

Suicidal Desire and the Capability for Suicide: Tests of the Interpersonal–Psychological Theory of Suicidal Behavior Among Adults

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The interpersonal–psychological theory of suicidal behavior (T. E. Joiner, 2005) proposes that an individual will not die by suicide unless he or she has both the desire to die by suicide and the ability to do so. Three studies test the theory’s hypotheses. In Study 1, the interaction of thwarted belongingness and perceived burdensomeness predicted current suicidal ideation. In Study 2, greater levels of acquired capability were found among individuals with greater numbers of past attempts. Results also indicated that painful and provocative experiences significantly predicted acquired capability scores. In Study 3, the interaction of acquired capability and perceived burdensomeness predicted clinician-rated risk for suicidal behavior. Implications for the etiology, assessment, and treatment of suicidal behavior are discussed.

Keywords: suicide, interpersonal psychological theory, belongingness, perceived burdensomeness

Research on basic interpersonal processes has shown that an unmet need to belong has a deleterious impact on psychological well-being (Baumeister & Leary, 1995). The thwarting of the need to belong has been shown to cause impairments in self-regulation (Baumeister, DeWall, Ciarocco, & Twenge, 2005) and increases in pain tolerance (DeWall & Baumeister, 2006). One of the clearest findings in the literature on suicide is that individuals who die by suicide often experience social isolation before their deaths (e.g., Trout, 1980). Feelings of being a burden on family members also have been found to be strong predictors of suicide in both adults (DeCatanzaro, 1995) and youth (Woznica & Shapiro, 1990). Basic research on motivation has theorized that with repetition, the effects of provocative stimuli diminish, while the opposite effects are amplified and strengthened (Solomon, 1980). The absence of physical pain during nonsuicidal self-injury (i.e., a provocative event) has been shown to predict the number of lifetime suicide attempts (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006).

The interpersonal–psychological theory of suicidal behavior (Joiner, 2005; hereafter referred to as the *interpersonal–psychological theory*) draws on these and other findings and proposes that an individual will not die by suicide unless he or she has both the desire to die by suicide and the ability to do so (see Figure 1). The theory proposes that the needs to belong and to contribute to the welfare of close others are so fundamental that the thwarting of these needs (i.e., thwarted belongingness and perceived burdensomeness) is a proximal cause of suicidal desire. A common variable in research on suicide is suicidal ideation (i.e., thoughts

about suicide). The theory proposes that suicidal ideation is an operationalized form of the construct of suicidal desire.¹ The theory proposes that suicidal desire is not sufficient to result in death by suicide—individuals must also acquire the capability to enact lethal self-injury through exposure and thus habituation to the fear and pain involved in self-injury. The interpersonal–psychological theory thus draws on basic research on interpersonal processes, motivation, and pain perception to propose specific mechanisms involved in suicidal behavior. The current article presents three studies directly testing hypotheses of the theory.

Research on suicidal behavior has demonstrated numerous risk factors, including impulsivity (Apter, Plutchik, & van Praag, 1993; Kingsbury, Hawton, Steinhardt, & James, 1999), childhood adversity (Joiner et al., 2007; King et al., 2001), mental disorders (Cavanagh, Carson, Sharpe, & Lawrie, 2003), and hopelessness (Brown, Beck, Steer, & Grisham, 2000). However, most of the individuals with these risk factors will not attempt suicide much less die by suicide. In addition, up to one third of the general population reports some degree of suicidal ideation during their lives (Paykel, Myers, Lindenthal, & Tanner, 1974), yet only 0.01% of Americans die by suicide each year (American Association of Suicidology, 2006). The imprecision of documented risk factors in the prediction of suicidal behavior indicates a need for theory-driven research on proximal, causal, and interactive risk factors involved in suicidal behavior.

The interpersonal–psychological theory posits three proximal, causal, interactive risk factors that must be present in order for someone to both desire and be capable of suicide. As each of these factors is relatively rare, and their conjunction even more so, the theory is consistent with the relative rarity of suicide itself and precisely specifies when suicidal behavior will occur. The current

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¹ Throughout the article, the term *suicidal ideation* is used to describe results using the Beck Suicide Scale. *Suicidal desire* is used to discuss the theory at the level of constructs.

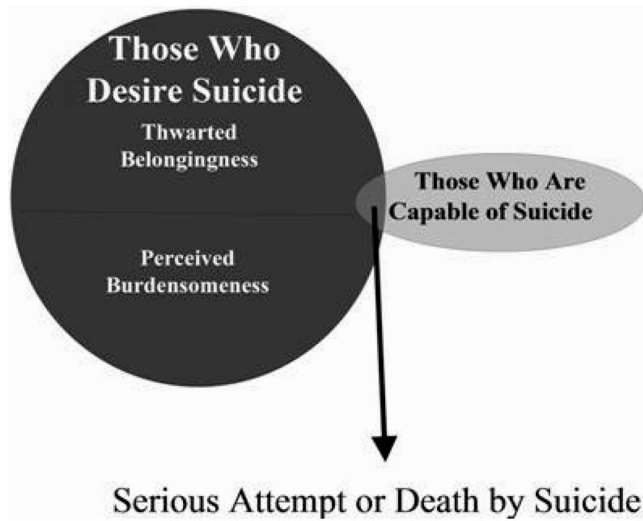


Figure 1. The interpersonal–psychological theory of suicidal behavior.

studies were designed to test the theory’s two main domains—the role of thwarted belongingness and perceived burdensomeness in suicidal desire (Study 1) and the acquired capability for suicide (Study 2), as well as the joint influence of suicidal desire and the acquired capability (Study 3).

Study 1

In Study 1 we examined the question “who wants to die by suicide?” and tested the hypothesis that the joint presence of thwarted belongingness and perceived burdensomeness predicts suicidal desire. A large body of literature supports the hypothesis that individuals with lower levels of belongingness will experience greater levels of suicidal desire (e.g., Hershberger, Pilkington, & D’Augelli, 1997; Joiner, Hollar, & Van Orden, 2006; Koivumaa-Honkanen et al., 2001). Previous studies also support the hypothesis that individuals with higher levels of perceived burdensomeness will experience suicidal desire. De-Catanzaro (1995) found that perceived burdensomeness toward family was correlated with suicidal ideation among community participants and high-suicide-risk groups (see also Joiner et al., 2002; Sabbath, 1969; Van Orden, Lynam, Hollar, & Joiner, 2006; Woznica & Shapiro, 1990). Thus, evidence suggests that both thwarted belongingness and perceived burdensomeness predict suicidal desire. However, no studies have directly examined both constructs. Study 1 attempts to address this gap in the literature.

