

# Being Certain about an Absence of the Positive: Specificity in Relation to Hopelessness and Suicidal Ideation

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Understanding why people think about suicide may assist researchers and clinicians in assessing and treating suicidal thoughts and behaviors. This study examined the cognitive content of future expectancies that would statistically predict suicidal ideation and whether hopelessness—one of the best-established cognitive predictors of suicide—would explain the relationship between certainty about pessimistic future-event predictions and suicidal ideation in an ethnically diverse sample. College undergraduates ( $N = 864$ ) completed measures of hopelessness, depression symptoms, and suicidal ideation. In addition, they made predictions about whether a given set of positive and negative events were likely to happen in their futures and rated how certain they were about each prediction. Being “as certain as one can be” when anticipating an absence of positive future outcomes (Certainty-AP)—but not certainty about negative outcomes (Certainty-N)—statistically predicted concurrent suicidal ideation, beyond the effects of simple pessimism about positive and negative outcomes, and hopelessness partially mediated this relationship. However, Certainty-AP statistically predicted suicidal ideation even after adjusting for hopelessness and symptoms of depression. These findings suggest that one specific type of future-oriented cognition that predicts suicidal ideation—independently of general hopelessness and symptoms of depression—involves certainty about the absence of positive future outcomes.

Understanding why people think about suicide is a critical priority in current psychopathology research, with direct implications for the assessment, treatment, and prevention of a growing public health concern. Suicide is among the top three leading causes of death among individuals between ages 15 and 44 worldwide (White & Hol-

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mes, 2006; World Health Organization, 2001) and among individuals between ages 15 and 34 in the United States (Centers for Disease Control and Prevention, 2008). Studying the cognitions that give rise to suicidal thinking and behavior may assist researchers and clinicians in modifying these maladaptive thinking processes. Cognitive models of suicide show promise in elucidating the thought content and processes that increase risk for suicidal behavior, but fine-grained research on cognitive content that distinguishes suicidal from depressive cognitions is a fairly recent endeavor (see Ellis, 2006). One often-studied cognitive factor that predicts suicide attempts and completed suicide is hopelessness (see McMillan, Gilbody, Beresford, & Neilly, 2007). However, the precise types of thoughts that give rise to hopelessness and the ways in which hopelessness-related cognitions result in suicidal thinking and behavior remain less well-studied. The present research seeks to address this gap in the literature by examining the specific content of hopelessness-related cognitions that give rise to suicidal ideation.

### **Hopelessness, Reduced Positive Future Expectancies, and Suicidal Ideation and Behavior**

Abramson, Metalsky, and Alloy (1989) defined hopelessness as the expectation that one will inevitably experience negative future outcomes and fail to experience desired future outcomes, and that one is helpless to affect these outcomes. Such hopeless expectations about the future are thought to reflect biased cognitive schemas (Beck, Rush, Shaw, & Emery, 1979) and were initially studied in the context of depression (e.g., Andersen & Limpert, 2001; Andersen, Spielman, & Bargh, 1992; MacLeod & Byrne, 1996; MacLeod, Byrne, & Valentine, 1996; MacLeod & Salaminiou, 2001). Given that depression is a predictor of suicidal ideation, attempts, and completed suicide (e.g., Harris & Barraclough, 1997; Kandel, Raveis, & Davies, 1991; Lewinsohn, Rohde, & Seeley, 1994), hopelessness-related cognitions may give rise to suicidal thoughts and behaviors through their association with symptoms of depression. However, evidence suggests that hopelessness is also associated with suicidal ideation and behavior independently of depression (Abramson et al., 1998; Steer, Kumar, & Beck, 1993) and may be more important than depression in explaining thoughts about suicide (Beck, Steer, Beck, & Newman, 1993). Thus, there might be an alternative path through which hopelessness-related cognitions lead to suicidal thoughts and behaviors.

