

Research Article

THE ACQUIRED CAPABILITY FOR SUICIDE: A COMPARISON OF SUICIDE ATTEMPTERS, SUICIDE IDEATORS, AND NON-SUICIDAL CONTROLS

Phillip N. Smith, Ph.D.,¹ Kelly C. Cukrowicz, Ph.D.,^{2*} Erin K. Poindexter, B.A.,² Valerie Hobson, M.A.,²
and Lee M. Cohen, Ph.D.²

Background: *The Interpersonal Theory of Suicide states that to make a serious or lethal suicide attempt, a person must experience reductions in fear and pain sensitivity sufficient to overcome self preservation reflexes (i.e., the acquired capability for suicide). The purpose of this study was to examine the fearlessness component of the acquired capability for suicide using self-report assessment instruments and an objective measure of aversion (the affectively modulated startle reflex task). Methods:* Depressed suicide ideators ($n = 15$), depressed suicide attempters ($n = 15$), and a group of control participants ($n = 14$) were compared on their self-report of acquired capability and painful and provocative life events, and completed the affectively modulated startle reflex task. This task compared electromyography recordings of participants' eye-blink response to a startle probe while viewing pictures of varying hedonic valence (neutral, positive, negative, and suicide-related). **Results:** Suicide attempters reported the highest levels of fearlessness and pain insensitivity and a greater history of painful and provocative life events. Although no group differences were found on the psychophysiology data, participants reacted to suicide-related images with less aversion compared to neutral images with no differences between suicide-related and positive images. **Conclusions:** Self-reported fearlessness and pain insensitivity can differentiate suicide attempters and suicide ideators. Results suggest that one's self-perception (i.e., cognitions regarding fear and pain tolerance) are more functionally related to suicide attempts than psychophysiological reactivity to suicide-related stimuli. *Depression and Anxiety 27:871–877, 2010. © 2010 Wiley-Liss, Inc.*

Key words: *suicide; suicide ideation; interpersonal theory; self-harm; acquired capability for suicide*

Suicide was the 12th leading cause of death in the United States in 2006 with approximately 33,300 deaths by suicide.^[1] Suicide is a major public health concern that merits research attention. The Interpersonal Theory of suicide states that to make a serious or lethal suicide attempt, an individual must desire death and experience fearlessness and pain insensitivity such that suicidal behaviors no longer evoke these responses.^[2] This *acquired capability for suicide* (hereafter referred to as acquired capability) develops over time through repeated exposure to psychologically provocative or fear-inducing and physically painful life events.^[2] The most

¹University of Rochester School of Medicine, Department of Psychiatry, Rochester, New York

²Texas Tech University, Department of Psychology, Lubbock, Texas

*Correspondence to: Kelly C. Cukrowicz, Department of Psychology, Texas Tech University, Lubbock, TX 79409-2051.
E-mail: Kelly.Cukrowicz@ttu.edu

The authors report they have no financial relationships within the past 3 years to disclose.

Received for publication 2 February 2010; Revised 8 March 2010; Accepted 9 March 2010

DOI 10.1002/da.20701

Published online 28 April 2010 in Wiley Online Library (wileyonlinelibrary.com).

direct method to develop acquired capability is non-lethal suicide attempts. Non-lethal suicide attempts increase the risk of death by suicide due, in part, to their facilitation of acquired capability. Additionally, life events that involve pain and/or fear will also facilitate acquired capability (see, Smith and Cukrowicz^[3] for a discussion on the development of acquired capability).

Findings indicate that future suicide attempts and deaths by suicide are associated with a greater history of past suicide attempts, non-suicidal self-harm, trauma exposure, and higher pain tolerance.^[4-7] Self-reported fearlessness and pain insensitivity are related to a greater number of past suicide attempts and exposure to painful and provocative life events.^[8] This is notable as most research has examined the relationship between general negative life events and suicide attempts,^[6] whereas the theory holds that it is the specifically painful and provocative aspects of events that facilitate acquired capability. These studies indicate that fearlessness and pain insensitivity are necessary for one to be capable of suicide and that this capability is important in determining whether one who wishes to die by suicide will attempt suicide.

The majority of research supporting the role of acquired capability has examined participants reporting a range of suicidal behavior, with most participants reporting no history of suicide attempts. As such, there exists a gap in the literature demonstrating differences in acquired capability between individuals, the theory specifically indicates will differ on acquired capability: suicide attempters and ideators with no history of suicide or self-harm. This information is critical because it is the fundamental proposition of the theory that acquired capability is the limiting factor in distinguishing those who desire death by suicide from those who will make a serious or lethal suicide attempt. Furthermore, all studies published to date have relied on self-reported acquired capability.^[8] This study examined group differences in acquired capability using both self-report and an objective index of aversion, a potential measure of fearlessness and a correlate of acquired capability.