The investigated hypothesis concerned the joint influence of thwarted belongingness and perceived burdensomeness, as this is posited to be the source of the most serious form of suicidal desire according to the theory. This hypothesis generates the following prediction: Within a regression framework, the interaction of thwarted belongingness and perceived burdensomeness should account for additional variance in suicidal desire above and beyond the contribution of either construct alone.

Method

Participants

Participants were 309 undergraduate students who were recruited through General Psychology courses and received course credit for participation. The majority of the sample was female ($n = 227$, 74%). Mean age was 19 years (range = 17–51 years). Data on the race and ethnicity of participants were not available; however, this sample was likely representative of the Florida State University (FSU) Psychology Department subject pool, which has the following racial breakdown: 64% White, 28% Black or African American, 5% American Indian/Alaska native, and 3% Asian. Following the National Institutes of Health’s classification of ethnicity, the subject pool is 10% Hispanic/Latino. Regarding socioeconomic status, approximately 26% of the undergraduate population met federal criteria for financial need status.

Procedure

Participants first reviewed and signed a statement of informed consent detailing the Human Subjects Committee approval as well as the purpose, procedures, and goals of the study. Participants completed a self-report questionnaire packet. Responses to the questions about suicide were screened by the experimenters for severe and imminent suicide risk according to Joiner, Walker, Rudd, and Jobes (1999).² All participants were debriefed and given phone numbers for local mental health services.

Materials and Measures

Interpersonal Needs Questionnaire (INQ). The INQ was designed by our research group to measure participants’ current beliefs about the extent to which they feel connected to others (i.e., belongingness) and the extent to which they feel like a burden on the people in their lives (i.e., perceived burdensomeness). Five items measure belongingness (e.g., “These days other people care about me”), and seven items measure perceived burdensomeness (e.g., “These days I feel like a burden on the people in my life”).³ Participants indicated the degree to which each item was true for them recently (on a 7-point Likert scale). Scores are coded such that higher numbers reflect higher levels of thwarted belongingness and perceived burdensomeness. Comparable internal consistency

² Data were collected by Kimberly A. Van Orden as well as undergraduate research assistants. Participants completed all study measures in individual rooms and were made aware at the beginning of the study (through the informed consent form) that the experimenter would look at their responses to the questions on suicide (while participants were completing other measures) and speak with them if necessary to ensure their safety. Experimenters were trained in the suicide risk protocol by Kimberly A. Van Orden under the supervision of Thomas E. Joiner Jr. Procedures were in place to escort students to the Florida State University Psychology Clinic and/or utilize emergency mental health services in the event of imminent risk; however, no participants presented with imminent risk.

³ Readers familiar with the original unpublished version of the INQ may recall 10 belongingness items and 15 perceived burdensomeness items. Further refinement of the measure (through exploratory factor analyses) indicated that the subset of items used in the present analyses allowed for greater precision of measurement of the constructs and reduced multicollinearity between thwarted belongingness and perceived burdensomeness in the prediction of suicidal ideation.

Table 1
Means and Standard Deviations for, and Intercorrelations Between, All Measures for Study 1

Variable	1	2	3	4	5	6
1. Belongingness	—					
2. Burdensomeness	.58*	—				
3. BSS score	.35*	.50*	—			
4. BDI score	.60*	.71*	.41*	—		
5. Age	-.03	.00	-.01	.00	—	
6. Gender	-.02	-.01	.03	.08	-.09	—
<i>M</i>	2.18	1.70	0.77	7.63	19.11	73.5
<i>SD</i>	1.15	0.94	2.55	7.87	2.38	
Range	5.60	4.86	20.00	40.00	34.00	
<i>SEM</i>	0.07	0.05	0.15	0.45	0.14	
95% CI	2.05, 2.30	1.59, 1.80	0.48, 1.05	6.75, 8.51	18.84, 19.38	

Note. *N* = 309. BSS = Beck Scale for Suicidal Ideation; BDI = Beck Depression Inventory; CI = confidence interval. Gender is coded such that 0 = female and 1 = male. For the categorical variable of gender, mean reflects the percentage that is female.
** *p* < .01. All other *ps* > .10.

tency coefficients were found for the belongingness items ($\alpha = .85$) and the perceived burdensomeness items ($\alpha = .89$). Construct validity data are encouraging (e.g., thwarted belongingness, more so than perceived burdensomeness, correlates with a theoretically related interpersonal construct, i.e., loneliness).

Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991). The BSS is a 21 item self-report inventory designed for the assessment of suicidal symptoms. Beck and Steer (1991) reported that items 1–19 measure suicidal ideation, and items 20 and 21 assess past attempts and are not used in the calculation of the BSS total score. A score of 0–2 is assigned for each item, and total scores for the BSS range from 0–38, with an increase in score representing a higher level of suicidal ideation and possible intent. In the following analyses, the BSS total score was used as an index of current suicidal ideation to tap the construct of suicidal desire; items 20 and 21 were not used in the present analyses. Internal consistency in this sample was high ($\alpha = .90$).

Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). The BDI is a frequently used 21-item self-report inventory designed for the assessment of depressive symptomatology. A score of 0–3 is assigned for each item, and total scores for the BDI range from 0–63, with higher scores representing a higher occurrence of symptoms associated with depression. Internal consistency in this sample was high ($\alpha = .89$).

Results and Discussion

Preliminary Analyses

Means, standard deviations, and intercorrelations for all variables are presented in Table 1. As expected, thwarted belongingness and perceived burdensomeness were positively and significantly correlated. As predicted, both belongingness and burdensomeness were significantly correlated with suicidal ideation. The percentage of participants reporting some level of suicidal ideation (i.e., scores greater than 0 on the BSS) was low ($n = 52, 17%$), though the range of scores was adequate (i.e., 1–20). The distribution of suicidal ideation was not normally distributed, as evidenced by both skew (4.46) and kurtosis (22.25).

Thwarted Belongingness and Perceived Burdensomeness as Predictors of Suicidal Symptoms

A regression equation was constructed with current suicidal ideation as the dependent variable. To statistically control for age, gender, and depressive symptoms, we entered these variables into the equation in the first step. We entered the main effects of belongingness and burdensomeness in the second step. Finally, we entered the two-way interaction of belongingness and perceived burdensomeness in the last step. All predictor variables were centered (around the mean) for the regression analyses presented below. As suicidal ideation was not normally distributed, a nonlinear transformation was used (i.e., square root), which reduced both skew (2.84) and kurtosis (7.80). We performed the analyses described below using both the untransformed and transformed scores: Tests of statistical significance did not differ. For ease of interpretation, results obtained by use of the untransformed variable are reported below.