Research on hopelessness-related thoughts suggests that a failure to anticipate positive future events, as opposed to the expectation that negative events will occur, distinguishes clinically depressed from non-depressed individuals (Andersen & Limpert, 2001; MacLeod & Salaminiou, 2001) and from clinically anxious individuals (MacLeod & Byrne, 1996). Such research appears to suggest that a reduced ability to expect positive outcomes is a distinctive feature of depression. However, additional research suggests that a failure to anticipate positive future outcomes is also associated with suicidal behavior, even in the absence of depression (MacLeod, Pankhania, Lee, & Mitchell, 1997). MacLeod and colleagues (2005) examined components of hopelessness among 441 individuals with a history of repeated suicidal behavior who were asked to quickly generate potential positive and negative future events that could happen to them in the future. A decreased ability to generate positive future expectancies was more strongly associated with hopelessness than was increased fluency in anticipating

negative future outcomes. Furthermore, lack of positive future-event fluency statistically predicted higher degrees of hopelessness, above and beyond symptoms of depression and anxiety (MacLeod et al., 2005). In a related vein, MacLeod and Cropley (1995) found that the reduced anticipation of positive future events was more strongly related to hopelessness than to depression. Finally, O'Connor and colleagues (2008) found that reduced positive future-event fluency more strongly predicted suicidal ideation than did hopelessness among individuals with a history of repeat self-harm 2.5 months after their most recent self-harm episode, while increased negative future-event fluency had no independent effect on suicidal ideation (O'Connor, Fraser, Whyte, MacHale, & Masterton, 2008). Taken together, these data suggest that breaking down the types of future-outcome expectancies that lead to hopelessness may be key to understanding the cognitive processes that also lead to suicidal thinking and behavior.

### Certainty when Anticipating Future Outcomes

Beyond having pessimistic future expectancies, however, the subjective probability that a particular type of outcome will occur also appears to matter. MacLeod et al. (2005) found that the degree to which parasuicidal patients rated their pessimistic predictions as *likely* outcomes was positively associated with hopelessness. Andersen and colleagues suggest—in line with the hopelessness model (Abramson et al., 1989)—that it is not merely making pessimistic predictions (i.e., anticipating that negative events will occur or that positive events will not occur), per se, that propels individuals into hopelessness and depression, but rather it is the point at which individuals make their pessimistic predictions with complete *certainty* that they become vulnerable to hopelessness and depression (Andersen, 1990; Andersen & Lyon, 1987; Andersen et al., 1992). In a study by Andersen and Lyon (1987), college undergraduates were either told that they had a 0%, 25%, 50%, 75%, or 100% likelihood of being exposed to an aversive event (i.e., 10 minutes of criticism from a graduate student) following an anagram task. Rather than increasing linearly as a function of perceived likelihood, dysphoric mood was found to increase quadratically, as a function of perceiving that the aversive outcome had a 100% chance of occurring. Further research suggests that the tendency to be certain about the occurrence of negative future events or the nonoccurrence of positive future events is associated with higher symptoms of depression concurrently (Andersen, 1990) and over time (Jacobson, Weary, & Edwards, 1999).

However, Andersen and colleagues have not typically distinguished between certainty about a negative future versus certainty about the absence of a positive future. Recent cross-sectional data suggest that being certain that positive future events will not occur—rather than certainty about negative outcomes—distinguishes symptoms of depression from generalized anxiety symptoms (Miranda, Fontes, & Marroquín, 2008; Miranda & Mennin, 2007). Furthermore, hopelessness better accounts for the relationship between certainty in a lack of positive outcomes and depression symptoms than it does for the relationship between negative-outcome certainty and symptoms of depression—both concurrently and over time (Miranda et al., 2008). Given that hopelessness predicts suicidal thoughts and behaviors independently of depression, it may be that certainty about an absence of positive future outcomes is an important characteristic of future-oriented cognitions that results in suicidal ideation. This relationship might show specificity in affecting ideation independently of negative-outcome expectancies.

## The Present Study

To further elucidate the nature of cognitive content-specificity in expectancies about the future that are associated with hopelessness and suicidal thinking, the present study examined whether certainty when anticipating an absence of positive future outcomes (Certainty-AP) better predicts suicidal ideation than being certain when anticipating negative future outcomes (Certainty-N), beyond simple pessimism, and whether hopelessness statistically mediates this relationship. Suicidal ideation has not typically been examined as an outcome in studies of cognitive content-specificity in future-event predictions (although there are exceptions, such as O'Connor et al., 2008), and thus, this study sought to address this gap in the literature using a non-clinical sample. Studying a nonclinical sample allows for the examination of factors that may predict suicidal behavior (given the association between suicidal ideation and attempts) before individuals engage in suicidal behavior. Furthermore, studies of suicidal thoughts and/or behaviors tend to include samples of limited ethnic diversity. This study sought to overcome this limitation by examining these questions in an ethnically diverse sample of college undergraduates.