The affectively modulated startle reflex research paradigm was used to explore the fearlessness inherent in acquired capability.^[9,10] Within this paradigm, a startle probe (e.g., burst of white noise) is presented during ongoing processing of other stimuli, such as pictures with varying hedonic valence.^[11] The magnitude of the startle response is then recorded. The magnitude of the startle response is typically attenuated when the other information being processed is positive and potentiated when it is negative. Although this paradigm does not identify complex emotions, such as fear,^[12] if an individual capable of suicide is fearless of suicide, he or she would be expected to demonstrate less aversion to suicide-related stimuli (i.e., reduced startle amplitude).

AIMS AND HYPOTHESES

The primary aim of this study was to compare self-reported acquired capability and history of painful and

provocative events among three groups of depressed individuals: those who reported suicide ideation with no history of self-harm or suicide attempts (suicide ideators), those with a history of at least one suicide attempt (suicide attempters), and psychologically healthy individuals (controls). It was predicted that suicide attempters would self-report greater acquired capability and exposure to painful and provocative life events compared to suicide ideators and controls. It was also predicted that painful and provocative life events would be more strongly associated with a history of suicide attempts than general negative life events.

A secondary aim of the study was to explore the nature of acquired capability using objective measurement. Using the affectively modulated startle reflex procedure, three hypotheses were tested: Suicide attempters would respond with less aversion (i.e., attenuated eye-blink response) to suicide-related images compared to images that are negative. Suicide ideators and controls would view suicide-related images as equally aversive as negative images (i.e., potentiated eye-blink response). Suicide attempters would show less aversion to suicide-related images compared to suicide ideators and controls.

METHOD

PARTICIPANTS

Participants were adult suicide ideators ($n = 15$), suicide attempters ($n = 15$), and controls ($n = 14$; see Tables 1 and 2 for demographic, psychiatric symptom, and diagnostic information). All psychiatrically distressed participants met criteria for a current Major Depressive Episode according to the Structured Clinical Interview for DSM-IV Diagnosis,^[13] which was administered by trained research clinicians. Suicide attempters reported at least one suicide attempt defined as "a self-inflicted, potentially injurious behavior with a nonfatal outcome for which there is evidence... of intent to die... [And which] may result in no injuries, injuries, or death" (p 272).^[14] Suicide ideators required a Beck Scale for Suicide Ideation (BSSI) score of four or greater.^[15] Suicide ideators were excluded if their ideation extended beyond the previous month or if they reported non-suicidal self-harm. These criteria were established to exclude suicide ideators who may be more similar to attempters with regard to acquired capability due to the facilitative effects of chronic suicide ideation and self-harm.

Exclusion criteria for the psychiatrically distressed participants were: Posttraumatic Stress Disorder (PTSD), Substance Use Disorder, Psychotic Disorder, or medication change within the previous two weeks. These exclusion criteria reduced the potential for confounding with the affectively modulated startle reflex task by qualities inherent to the diagnosis (e.g., exaggerated startle reflex in PTSD). Control participants were excluded if they reported any psychiatric diagnosis, suicide ideation, attempts, or self-harm.

MATERIALS: SELF-REPORT INVENTORIES AND CLINICIAN ADMINISTERED INTERVIEWS

All measures selected for this study have demonstrated adequate reliability and validity in previous samples. Suicide ideation was assessed using the BSSI. The BSSI is a 21-item self-report measure of the degree of severity of suicide ideation, wishes, and attitudes.^[15] Internal consistency in the current sample was good ($\alpha = .92$).