Table 2
Hierarchical Multiple Regression Equation Predicting Current Suicidal Symptoms

Predictors entered in set	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	Semipartial correlation (<i>sr</i>)	<i>p</i>
1	20.46	.17		3, 305		
Age			−0.23		−.01	.820
Gender			0.06		.00	.956
Depression			7.81		.41	.000
2	21.47	.26		5, 303		
Perc burden			5.62		.28	.000
Thwart belong			1.07		.05	.284
3	21.06	.30		6, 302		
Burden × Belong			3.78		.18	.000

Note. For Model 3, *f*² effect size of .43, a large effect (Cohen, 1988). Perc burden = perceived burdensomeness; thwart belong = thwarted belongingness.

In Step 1, a model containing age, gender, and depressive symptoms significantly predicted current suicidal ideation, $F(3, 305) = 20.46, p = .000$. In Step 2, a model containing the above-mentioned covariates as well as main effects of burdensomeness and belongingness significantly predicted current suicidal ideation, $F(5, 303) = 21.47, p = .000$; see Table 2. The addition of belongingness and burdensomeness to the model accounted for an additional 9% of the variance in current suicidal ideation. Perceived burdensomeness significantly predicted suicidal symptoms, semipartial correlation (sr) = .28, $t(303) = 5.62, p = .000$, but belongingness was not a significant predictor of suicidal ideation. Crucial to our hypothesis, in Step 3, a model containing the interaction of burdensomeness and belongingness, as well as the covariates and main effects, significantly predicted current suicidal ideation, $F(6, 302) = 21.06, p = .000$. The addition of the interaction of belongingness and burdensomeness to the model accounted for an additional 4% of the variance in ideation, $sr = .18, t(302) = 3.78, p = .000$.

To examine the form of the interaction, we followed the recommendations of Cohen, Cohen, West, and Aiken (2003) and plotted the regression line (with suicidal ideation as the dependent variable) as a function of levels of both thwarted belongingness and perceived burdensomeness. Because of the nonsignificant main effect of thwarted belongingness, we chose to depict the

interaction as the relationship between thwarted belongingness and suicidal ideation as a function of perceived burdensomeness. As our sample was nonclinical, and we were interested in elevated levels of the variables in question, we chose to examine and depict the majority of the distribution of our variables, as represented by the 10th–90th percentiles of thwarted belongingness and perceived burdensomeness. As depicted in Figure 2, the relationship between thwarted belongingness and suicidal ideation was statistically nonsignificant, as evidenced by tests of the simple slopes at low and medium levels of perceived burdensomeness (i.e., the 10th and 50th percentiles, respectively). In contrast, at high levels of perceived burdensomeness (i.e., at the 90th percentile), the relationship was positive and significant, $B = .49, 95\%$ confidence interval = .16–.81, $t(302) = 2.95, p = .003$. Thus, in line with predictions, the combined presence of high thwarted belongingness and high perceived burdensomeness may be especially pernicious with regard to the development of suicidal desire.

Study 2

In Study 2 we examined the question “who can die by suicide?” and tested the hypothesis that experiences with pain and provocation—including past suicide attempts—allow individuals to acquire the capability for lethal self-injury. We tested this hypothesis

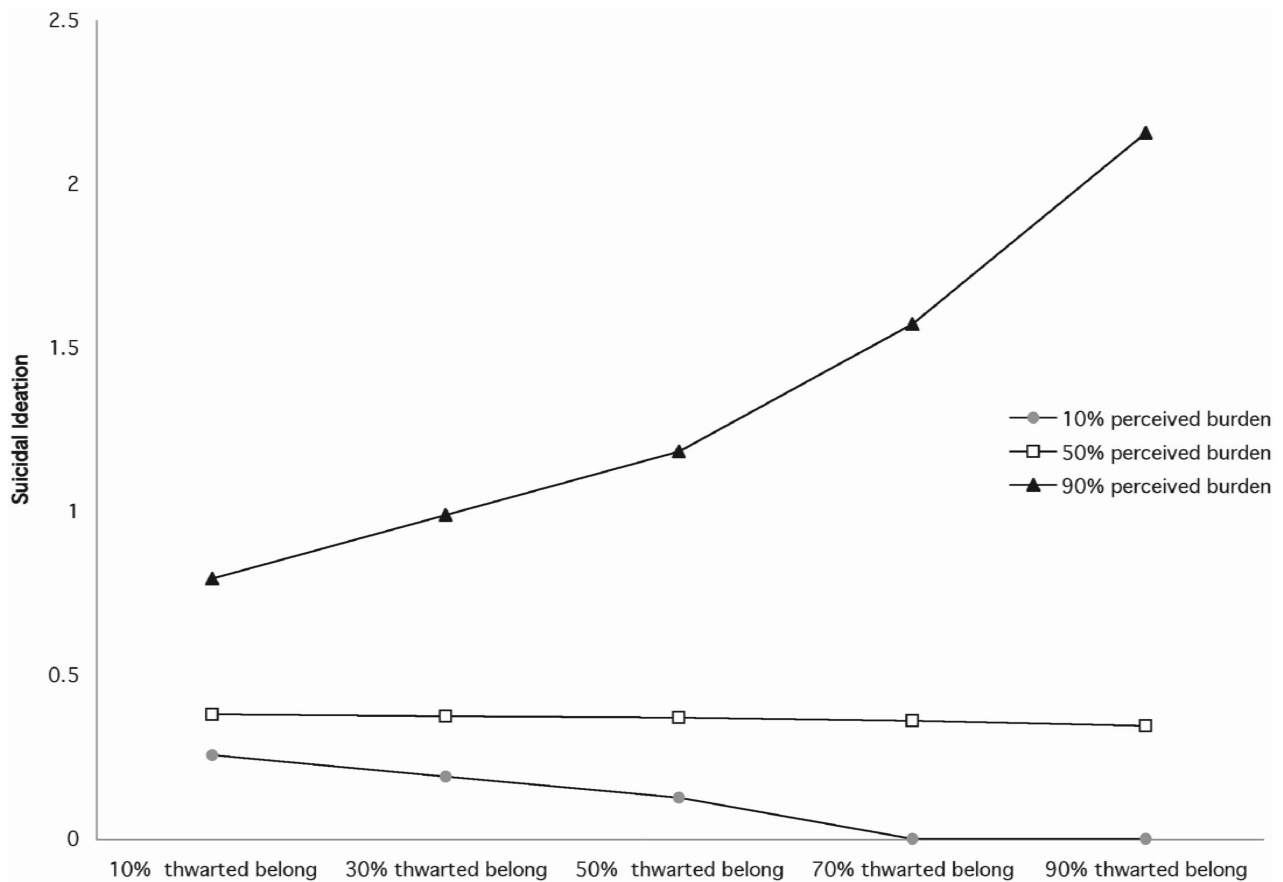


Figure 2. Interaction of perceived burdensomeness (perceived burden) and thwarted belongingness (thwarted belong) in the prediction of suicidal symptoms.