We hypothesized that certainty when anticipating a lack of positive future outcomes would be more strongly associated with hopelessness and with suicidal ideation than would be certainty when anticipating negative future experiences, beyond pessimism. Given previous research findings that depression symptoms are associated with both certainty about negative future outcomes and certainty about an absence of positive future outcomes, we hypothesized that both Certainty-AP and Certainty-N would be positively associated with depression. However, given the specific association between positive future expectancies and hopelessness found in previous work, we predicted that hopelessness—and not depression—would mediate the relationship between Certainty-AP and suicidal ideation.

## METHOD

### Participants

Eight hundred sixty-four college undergraduates (71% female) at a public university in the northeastern United States participated in this study as part of their Introduction to Psychology research requirement. The average age of participants was 20.44 ( $SD = 4.57$ ; range = 18-59). The racio-ethnic distribution of the sample was 34% White, 29% Asian, 16% Hispanic, 13% Black, and 7% of other ethnicities, with 3 individuals not reporting their ethnicities. Approximately 43% of the sample was born outside of the United States. The number of participants included in the final analyses varied from 836 to 861, due to missing data.

### Measures

*Beck Depression Inventory, 2nd Edition* (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report questionnaire designed to assess the severity of depressive symptoms (e.g., sadness, anhedonia, sleep disturbance), as experienced in the previous two weeks. Each item is rated on a scale from 0 (e.g., "I do not feel sad") to 3 (e.g., "I am so sad or unhappy that I can't stand it"). The maximum score possible

is 63, and a score of 20 or above indicates at least moderate depression. Scores in the present sample ranged from 0 to 46, with an average of 12.7 ( $SD = 8.7$ ). This average is slightly higher than that of other studies using college-student samples (e.g., Miranda et al., 2008). The BDI-II has demonstrated good concurrent, discriminant, and predictive validity in clinical and nonclinical samples (Beck et al., 1996) and showed good internal consistency in this sample ( $\alpha = 0.88$ ).

*Beck Hopelessness Scale* (BHS; Beck & Steer, 1988). The BHS is a 20-item, true-false, self-report scale which examines participants' general expectations about their future. The BHS includes 11 negatively phrased items (e.g., "my future seems dark to me"), and 9 positively phrased items (e.g., "I look forward to the future with hope and enthusiasm"). Scores on the BHS range from 0 to 20. The average score in the present sample was 4.2 ( $SD = 4.0$ ; range = 0–20). The BHS has demonstrated good concurrent, discriminant, and predictive validity (see Beck & Steer, 1988) and showed high internal consistency in the present study ( $\alpha = .87$ ).

*Beck Scale for Suicidal Ideation* (BSS; Beck & Steer, 1991). The BSS is a 21-item self-report questionnaire that measures the presence of suicidal ideation. It includes statements about passive and active suicidal thoughts (e.g., "I would not take the steps necessary to avoid death if I found myself in a life-threatening situation"; "I have a specific plan for killing myself"). Individuals are asked to respond to five questions that inquire about suicidal desire and then complete additional items if they endorse any wish to die. Scores on the BSS range from 0 to 38, with totals in the present sample ranging from 0 to 21 ( $M = 0.9$ ,  $SD = 2.6$ ).<sup>1</sup> The BSS also includes two questions regarding whether the individual has made one or more suicide attempts, and, if so, how strong the intent was during the last suicide attempt. In the present sample, 36 individuals endorsed the item indicating one past suicide attempt, and 28 individuals reported that they had made more than one past suicide attempt. The BSS has shown good concurrent validity in clinical samples, with correlations of .90-.94 with clinician ratings (Beck, Steer, & Ranieri, 1988). Cronbach's alpha for items 1-19 in the present sample was high ( $\alpha = .98$ ).