TABLE 1. Demographic information and psychological symptoms by group

	Suicide ideator group <i>n</i> = 15 (%)	Suicide attempter group <i>n</i> = 15 (%)	Control group <i>n</i> = 14 (%)			
Gender						
Male	5 (33.3)	8 (46.7)	8 (57.1)			
Female	10 (66.7)	7 (53.3)	6 (42.9)			
Mean age* (<i>SD</i>)	33.07 ^a (14.03)	28.60 ^b (11.98)	20.36 ^b (2.17)			
Ethnicity						
Caucasian	12 (80.0)	10 (66.7)	12 (85.7)			
Latino	1 (6.7)	1 (6.7)	1 (7.1)			
African-American	0 (0.0)	0 (0.0)	1 (7.1)			
Native American	1 (0.0)	2 (13.3)	0 (0.0)			
Asian	1 (6.7)	1 (6.7)	0 (0.0)			
Indian	1 (6.7)	1 (6.7)	0 (0.0)			
Marital status*						
Single, never married	9 (60.0)	8 (53.3)	7 (50.0)			
In a relationship, unmarried	0 (0.0)	0 (0.0)	7 (50.0)			
Married	3 (20.0)	1 (6.7)	0 (0.0)			
Divorced	1 (6.7)	3 (20.0)	0 (0.0)			
Living w/partner	1 (6.7)	2 (13.3)	0 (0.0)			
Separated	1 (6.7)	1 (6.7)	0 (0.0)			
Education level						
Some college	9 (60.0)	11 (73.3)	14 (100)			
College degree	4 (26.7)	2 (13.3)	0 (0.0)			
Advanced degree	1 (6.7)	1 (6.7)	0 (0.0)			
HS diploma	1 (6.7)	1 (6.7)	0 (0.0)			
Additional information						
Family history of mood disorder	6 (40.0)	3 (20.0)	0 (0.0)			
Family history of suicide	2 (13.3)	1 (6.7)	0 (0.0)			
Current psychotherapy	4 (26.7)	3 (20.0)	0 (0.0)			
Past psychotherapy	12 (80.0)	14 (93.3)	3 (21.4)			
Current antidepressant medication	4 (26.7)	3 (20.0)	0 (0.0)			
Current mood stabilizer medication	2 (13.3)	0 (0.0)	0 (0.0)			
Current anxiolytic medication	2 (13.3)	0 (0.0)	0 (0.0)			
Current stimulant medication	1 (6.7)	0 (0.0)	0 (0.0)			
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
BDI	32.53	(13.34)	25.53	(8.19)	1.50	(2.56)
BHS*	12.60 ^a	(5.42)	8.80 ^b	(4.60)	1.93	(1.49)
BSSI	12.13	(6.57)	11.27	(5.65)	0.00	(0.00)

BDI-II, Beck Depression Inventory–II; BAI, Beck Anxiety Inventory; BHS, Beck Hopelessness Scale; BSSI, Beck Scale for Suicide Ideation. No significant group differences were found on any of the variables except age, $F_{(2, 41)} = 5.09, P < .05$; marital status, $\chi^2_{(10)} = 24.63, P < .05$; and BHS scores, $t_{(28)} = 2.070, P < .05$ (denoted with a *). Different superscript letters indicate a significant difference between the groups. Control participants were not compared with psychiatrically distressed participants on psychiatric symptom measures as they were specifically selected to be free from distress.

Symptoms of depression and hopelessness were assessed using the *Beck Depression Inventory-II (BDI)* and the *Beck Hopelessness Scale (BHS)*. The BDI is a 21-item self-report measure of depressive symptoms consistent with DSM-IV criteria over the previous two weeks.^[16] The BHS is a 20-item self-report measure of the extent to which participants agree with statements of negative expectancy.^[17] Within the current sample, internal consistency for each of the measures was good (BDI $\alpha = .97$, BHS $\alpha = .93$).

Self-reported fearlessness and pain insensitivity was assessed using the *Acquired Capability for Suicide Scale (ACSS)*. The ACSS is a 20-item self-report measure of the extent to which individuals perceive themselves as capable of performing or being exposed to potentially dangerous or fatal situations, including suicide.^[8] Internal consistency in the current sample was good ($\alpha = .88$). Life events were

measured using the *Painful and Provocative Events Scale and Impulsive Behaviors Scale (PPES/IBS)* and the *Life Experiences Survey (LES)*. The PPES/IBS is a 49-item measure of the frequency with which participants have experienced a number of life events (e.g., having been shot, a victim of abuse, self-mutilation).^[8] Internal consistency of the PPES/IBS in the current sample was good ($\alpha = .89$). The LES is a 43-item self-report measure in which participants identify the occurrence of life experiences over the past 12 months and rate their impact (from extremely negative to extremely positive).^[18]

MATERIALS: PICTURE STIMULI

The majority of the images were from the International Affective Picture System collection (IAPS).^[10] IAPS images have been

TABLE 2. Diagnostic summary according to SCID-I and SCID-II administration by group

	Number of suicide ideators meeting criteria	Number of suicide attempters meeting criteria
SCID-I: MDE	15	15
SCID-I: Panic disorder	1	2
SCID-I: AWOP	1	0
SCID-I: Social phobia	4	5
SCID-I: GAD	5	8
SCID-I: Somatization disorder	1	0
SCID-I: Pain disorder	1	0
SCID-I: Hypochondriasis	1	0
SCID-I: Bulimia nervosa	0	2
SCID-II: Avoidant PD	1	2
SCID-II: Obsessive-compulsive PD	4	1
SCID-II: Depressive PD	6	1
SCID-II: Paranoid PD	1	3
SCID-II: Borderline PD	3	2
SCID-II: Passive-aggressive PD	0	1
SCID-II: Schizoid PD	0	1
SCID-II: Antisocial PD	0	1