using both past suicide attempts as well as a measure designed to tap the construct of an acquired capability. The theory assumes that habituation occurs through repeated practice and exposure. Opponent process theory (Solomon, 1980) states that, with repetition, the effects of provocative stimuli diminish, while the opposite effects of the stimuli (i.e., the opponent processes) are amplified and strengthened. Many studies have found that individuals with suicidal symptoms often have greater tolerance for pain than others (e.g., Orbach, Mikulincer, King, Cohen, & Stein, 1997). Joiner (2005) proposed that the most direct pathway to an acquired capability is the experience of previous suicide attempts. Consistent with this hypothesis, previous research has shown that one of the most potent predictors of future suicidal behavior is past suicide attempts, which predict intensity of subsequent suicidal ideation (Joiner et al., 2005), suicide attempts (Maser et al., 2002), and death by suicide (Brown et al., 2000; Maser et al., 2002). Drawing from this research, the interpersonal-psychological theory suggests that previous suicide attempts are one of the most potent experiences through which one can acquire the capability for suicide. Thus, our first goal in Study 2 was to test the hypothesis that previous suicide attempts are positively associated with one's acquired capability for suicide.

Joiner (2005) also proposed that other less direct pathways to an acquired capability may exist through the experience of other fear-inducing, risky behaviors, such as self-injecting drug use, nonsuicidal self-injury, or exposure to physical violence. For example, previous research has demonstrated that painful and provocative behaviors, such as self-injecting drug use, prostitution, and violent behavior, have been related to increased risk for suicidal behavior, including suicide attempts and death by suicide (Darke & Ross, 2002; Kidd & Kral, 2002; Whitlock & Broadhurst, 1969). In Study 2 we tested the first component of this hypothesis—that experiences with pain and provocation predict the acquisition of an ability to enact lethal injury. To test this hypothesis, we administered questionnaires designed to measure the frequency with which an individual has engaged in behaviors thought to be painful and/or fear provoking, including a measure of suicide attempts, as well as a measure designed to assess the degree to which an individual has acquired the ability for suicide. If the prediction of the theory is correct, one would expect that individuals who have engaged more frequently in painful and provocative experiences will have moved further along the trajectory toward the acquired ability for suicidal behavior and will thus have higher scores on the measure of acquired capability for suicide.

It is necessary to make the distinction between suicidal desire or ideation and the acquired ability for suicide. The theory posits that it is possible for an individual to desire suicide (i.e., experience thwarted belongingness and/or perceived burdensomeness) but lack the capability for suicide (and vice versa). In the current study, we were interested in determining whether exposure to painful and/or provocative experiences leads toward the acquired ability for suicide independent of suicidal ideation levels. Thus, we controlled for suicidal ideation (cf. suicidal desire) in our analysis. We hypothesized that multiple suicide attempters would have the highest level of acquired capability for suicide, followed by single-attempters, with nonattempts having the lowest level. Second, we hypothesized that exposure to painful and/or provocative experiences would be positively associated with the acquired ability for suicide and that this relationship would persist even when other suicide risk factors (i.e., gender, age, suicidal ideation, depressive symptoms) were controlled for.

Method

Participants

The Study 2 sample consisted of 228 adult clients (101 men, 127 women) from the FSU Psychology Clinic, an outpatient community mental health center. This sample represented new adult therapy cases admitted over the course of January 2005 to July 2006. The participants' ages ranged from 18 to 54 years old ($M = 26.21$ years, $SD = 9.56$). The racial/ethnic composition of this sample was generally representative of the overall client population of the FSU Psychology Clinic and consisted of 74% White (non-Hispanic), 9% Hispanic, 12% Black/African American, and 5% Other (e.g., Asian/Pacific Islander, Native American) clients. The clinic has an inexpensive sliding fee scale, thus a sample with a relatively low socioeconomic status is served. Approximately 50% of the client population reports a family income of less than \$10,000 (range = \$0–\$350,000). The majority of participants (84.6%) had never attempted suicide (107 women, 86 men), 8.8% had attempted once (8 women, 12 men), and 6.6% had attempted two or more times (12 women, 3 men).

Procedure

Upon application, all patients were informed of the research and training nature of the clinic and signed a form consenting to their inclusion in research and to limits of confidentiality (including imminent risk for suicide). All measures utilized in Study 2 were administered to clients with their application materials prior to treatment. Participants were assessed for suicide risk by a graduate student clinician prior to beginning treatment and were designated to be either at low, moderate, or high risk for suicide (see Table 5 for information regarding management of risk). The FSU Psychology Clinic primarily serves patients who present with clinical disorders typical of a community mental health outpatient clinic, and it uses minimal exclusionary criteria, excluding from treatment only people with psychotic or bipolar-spectrum disorders who do not take actions to become stabilized on medications. The diagnostic composition of the Psychology Clinic from 2005 to 2006 was 59% with one or more mood disorders, 36% with one or more anxiety disorders, 25% with one or more substance-use disorders, 11% with one or more personality disorders, 5% with one or more schizophrenia-spectrum disorders, and 19% with one or more other diagnoses (e.g., eating disorders, trichotillomania). The percentages overlap due to frequent comorbidity among clients.

Materials and Measures

BSS. We utilized the first 19 items of the BSS as a measure of suicidal ideation and item 20 as a measure of past suicide attempts (0, 1, or 2 or more times). The BSS demonstrated good reliability in the current sample (Cronbach's $\alpha = .86$).

BDI. Described in Study 1, the BDI demonstrated good reliability in the current sample (Cronbach's $\alpha = .91$).

Impulsive Behavior Scale (IBS; Rossotto, Yager, & Rorty, 1994). The IBS was utilized to assess the number of painful and provocative events that the client experienced. The IBS is a 25-item measure that asks participants to indicate how many times they have engaged in particular impulsive behaviors (e.g., self-mutilation, shoplifting, promiscuous sex). Participants are asked to

indicate how many times they have engaged in each of the impulsive behaviors, rated on a 5-point scale (1 = *never*, 2 = *once*, 3 = *on occasion*, 4 = *sometimes*, 5 = *regularly*).

Painful and Provocative Events Scale (PPES; Bender, Gordon, & Joiner, 2007). The PPES (created by our research group) was administered to assess the number of painful and provocative events the client experienced. It is a 10-item self-report measure scored in the same format as the IBS; it asks the individual to report how many times they have experienced certain events (played contact sport, got a piercing, shot a gun, tied a noose, intentionally hurt animals, participated in physical fights, jumped from high places) that the interpersonal-psychological theory proposes might lead to acquired capability for suicide. We combined the items from the IBS and PPES as an index of exposure to painful and provocative experiences. The coefficient alpha for the combined IBS and PPES was .90, indicative of good reliability.

