deficits in social, occupational, and mental/physical health functioning for suicidal adolescents and young adults highlight the importance of evidence-based intervention and prevention efforts to improve outcomes for these individuals. In light of our results, building hope and optimism for positive future events may be a critical intervention target for suicidal adolescents and worth incorporating into treatment planning.

Acknowledgments

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Table 1

Correlations of Time1 Predictor Variables and Time2 Depression

	T1 Depression	T1 SI	T1 Hopeless +	T1 Hopeless -
T1 Depression	---	---	---	---
T1 SI	.413[**]	---	---	---
T1 Hopeless +	.402[**]	.298[**]	---	---
T1 Hopeless -	.543[***]	.449[**]	.669[***]	---
T2 Depression[a]	.073	.143	.424[**]	.296[*]

Note.

[*]
$p < .05$

[**]
$p < .01$

[***]
$p < .001$.

[a]Depression was measured with the PHQ-9 at T2, RADS-2:SF at T1

T1 = Time One. ; T2 = Time Two. ; SI = Suicidal Ideation (SIQ-JR).
Hopeless + = Positive-expectation subscale; Hopeless - = Negative expectation subscale

Table 2

Linear Regressions Predicting Time2 Depression using Time1 Predictors

	B	**SE**	**β**
T1 Depression[a]	-0.195	0.183	-0.159
T1 Hopeless +	0.781	0.370	0.421[*]
T1 Hopeless -	0.156	0.364	0.079
T1 Suicidal Ideation	0.011	0.032	0.048

Note.

[*]
$p < .05$.

[a]
Depression was measured with the RADS-2:SF at T1, PHQ-9 at T2

T1 = Time One.
Hopeless + = Positive-expectation subscale; Hopeless - = Negative expectation subscale

Table 3

Logistic Regression Predicting Future Suicidal Behavior using Time1 Predictors

	B	SE	Wald χ^2 (df = 1)	OR (95% CI)
T1 Depression	-0.032	0.079	0.158	0.97 (0.83, 1.13)
T1 Hopeless +	0.371	0.171	4.736	1.45 (1.04, 2.03)[*]
T1 Hopeless -	-0.087	0.165	0.277	0.92 (0.66, 1.27)
T1 Suicidal Ideation	0.013	0.014	0.864	1.01 (0.99, 1.04)

Note.

[*]
$p < .05$.

T1 = Time One.

Hopeless + = Positive-expectation subscale; Hopeless - = Negative expectation subscale