*Pessimism and Certainty Regarding Positive and Negative Outcomes.* Pessimism and predictive certainty in the occurrence of positive and negative future outcomes were measured using the Future Events Questionnaire (FEQ; Miranda & Mennin, 2007), a measure adapted from prior work by Andersen and colleagues (Andersen, 1990; Miranda & Andersen, 2008) designed to measure *depressive predictive certainty*. The FEQ is a 34-item self-report questionnaire consisting of 17 positive (e.g., "be admired by people") and 17 negative (e.g., "regret a major life decision") future events, presented in mixed order. Events were selected from prior studies of future-event predictions (Andersen & Limpert, 2001; MacLeod, Williams, & Bekerian, 1991; Andersen et al., 1992; MacLeod et al., 1996; Miranda & Andersen, 2008). Individuals are asked to consider whether each event is likely to happen to them in the future and to circle "yes" or "no" on the questionnaire. After making this decision, individuals are asked to rate how certain they are of their prediction on a Likert scale ranging from 1 ("not

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1. Given the large positive skew in the distribution of BSS scores (i.e., with about 80% of the sample with a BSS total of 0), scatterplots with LOESS fit were conducted to examine whether a curvilinear relationship between BSS score and other variables existed that would necessitate transformation of scores. No systematic curvilinear relationships were detected. Given an approximate linear relationship, ordinary least squares regression coefficients should be unbiased estimators of population coefficients (Fox, 1997).

at all certain”) to 5 (“as certain as one can be”). *Certainty* was calculated as the number of times individuals predicted that a negative event would happen in their futures with the highest degree of certainty or that a positive event would not happen with the highest degree of certainty. Two predictive certainty scores were computed: *Certainty about the presence of negative future outcomes (Certainty-N)* and *certainty about the absence of positive future outcomes (Certainty-AP)*. Previous research has used the term *depressive predictive certainty* to refer to these scores (Miranda et al., 2008; Miranda & Mennin, 2007), consistent with the work of Andersen and colleagues (Andersen, 1990; Andersen et al., 1992; Andersen & Limpert, 2001). Two types of pessimism were computed—one involving the total number of times participants responded “yes” to a negative event (pessimism about negative outcomes, or *Pessimism-Neg*) and the total number of times they responded “no” to a positive event (pessimism about positive outcomes, or *Pessimism-Pos*), excluding items for which individuals made their predictions with the highest certainty. Thus, *Pessimism-Neg* and *Pessimism-Pos* captured the degree of pessimism in the sample that did not overlap with certainty. Scores on each of the pessimism and certainty scales can range from 0 to 17. In the present sample, pessimism about positive outcomes ranged from 0 to 14 ( $M = 2.5$ ,  $SD = 2.7$ ), and pessimism about negative outcomes ranged from 0 to 16 ( $M = 7.0$ ,  $SD = 3.3$ ). Scores ranged from 0 to 6 ( $M = 0.3$ ,  $SD = 0.8$ ) for *Certainty-AP* and from 0 to 17 ( $M = 1.5$ ,  $SD = 2.3$ ) for *Certainty-N*. Internal consistency was adequate for yes/no responses ( $\alpha = .70$ ) and certainty ratings ( $\alpha = .89$ ).

## Procedure

After providing informed consent, participants completed packets that included the above measures in groups of 4-8. Participants were then debriefed about the purpose of the study, and each participant was provided with a list of treatment referrals that included the telephone number and location of the college counseling center, along with a list of local resources. Additionally, a risk assessment procedure was followed whereby participants who endorsed suicidal ideation with a plan—as assessed by a score of 3 on the suicide ideation question on the BDI (item 9) and by a response of 2 on at least one of several BSS items indicating suicide ideation with a plan (e.g., “I have a specific plan for killing myself”), were to be interviewed by a licensed clinical psychologist (R.M.) and referred to the college counseling center for further evaluation. No participants in the present sample endorsed current suicidal ideation with a plan, as defined by the above criteria, during the study. (Participants who indicated they had made a recent suicide attempt—as reported on another questionnaire that is not a focus of the present analyses—and who reported current suicidal intent, as indicated by a nonzero response on item 12 of the BSS, or by a response of 2 or above on item 9 of the BDI-II—were also interviewed and referred to the counseling center.) Participants who endorsed suicidal ideation without a plan were encouraged to visit the student counseling center or to inform their own clinician of their thoughts. In addition, they were asked to contract for safety prior to leaving the study session, and an e-mail was sent to the individual by R.M. to inquire about how the individual was feeling following the study, and if necessary, to schedule an appointment to discuss referrals for treatment. No individuals reported adverse consequences of taking part in the research.