Acquired Capability for Suicide Scale (ACSS; Bender et al., 2007). The ACSS (also created by our research group) is a 5-item measure designed to assess one's fearlessness about lethal self-injury. Individuals are asked to rate each item on a 1 (*not at all like me*) to 5 (*very much like me*) scale. Examples of items include "Things that scare most people don't scare me" and "I can tolerate more pain than most people." The scale is correlated with Linehan, Goodstein, Nielsen, and Chiles's (1983) Fear of Suicide subscale of the Reasons for Living Inventory (a measure designed to tap a similar construct) in the expected direction ($r = -.48, p < .0001$; Bender et al., 2007). The ACSS total is also strongly correlated with a BSS item that asks about one's courage to kill oneself ($r = .79, p = .007$; Bender et al., 2007). Joiner (2005) proposed that acquired capability is distinct from current distress/depression and is more related to fearlessness about self-injury. Thus, as expected, the scale does not correlate with the BSS ($r = .09, p = .35$; Bender et al., 2007) or the BDI ($r = -.11, p = .24$; Bender et al., 2007). This is indicative of discriminant validity. In the current sample, reliability for the ACSS was adequate (Cronbach's $\alpha = .67$).

Results

Past Suicide Attempts and Acquired Capability for Suicide

Means, standard deviations, and intercorrelations for all variables are presented in Table 3. A one-way analysis of variance was conducted to test the hypothesis that past suicide attempts would predict acquired capability for suicide (as measured by the ACSS). Consistent with predictions, number of past attempts (i.e., 0, 1, or 2 or more) significantly predicted acquired capability, $F(2, 225) = 3.59, p = .029$. The lowest level of acquired capability was reported by individuals with no past suicide attempts ($M = 2.55, SD = 0.81$), followed by individuals with a single past attempt ($M = 2.68, SD = 0.90$), with the highest level reported by individuals with multiple (i.e., two or more) past suicide attempts ($M = 3.13, SD = 0.87$).

Painful and Provocative Experiences and Acquired Capability for Suicide

A set of regression equations was constructed to test the hypothesis that the number of painful and provocative events (as measured by the combined IBS and PPES score) experienced would predict acquired capability for suicide (as measured by the ACSS). Age, gender, suicidal ideation, and depression symptoms were entered in Step 1, to rule out the possibility that the relationship between painful and provocative events and acquired capability for suicide was better accounted for by these variables. This model, containing age, gender, depressive symptoms, and suicidal ideation, significantly predicted acquired capability scores, $F(4, 223) = 4.34, p = .002$; see Table 4. Gender significantly predicted higher levels of acquired capability scores such that men had higher scores, $sr = -.22, t(223) = -3.34, p = .001$. Contrary to predictions, suicidal ideation significantly predicted higher levels of acquired capability, $sr = .13, t(223) = 2.03, p = .044$. Age and depressive symptoms were not significant predictors of acquired capability scores.

Table 3
Means and Standard Deviations for, and Intercorrelations Between, All Measures for Study 2

Variable	1	2	3	4	5	6	7
1. Gender	—						
2. Age	.02	—					
3. BSS score	.00	.17**	—				
4. BDI score	.22**	.29**	.43**	—			
5. ACSS	-.23**	.04	.14*	-.01	—		
6. Painful and provocative events	-.12	.10	.21**	.29**	.29**	—	
7. Past attempts	.07	.20**	.43**	.33**	.17*	.40**	—
<i>M</i>	55.7	26.21	1.50	14.13	2.60	3.54	0.22
<i>SD</i>		9.56	3.64	10.69	0.84	0.95	0.55
Range		37.00	25.00	45.00	3.40	4.80	2.00
<i>SEM</i>		0.63	0.24	0.71	0.06	0.06	0.04
95% CI		24.97, 27.46	1.02, 1.97	12.73, 15.52	2.50, 2.71	3.42, 3.66	0.15, 0.29

Note. $N = 228$. BSS = Beck Scale for Suicidal Ideation; BDI = Beck Depression Inventory; ACSS = Acquired Capability for Suicide Scale; CI = confidence interval. Gender is coded such that 0 = male and 1 = female. For the categorical variable of gender, mean reflects the percentage that is female. * $p < .05$. ** $p < .01$.

Table 4
Hierarchical Multiple Regression Equation Predicting Acquired Capability for Suicide, Study 2

Predictors entered in set	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	Semipartial correlation (<i>sr</i>)	<i>p</i>
1	4.34	.07		4, 223		.002
Age			0.41		.03	.686
Gender			-3.34		-.22	.001
Depressive symptoms			-0.48		-.03	.629
Suicidal ideation			2.03		.13	.044
2	7.24	.14		5, 222		.000
Age			-0.40		.03	.691
Gender			-3.31		-.16	.009
Depressive symptoms			-1.41		-.10	.126
Suicidal ideation			1.59		.11	.079
Painful and provocative events			4.09		.26	.000

Note. For Model 2, f^2 effect size of .16, a medium-to-large effect (Cohen, 1988).

Next, in Step 2, painful and provocative experiences (i.e., the composite scores for the IBS and the PPES) were entered into the equation. A model containing age, depressive symptoms, gender, current suicidal ideation, and painful and provocative experiences significantly predicted acquired capability scores, $F(5, 222) = 7.24$, $p = .000$. The addition of painful and provocative experiences to the model accounted for an additional 7% of the variance in acquired capability scores. As predicted, higher levels of painful and provocative experiences significantly predicted higher levels of acquired capability scores, $sr = .26$, $t(222) = 4.19$, $p = .000$.

Even after potentially confounding variables were controlled for, exposure to painful and provocative experiences significantly predicted acquired capability scores. As expected, we found that gender was related to acquired capability level, with men exhibiting higher levels of acquired capability. This finding dovetails with the fact that the majority of deaths by suicide are by men, presumably because men are more likely to have acquired the capability for suicide (American Association of Suicidology, 2006). In contrast to previous findings (Bender et al., 2007), suicidal ideation was a significant predictor of acquired capability; however, the magnitude of the relationship was small, suggesting that suicidal ideation and acquired capability are indeed distinct constructs. Also, we did not find a relationship between depressive symptoms and acquired capability. This is not entirely surprising given that most people who are depressed do not die by suicide (perhaps due to a lack of the acquired capability; Conner et al., 2001) despite the fact that they frequently experience suicidal ideation. In sum, the results of Study 2 are supportive of the interpersonal-psychological theory and indicate that engaging in painful and provocative experiences, including past suicide attempts, increases an individual's acquired capability for self-harm.

Study 3

In Study 3 we addressed the question "who is at greatest risk for suicidal behavior?" The theory proposes that those at greatest risk both desire suicide and are capable of suicidal behavior. We addressed the constructs of the theory in a clinical sample in the context of suicide risk assessment. In Study 3, we used both acquired capability and perceived burdensomeness to predict

clinician-rated risk for suicide, above and beyond the contribution of other risk factors (i.e., depression symptoms, age, and gender). In the current sample, data on the construct of thwarted belongingness were unavailable. Thus, this study is able to address (in part) the hypothesis of the interpersonal-psychological theory that the outcome of suicidal behavior depends on the presence of suicidal desire (cf. perceived burdensomeness) and acquired capability. We predicted an interaction between perceived burdensomeness and acquired capability in the prediction of clinician-rated suicide risk.

Method

Participants and Procedure

The Study 3 sample consisted of 153 adult clients (83 women, 70 men) from the FSU Psychology Clinic (this sample was distinct from that of Study 2). The participants' ages and ethnicities were very similar to those reported in Study 2. The majority of participants (85.62%; $n = 131$) had never attempted suicide, 7.84% ($n = 12$) had attempted once, and 6.53% ($n = 10$) had attempted two or more times. Procedures were similar to those described for Study 2.

Materials and Measures

BDI. The BDI was discussed earlier. The BDI items demonstrated adequate reliability in the current sample (Cronbach's $\alpha = .93$).

INQ. The INQ was discussed in Study 1. In the current sample, only perceived burdensomeness items were available. The burdensomeness items demonstrated good reliability in the current sample (Cronbach's $\alpha = .93$).

ACSS. The ACSS was discussed in Study 2. The ACSS items demonstrated adequate reliability in the current sample (Cronbach's $\alpha = .68$).

Clinician ratings of suicide risk. The FSU Psychology Clinic utilizes a standardized assessment protocol for rating suicide risk (Joiner et al., 1999; see Table 5). In the framework, past suicidal behavior is used to weight information about current suicidal

Table 5
Protocol for Rating and Managing Risk for Suicide

Risk	Symptomatic presentation	Actions taken
Low	A person with no identifiable suicidal symptoms A multiple attempter with no other risk factors A nonmultiple attempter with suicide ideation of limited intensity and duration, no or mild symptoms of the Resolved Plans and Preparation factor and no or few other risk factors	Give emergency numbers Create a coping card (a crisis response plan) Symptom-matching hierarchy Document activities and continue to monitor risk
Moderate	A multiple attempter with any other notable finding A nonmultiple attempter with moderate to severe symptoms of the Resolved Plans and Preparation factor A nonmultiple attempter with moderate to severe symptoms of the Suicidal Desire and Ideation factor (but mild or no Resolved Plans and Preparation) and at least two other notable risk factors	Actions listed above Midweek phone check-ins
High	A multiple attempter with any two or more other notable findings A nonmultiple attempter with moderate to severe symptoms of the Resolved Plans and Preparation factor and at least one other risk factor A multiple attempter with severe symptoms of the Resolved Plans and Preparation factor A nonmultiple attempter with severe symptoms of the Resolved Plans and Preparation factor and two or more other risk factors	Actions listed above Consult a supervisor before the client leaves the clinic Consider emergency mental health options with supervisor Client should be accompanied and monitored at all times If hospitalization is not warranted, use steps from "moderate" category

Note. Adapted from "Scientizing and Routinizing the Assessment of Suicidality in Outpatient Practice," by T. E. Joiner Jr., R. L. Walker, M. D. Rudd, and D. A. Jobes, 1999, *Professional Psychology: Research and Practice*, 30, 447–453. Copyright 1999 by the American Psychological Association.

symptoms: Individuals with multiple attempts are designated at higher risk. To complete the assessment, clinicians record the presence (or absence) of past suicidal and nonsuicidal self-injury (as well as the details of the behaviors). Next, clinicians evaluate current suicidal symptoms by recording the presence or absence of the following: current suicidal ideation, resolved plans and preparation,⁴ confidence to make an attempt, isolation, hopelessness, significant stressors, family history of suicide, impulsivity, and Axis I and II symptomatology. The nature of past and current suicidal symptoms is then used to designate an individual at low, moderate, or high risk for suicide according to the framework. Information on past and current suicidal symptoms (from charts) was used to generate inter-rater reliability data. Three raters (who have been trained in the protocol; Kimberly A. Van Orden, Kathryn H. Gordon, and Theodore W. Bender) were given access to risk assessment forms completed by clinicians; forms included information about the presence or absence of the variables listed above (e.g., current ideation, past attempts). Charts from half of the sample were randomly selected for reliability ratings (though all charts from clients rated at high risk were included). Each chart was rated by one of the three raters, who were blind to the original risk designation as well as client name. Inter-rater reliability for suicide risk level (i.e., low, moderate, high) between the original clinician rating and study author rating was adequate (Kappa coefficient = .71, $p = .000$). The clinician ratings for suicide risk correlated in the expected direction with BSS scores ($r = .64$, $p = .000$), which provides some evidence for their validity.

Results and Discussion

Means, standard deviations, and intercorrelations for all variables are presented in Table 6. Perceived burdensomeness and risk

for suicide were significantly correlated. Acquired capability was not significantly correlated with risk for suicide. Perceived burdensomeness and acquired capability were not significantly correlated, consistent with the results of Study 2. Eighty-two percent of the sample was rated to be at low risk for suicide, 15% were rated at moderate risk, and 3% were rated at high risk.

A regression equation was constructed with clinician-rated risk for suicide as the dependent variable. All predictor variables were centered (around the mean) for the regression analyses presented below. In Step 1, a model containing main effects of depression, gender, and age significantly predicted risk for suicide, $F(3, 149) = 14.64$, $p = .000$; see Table 7. In Step 2, a model containing main effects of acquired capability and perceived burdensomeness significantly predicted risk for suicide, $F(5, 147) = 11.61$, $p = .000$. The addition of main effects of acquired capability and perceived burdensomeness to the model accounted for an additional 5% of the variance in suicide risk. Higher levels of perceived burdensomeness significantly predicted greater risk for suicide, $sr = .22$, $t(147) = 3.10$, $p = .002$, but acquired capability was not a significant predictor of risk for suicide. In Step 3, a model containing the interaction of acquired capability and perceived burdensomeness, as well as main effects, significantly predicted current risk for suicide, $F(6, 146) = 10.79$, $p = .000$. The addition

⁴ Resolved plans and preparations compose a group of suicidal symptoms that involve preparatory behaviors for suicide (e.g., specificity of a plan for attempt, and having made preparations for an attempt) as well as courage and intention for suicidal behaviors (e.g., availability of means and perceived competence for an attempt). These symptoms have been found to be empirically distinct from symptoms such as a wish to die and frequency of ideation, which load onto the suicidal desire and ideation factor (Joiner, Rudd, & Rajab, 1997).