## RESULTS

### Differential Association between Certainty about an Absence of Positive versus Certainty about Negative Outcomes and Suicidal Ideation

Correlational analyses were conducted to examine whether certainty when anticipating an absence of positive future outcomes (Certainty-AP) would be more strongly associated with suicidal ideation than would certainty when predicting negative future outcomes (Certainty-N). This hypothesis was supported by the analyses. Being “as certain as one can be” when predicting that positive events were not likely to occur in one’s future was more strongly associated with suicidal ideation,  $r(841) = .28$ ,  $p < .01$ , than was being certain when predicting negative outcomes,  $r(841) = .15$ ,  $p < .01$ ,  $Z_{diff} = 3.39$ ,  $p < .01$ . Furthermore, Certainty-AP was also more strongly correlated with hopelessness,  $r(839) = .30$ ,  $p < .01$ , than was Certainty-N,  $r(839) = .21$ ,  $p < .01$ ,  $Z_{diff} = 2.37$ ,  $p < .05$ . Certainty-AP was equally associated with symptoms of depression, compared to Certainty-N,  $r(835) = .32$  and  $.30$ , respectively,  $p < .01$ ,  $Z_{diff} = .51$ . Pessimism about positive outcomes was more strongly associated with suicidal ideation,  $r(841) = .27$ ,  $p < .01$ , hopelessness,  $r(839) = .60$ ,  $p < .01$ , and depression,  $r(835) = .48$ ,  $p < .01$ , than was pessimism about negative outcomes,  $r = .12$ ,  $.36$ , and  $.31$ , respectively ( $Z_{diff} = 3.60$ ,  $6.81$ , and  $4.27$ , respectively,  $p < .01$ ). Hopelessness was significantly and positively associated with symptoms of depression,  $r(854) = .66$ ,  $p < .01$ , and with suicidal ideation,  $r(859) = .43$ ,  $p < .01$ . Finally, Certainty-AP was positively correlated with Certainty-N,  $r(841) = .34$ ,  $p < .01$ .

### Hopelessness as a Mediator of the Relationship between Certainty in Future-Event Predictions and Suicidal Ideation

We hypothesized that Certainty-AP would more strongly predict concurrent suicidal ideation than Certainty-N, beyond pessimism, and that this relationship would be statistically mediated by hopelessness. Furthermore, we hypothesized that symptoms of depression would not further explain the Certainty-AP-ideation relationship, beyond hopelessness. These hypotheses were tested via three separate hierarchical linear regressions in which Certainty-AP and Certainty-N were entered together in one block for each analysis, and pessimism about positive and negative outcomes were entered in a subsequent block to predict hopelessness (see Table 1a), symptoms of depression (see Table 1b), and suicidal ideation (see Table 1c), respectively.<sup>2</sup>

2. Demographic comparisons revealed statistically significant sex differences in predictive certainty, with males scoring higher than females on Pessimism-Pos ( $M = 2.83$  vs.  $2.42$ ), Certainty-AP ( $M = 0.35$  vs.  $0.22$ ), and Certainty-N ( $M = 1.74$  vs.  $1.34$ ),  $ps < .05$ . In addition, individuals of ethnic minority background had higher BDI ( $M = 13.27$  vs.  $11.73$ ), Pessimism-Pos ( $M = 2.68$  vs.  $2.27$ ), and Pessimism-Neg scores ( $M = 7.17$  vs.  $6.66$ ) than White participants,  $ps < .05$ . Finally, age was significantly and negatively correlated with depression symptoms,  $r(855) = -.13$ ,  $p < .01$ , and to a smaller degree with hopelessness,  $r(858) = -.08$ ,  $p < .05$ , Pessimism-Neg,  $r(840) = -.10$ ,  $p < .01$ , and Certainty-AP,  $r(840) = -.07$ ,  $p < .05$ . However, adjusting for demographic variables (age, sex, ethnicity) yielded almost identical results to regressions that did not adjust for these characteristics. Thus, demographic variables were removed from the final analyses.