Table 6
Means and Standard Deviations for, and Intercorrelations
Between, All Measures for Study 3

Variable	1	2	3	4	5	6
1. Gender	—					
2. Age	.00	—				
3. BDI Score	-.27**	.29**	—			
4. ACSS	.34**	.05	.03	—		
5. Burdensomeness	-.04	.33**	.69**	.09	—	
6. Risk for suicide	.00	.30**	.43**	.14	.49**	—
<i>M</i>	54.2	26.20	14.46	2.61	2.11	1.22
<i>SD</i>		9.34	10.86	0.82	1.29	0.49
Range		37.00	45.00	3.40	4.86	2.00
<i>SEM</i>		0.76	0.88	0.07	0.10	0.04
95% CI		24.71, 27.69	12.72, 16.19	2.47, 2.74	1.90, 2.32	1.14, 1.29

Note. $N = 153$. BDI = Beck Depression Inventory; ACSS = Acquired Capability for Suicide Scale; CI = confidence interval. Gender is coded such that 0 = male and 1 = female. For the categorical variable of Gender, mean reflects percentage that is female. * $p < .05$. ** $p < .01$.

of the interaction of acquired capability and perceived burdensomeness to the model accounted for an additional 3% of the variance in suicide risk, $sr = .16$, $t(146) = 2.26$, $p = .026$.

To examine the form of the interaction, we used the same strategy as described in Study 1. Because of the hypothesized (and observed) nonsignificant main effect of acquired capability, we chose to depict the interaction as the relationship between acquired capability and risk for suicide as a function of perceived burdensomeness. As in Study 1, we chose to examine and depict the majority of the distribution of our variables, as represented by the 10th–90th percentiles of acquired capability and perceived burdensomeness. As depicted in Figure 3, the relationship between acquired capability and risk for suicide was statistically nonsignificant, as evidenced by tests of the simple slopes, at low and medium levels of perceived burdensomeness (i.e., the 10th and 50th percentiles, respectively). In contrast, at high levels of perceived burdensomeness (i.e., at the 90th percentile), the relationship was positive and significant, $B = .23$, 95% confidence interval =

.06–.41, $t(146) = 2.61$, $p = .010$. These results indicate that acquired capability predicts elevated risk for suicide, but only at high levels of perceived burdensomeness.

In sum, the results of Study 3 indicate that, as predicted, the interaction between perceived burdensomeness and acquired capability for suicide predicted clinician ratings of suicide risk, and did so in the predicted way, above and beyond the contribution of other risk factors (i.e., depression scores, gender, and age). These results are consistent with the theory's hypothesis that suicidal behavior will occur only if individuals both desire suicide and are capable of engaging in suicidal behavior. Results of Study 3 demonstrate that the predictions of the theory are relevant not only to self-report ratings of suicide but also to clinician ratings.

General Discussion

The interpersonal–psychological theory of suicidal behavior (Joiner, 2005) proposes that an individual will not die by suicide unless he or she has both the desire to die by suicide and the ability to do so. Results of all three studies presented here were consistent with this view. Results of Study 1, in line with hypotheses, suggest that the desire for suicide results from the joint presence of two related but distinct interpersonal variables—an unmet need to belong (i.e., thwarted belongingness) and an unmet need to contribute to the welfare of others (i.e., perceived burdensomeness). The theory does not propose that thwarted belongingness and perceived burdensomeness are the only paths to suicidal desire but that their joint presence is likely to result in a highly pernicious form of suicidal desire. Future research could directly test this possibility by examining whether suicidal desire in individuals with very high levels of thwarted belongingness and perceived burdensomeness is accompanied by higher levels of intent, compared to individuals with lower levels of thwarted belongingness and perceived burdensomeness. Future research could also address the hypotheses that other predictors of suicide, including mental pain (Shneidman, 1985), aversive self-awareness (Baumeister, 1990), and hopelessness (Cornette, Abramson, & Bardone, 2000), are related to suicidal desire through their relationships with thwarted belongingness and perceived burdensomeness.

The results of Study 2 are consistent with the hypothesis of the theory that individuals must not only desire suicide but also

Table 7
Hierarchical Multiple Regression Equation Predicting Clinician-Rated Risk for Suicide, Study 3

Predictors entered in set	<i>F</i> for set	<i>R</i> ²	<i>t</i> for Predictors	<i>df</i>	Semipartial correlation (<i>sr</i>)	<i>p</i>
1	14.64	.23		3, 149		.000
Depression			5.18		.37	.000
Gender			–1.44		–.10	.151
Age			2.40		.17	.018
2	11.61	.28		5, 147		.000
Acquired capability			1.30		.09	.200
Burdensomeness			3.10		.22	.002
3	10.79	.31		6, 146		.000
Acquired capability			1.60		.11	.112
Burdensomeness			2.73		.19	.007
Capability × Burden			2.26		.16	.026

Note. For Model 3, f^2 effect size of .45, a large effect (Cohen, 1988).