TABLE 1a. Hierarchical Linear Regression Predicting Hopelessness

Block	Variable	$\beta_{\text{block1}}$	$\beta_{\text{block2}}$	Partial $r^*$	Model F
1	Certainty-AP	0.25**	0.15**	.18**	46.55**
	Certainty-N	0.12**	0.14**	.18**	
2	Pessimism-Pos		0.51**	.55**	191.56**
	Pessimism-Neg		0.28**	.36**	

Note. \*\* $p < .01$ ; \* $p < .05$ .  $\beta$  = standardized regression coefficient at each block. \*Refers to values in final model.

Before adjusting for pessimism, Certainty-AP more strongly predicted hopelessness ( $\beta = 0.25, p < .01$ ) than did Certainty-N ( $\beta = 0.12, p < .01$ ). Furthermore, while Certainty-AP significantly predicted suicidal ideation ( $\beta = 0.26, p < .01$ ), Certainty-N did not do so ( $\beta = 0.06, p = .10$ ) when both variables were included in the regression. However, both variables equivalently predicted depression symptoms ( $\beta_{\text{AP}} = 0.25$  and  $\beta_{\text{N}} = 0.22, p < .01$ ) when both were included in a regression.

After adjusting for pessimism, both Certainty-AP ( $\beta = 0.15, p < .01$ ) and Certainty-N ( $\beta = 0.14, p < .01$ ) equivalently predicted hopelessness, and both variables significantly predicted depression symptoms, but Certainty-N ( $\beta = 0.23, p < .01$ ) did so more strongly than Certainty-AP ( $\beta = 0.17, p < .01$ ). In addition, both pessimism about positive and negative outcomes significantly predicted hopelessness ( $\beta_{\text{Pess-Pos}} = 0.51, p < .01$ , and  $\beta_{\text{Pess-Neg}} = 0.28, p < .01$ , respectively), and depression symptoms ( $\beta_{\text{Pess-Pos}} = 0.37, p < .01$ , and  $\beta_{\text{Pess-Neg}} = 0.27, p < .01$ , respectively). Certainty-AP significantly predicted suicidal ideation ( $\beta = 0.22, p < .01$ ), but Certainty-N did not ( $\beta = 0.07, p = .06$ ), adjusting for pessimism. Both forms of pessimism were statistically significant predictors of suicidal ideation, although pessimism about positive outcomes was a stronger predictor ( $\beta = 0.20, p < .01$ ) than pessimism about negative outcomes ( $\beta = 0.10, p < .01$ ).

Mediational analyses were conducted using Baron and Kenny's (1986) criteria. These criteria require that the independent variable (i.e., pessimism, certainty) be significantly related to both the mediator (i.e., hopelessness) and the outcome variable (i.e., suicidal ideation), that the mediator be related to the outcome, and that adjusting for the mediator significantly diminishes the relationship between the predictor and the outcome. For complete mediation to occur, the relationship between the predictor and outcome must be close to zero after adjusting for the mediator. Bias-corrected 95% confidence intervals—computed using bootstrapping (with  $n = 1000$  bootstrap resamples)—were used to test for the significance of indirect effects (Preacher & Hayes, 2008).<sup>3</sup>

An indirect effect was considered statistically significant if its confidence interval did not include zero. Hopelessness partially mediated the relationship between Certainty-AP and suicidal ideation, after adjusting for pessimism, as the confidence interval for the indirect effect did not include zero ( $CI = 0.10\text{--}0.36$ ). Furthermore, hopelessness mediated the relationship between pessimism and ideation (adjusting for certainty), as entering hopelessness in the regression model reduced the relationship between both forms of pessimism and suicidal ideation to about 0 (see Table 1c), and indirect effects were statistically significant ( $CI_{\text{Pess-Pos}} = 0.14\text{--}0.26$ ;  $CI_{\text{Pess-Neg}} = 0.06\text{--}0.13$ ). Certainty-AP continued to statistically predict ideation, even after depres-

3. The majority of variables had skewness scores over 1 (with the exception of BDI-II and Pessimism-Neg). Bootstrapping does not assume a normal distribution (see Preacher & Hayes, 2008).

TABLE 1b. Hierarchical Linear Regression Predicting Depression Symptoms

Block	Variable	$\beta_{block1}$	$\beta_{block2}$	$\beta_{block3}$	Partial $r^*$	Model $F$
1	Certainty-AP	0.25**	0.17**	0.10**	.13**	68.97**
	Certainty-N	0.22**	0.23**	0.17**	.21**	
2	Pessimism-Pos		0.37**	0.14**	.15**	131.32**
	Pessimism-Neg		0.27**	0.14**	.17**	
3	Hopelessness			0.48**	.44**	169.48**

Note.\*\* $p < .01$ ; \* $p < .05$ .  $\beta$  = standardized regression coefficient at each block. \*Refers to values in final model.

sion score was added to the regression analysis ( $\beta = 0.13$ ,  $p < .01$ ). However, there was a statistically significant indirect relationship between Certainty-AP and suicidal ideation through depression symptoms, adjusting for pessimism and hopelessness ( $CI = 0.03-0.22$ ).

In sum, hopelessness partially mediated the relationship between both forms of certainty and suicidal ideation and mediated the relationship between pessimism and ideation, and depression symptoms also partially explained the relationship between Certainty-AP and suicidal ideation, after adjusting for all other variables. However, certainty about an absence of positive future outcomes statistically predicted suicidal ideation independently of hopelessness, pessimism, and depression symptoms, while certainty about negative outcomes did not do so.

## DISCUSSION

The purpose of this study was to determine whether the cognitive content of future expectancies—and in particular, certainty in pessimistic future-event predictions—would show specificity in its relationships with hopelessness and suicidal ideation. Our findings supported the hypothesis that being certain that positive future events would *not* occur would be more strongly associated with hopelessness and suicidal ideation than certainty that negative events *would* occur. Furthermore, the data supported the hypothesis that certainty about an absence of positive events would be associated with suicidal ideation independently of simple pessimism. Hopelessness partially mediated the relationship between Certainty-AP and suicidal ideation. At the same time, Certainty-AP also statistically predicted suicidal ideation independently of hopelessness. As hypothesized, depression symptoms did not qualify this relationship. In terms of pessimism, anticipating an absence of positive future events was more strongly associated with both hopelessness and suicidal ideation than was the anticipation of negative events, and both statistically predicted suicidal ideation when entered together with certainty into a regression. Hopelessness did, however, meet full criteria in mediating the relationship between pessimism (about both positive and negative outcomes) and suicidal ideation.

Our findings replicate the work of MacLeod and colleagues (MacLeod et al., 1997, 2005), which has emphasized the relative importance of pessimistic future expectancies for positive events, in both depressed and suicidal samples. These findings also extend this work by demonstrating that certainty about the absence of positive future events is not only a characteristic of depressive cognition, as suggested by previous research (Miranda & Mennin, 2007), but is also independently associated with suicidal thinking, even beyond hopelessness and symptoms of depression. This inde-

TABLE 1c. Hierarchical Linear Regression Predicting Suicidal Ideation

Block	Variable	$\beta_{block1}$	$\beta_{block2}$	$\beta_{block3}$	$\beta_{block4}$	Partial $r^2$	Model $F$
1	Certainty-AP	0.26**	0.22**	0.16**	0.13**	.13**	36.04**
	Certainty-N	0.06	0.07	0.01	-0.04	-.04	
2	Pessimism-Pos		0.20**	0.00	-0.04	-.03	32.27**
	Pessimism-Neg		0.10**	-0.01	-0.05	-.05	
3	Hopelessness			0.39**	0.24**	.18**	44.62**
4	Depression sx				0.31**	.25**	48.29**

Note.\*\* $p < .01$ ; \* $p < .05$ .  $\beta$  = standardized regression coefficient at each block. \*Refers to values in final model.

pendent role of content-specificity is important because predicting suicidal risk above and beyond depression is a major goal of current suicide research.