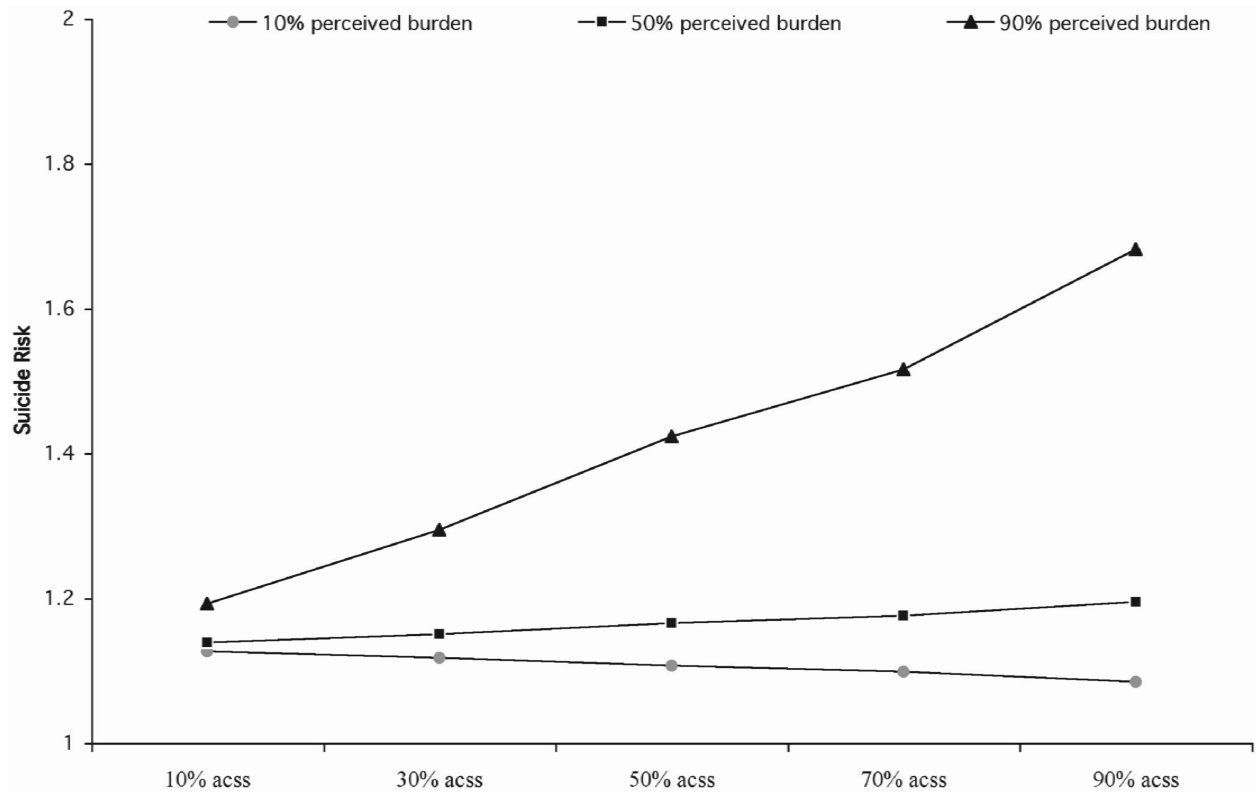


Figure 3. Interaction of perceived burdensomeness (perceived burden) and acquired capability in the prediction of clinician-rated risk for suicide. acss = Acquired Capability for Suicide Scale.

possess the capability to enact lethal self-injury. Results indicate that individuals with a greater number of past suicide attempts as well as greater experiences of other types of pain and provocation (e.g., nonsuicidal self-injury) may be more able than others to overcome the fear and pain involved in lethal self-injury and thus be more capable of suicidal behavior. Future research could address whether specific populations known to have elevated rates of death by suicide, such as physicians, also evidence higher levels of an acquired capability. Future research could also prospectively test whether individuals with higher levels of acquired capability are more likely to make future attempts, choose more lethal means, and be more likely to die as a result of suicidal behavior (the theory would predict so, but only in the presence of serious suicidal desire).

Results of Study 3 are consistent with the hypothesis of the theory that both suicidal desire and an acquired capability for suicide are necessary—but by themselves are not sufficient—to result in suicidal behavior: In the absence of high levels of perceived burdensomeness (a proposed proximal cause of suicidal desire), acquired capability did not predict clinician-rated risk for suicide. These results not only corroborate the theory but also support its clinical relevance: Measurement of the constructs in the interpersonal–psychological theory may aid clinicians in the task of suicide risk assessment. Future research could address whether clinical interventions aiming to reduce thwarted belongingness and perceived burdensomeness may help clinicians manage suicide risk.

Limitations and Future Directions

The current studies, while consistent with the interpersonal–psychological theory, were limited by several factors that suggest directions for future research. A limitation common to all studies was the cross-sectional design. This design precludes causal inferences between our variables. Our design did not allow us to disentangle the influences of genetic or temperamental characteristics present at birth that may have caused individuals to possess lower levels of fear about death and self-injury and thereby lead them to expose themselves to painful and provocative events (i.e., versus our hypothesis that painful and provocative experiences lead to reduced fear). Prospective designs could address these limitations, perhaps by repeatedly measuring perceptions of belongingness or burdensomeness over time (e.g., daily diary methodology) and resulting suicidal desire and by tracking experiences with pain and provocation over time and measuring resulting decreases in fear regarding death and self-injury.

Future studies addressing the hypothesis concerning thwarted belongingness and perceived burdensomeness could also address the issue of causality by utilizing a within-subjects quasi-experimental design: Interventions targeting thwarted belongingness and perceived burdensomeness could test whether decreases in these constructs could account for decreases in suicidal desire. Study 1 was also limited in its generalizability: Participants were undergraduate students, and the number of participants with clinically significant levels of suicidal symptoms was low. It will be

necessary to replicate these results in a clinical sample. In addition, the sample was primarily female and Caucasian; replications could include more diverse samples to ensure generalizability to other racial groups, as these interpersonal variables could function differently cross-culturally. Finally, results suggested that perceived burdensomeness may be an especially strong predictor of suicidal desire. Future studies are needed to replicate this finding and to determine whether the theory will need to be revised to reflect differential weighting of the constructs in the prediction of desire for suicide.

Regarding limitations specific to Study 2, additional research with behavioral measures is needed to complement research done with the self-report ACSS scale. It could be that individuals with greater levels of acquired ability possess other or different characteristics from high scorers on the ACSS; for example, these individuals may have acquired greater physical pain tolerance through past attempts, a characteristic of acquired capability not measured by the ACSS. Another limitation of Study 2 is that suicide attempts were measured retrospectively, thus making it impossible to verify self-report data or gather detailed information on the characteristics of reported suicidal behavior. A possibility that we were thus unable to examine is that all suicide attempts may not function similarly with regard to the acquired capability: It may be that the experience of a suicide attempt sensitizes some individuals to the pain and fear involved in self-injury, whereas for others the experience of a suicide attempt causes habituation. Acquired capability would be increased only for individuals who experience habituation. If this is indeed the case, future research should investigate potential moderators that may predict under what circumstances sensitization or habituation occurs.

Finally, the design for Study 3 included clinician-rated risk for future suicidal behavior rather than the outcome of nonlethal and lethal suicide attempts. The measurement of suicide attempts would allow for a more stringent test of the theory's utility in risk assessment: Because of low base rates of suicidal behavior, many risk prediction models high in sensitivity are low in specificity and thus result in a high number of false positives (e.g., Jacobs, Brewer, & Klein-Benheim, 1999). The interpersonal-psychological theory was designed to address the need for both sensitivity and specificity: The theory is sensitive in that it will detect a large number of individuals at risk for suicidal desire (i.e., those experiencing thwarted belongingness and perceived burdensomeness). The theory is specific in that it proposes that only those individuals who both are experiencing thwarted belongingness and perceived burdensomeness and have acquired the capability for suicide are at risk for suicide attempts. Future studies could also test the utility of incorporating the constructs of the theory into established treatments for suicidal behavior. Our results suggest that it may be effective to target the constructs of acquired capability, perceived burdensomeness, and thwarted belongingness within empirically validated treatments. For example, any preparatory behaviors for suicide, such as viewing suicide "how to" Web sites that may facilitate habituation to the pain and fear involved in suicidal behavior, could be targeted to prevent further acquisition of the capability for suicide. Also, social isolation and judgmental thoughts about one's ineffectiveness could be targeted early in treatment to prevent or treat serious levels of suicidal desire.

Results of three studies, including two outpatient clinical samples, corroborated the hypotheses of the interpersonal-psychological theory. Our results support the clinical relevance of the assessment—and amelioration of—thwarted belongingness, perceived burdensomeness, and an acquired capability in the clinical management of suicidal behavior.

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