These findings also support the work of O'Connor et al. (2008) with repeat self-harmers. Here, we obtain similar findings in a nonclinical sample of college undergraduates and highlight the unique role of predictive certainty. Furthermore, unlike O'Connor et al., who found a prospective relationship between future expectancies and suicidal ideation but did not find a concurrent relationship (perhaps, as the authors suggested, because the role of future predictions might be obscured by the more immediate concerns of self-harmers being interviewed within a day of their index episode), we show here that the relationship between positive expectancies and suicidal ideation does exist concurrently in a nonclinical sample. Noteworthy, the present study employs an independent measure of future expectancies that does not rely on participants' ability to personally generate valenced future events.

These findings add to the field's current understanding of the role of hopelessness-related cognitions in suicidal ideation. Building on the hopelessness theory of depression (Abramson et al., 1989), hopelessness has been posited to be a proximal and sufficient cause of suicidal behavior through which more distal cognitive vulnerability factors are mediated (Abramson et al., 1998). The original construct of hopelessness represents a global assessment of the future; we propose that by breaking future expectancies into their valenced components and assessing certainty, the path through which such thoughts might lead to suicidal ideation is better illuminated. We have previously shown that certainty about the absence of positive events exhibits a specific relationship with future-oriented cognition in depression as differentiated from anxiety, and that hopelessness is central to the relationship (Miranda et al., 2008). The present findings suggest that the unique importance of certainty in the prediction of a positive future has implications for suicidal ideation, partly through its relationship to general hopelessness but also beyond that relationship, and also beyond its relationship with symptoms of depression. Future research should investigate whether certainty about an absence of positive future outcomes distinguishes depressed individuals at risk for suicidal behavior from those who are not at risk; such certainty may also represent a route to suicidal behavior that applies to nondepressed individuals, an implication that is both clinically and theoretically significant.

This study has several limitations. First, the cross-sectional nature of the sample does not allow for causal interpretation. Whether predictive certainty gives rise to hopelessness and suicidal ideation, simply co-occurs, or is a consequence of hopelessness, cannot be addressed here. Second, the pathways presented here are based on a nonclinical student sample and could differ in more high-risk populations. Importantly

though, they are consistent with O'Connor and colleagues' (2008) conclusions drawn from clinical samples of parasuicidal individuals. Third, our sample was 71% female; the present conclusions may be more generalizable to women than to men. Finally, while the differences in correlations between the two types of predictive certainty and the outcome variables (hopelessness, suicidal ideation) differed statistically, the differences in correlation magnitude were small. Given the large sample in this study, we recommend that future work examine the practical significance of these differences.

Despite these limitations, this study has several strengths that contribute to research on future expectancies and hopelessness in suicide. The nonclinical nature of our sample, while a limitation for clinical applicability, suggests that content-specificity in future expectancies (and the role of certainty) represents a characteristic of hopelessness-related cognitions that does not depend on a history of self-harm behavior. Future research should explore the temporal relationships implied here to determine whether pessimistic future-event certainty develops prior to, concurrently with, or as a result of hopelessness, and to identify the cognitive mechanisms through which it acts. Ethnic diversity is another positive aspect of the present sample. Previous studies (e.g., MacLeod et al., 1997, 2005; O'Connor et al., 2008) have sampled adult patient populations in the United Kingdom; the present study encompasses an ethnically diverse group of North American young adults. Furthermore, our use of suicidal ideation as an outcome—where previous studies typically use suicidal behavior as a between-groups variable and do not assess the processes underlying ideation—allows us to better frame the role of future-outcome expectancies in suicidal ideation.

In sum, predictive certainty appears to play an important role in distinguishing the content-specificity of future-event predictions as relates to suicidal ideation. In addition to implications for research, these characteristics of future-oriented cognition may also aid clinicians in suicide prevention and intervention. When clinicians are able to specify the types of future expectancies that characterize or result from a patient's hopelessness, they can identify these as loci of therapeutic intervention and perhaps interrupt the development of hopelessness that is so closely associated with suicidal behavior. Given the central role of hopelessness in suicidal ideation and behavior, decreasing an individual's certainty that positive future events will not occur may be one high-priority area of intervention in cognitive therapies intended to treat this increasingly troubling public health concern.

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