SCID, Structured Clinical Interview for DSM-IV-TR Diagnosis; MDE, Major Depressive Episode; AWOP, Agoraphobia without Panic; GAD, Generalized Anxiety Disorder; PD, Personality Disorder.

standardized and demonstrated to elicit reliable modulation of the startle reflex.^[19–22] Images were selected according to normative ratings to be representative of positive, negative, and neutral categories (15 images from each group).¹ Negative images included no death or mutilation content. None of the images selected demonstrated significant gender differences in the normative sample. Suicide-related images were composed of two selected from the IAPS database and 13 from the World Wide Web. These images depicted the act of suicide or dead bodies that were judged to be the result of suicide across a number of methods (e.g., hanging, overdose, etc.). Adequacy of the images was subjectively gauged by the first and second authors.

PROCEDURE

Data collection procedures were approved by the university Institutional Review Board. Following consent, participants completed the University of Washington Risk Assessment Protocol.^[23] Participants then completed all assessments described above and others not discussed in this study. Psychophysiological data collection procedures conformed to the recommendations of the Society for Psychophysiological Research.^[24] In brief, participants viewed images on a computer monitor and heard, during a portion of those image presentations, a 95 bd burst of white noise presented using

¹IAPS images used were neutral: 1,616, 2,038, 2,102, 2,445, 2,745.1, 2,880, 5,534, 5,731, 6,150, 7,002, 7,025, 7,150, 7,595, 7,705, 9,210; positive: 1,140, 1,460, 1,710, 1,811, 2,050, 2,070, 2,154, 2,340, 4,626, 5,480, 5,600, 5,760, 5,833, 8,496, 8,501; negative: 2,095, 3,180, 3,350, 3,530, 6,540, 6,838, 7,380, 9,006, 9,140, 9,301, 9,421, 9,520, 9,570, 9,810, 9,910; suicide-related: 3,068, 6,570.

headphones. Action potentials of the orbicularis oculi (i.e., eye-blink reflex) muscle were recorded using electromyography. Following a habituation phase (a series of 10 blank screen trials including startle probes), participants completed the 60 experimental trials including the positive, negative, neutral, and suicide-related images. Trials were presented in counterbalanced blocks of 15 images each with images pseudo-randomly ordered within block so that no more than 2 images of each category were presented sequentially. Each block contained the same number of images from each category.

RESULTS

Descriptive statistics for self-report measures of acquired capability and life events can be found in Table 3. To explore the relationship between attempt status and acquired capability, painful and provocative life events, and negative life events, a multivariate analysis of covariance (MANCOVA) was conducted controlling for age, gender, marital status, BDI, BHS, and BSSI, with group (suicide attempter, ideator, control) as the independent variable and the ACSS, PPES/IBS, and LES as the dependent variables. This omnibus test was significant, Wilks' Lambda $F_{(6,66)} = 6.68, P = .000$. Follow-up univariate analyses of variance indicated significant effects for the ACSS, $F_{(2,35)} = 3.35, P = .047, \eta^2_{\text{partial}} = .160$, and the PPES/IBS, $F_{(2,35)} = 20.09, P = .000, \eta^2_{\text{partial}} = .534$. The univariate effect for the LES was not significant, $F_{(2,35)} = 1.21, P = .309, \eta^2_{\text{partial}} = .065$.

Pair-wise comparisons indicated that suicide attempters reported higher scores on the ACSS than ideators ($P = .029$) and higher scores on the PPES/IBS than either the ideators ($P = .000$) or controls ($P = .000$). Controls and suicide ideators reported equivalent scores on the PPES/IBS ($P = .110$). No differences on the ACSS were found between controls and suicide ideators ($P = .914$) or controls and suicide attempters ($P = .182$).

EMG RESPONSES TO IMAGES

The unit of analysis for psychophysiological data was the within-participant standardized magnitude of EMG responses averaged by image category (see Fig. 1).^[24] Psychophysiological data were analyzed using a group by valence (3×4) repeated measures MANCOVA with age, gender, marital status, BDI, BHS, and BSSI as covariates, and group (suicide attempter, ideator, control) and image valence (neutral, negative, positive, suicide-related) as the independent variables and psychophysiological reactivity as the dependent variable. The interaction between group and valence was not significant, Pillai's Trace $F_{(6,68)} = 1.39, P = .233$. The main effect of image valence was significant, Pillai's Trace $F_{(3,33)} = 4.23, P = .012$. The main effect of group was not significant, Pillai's Trace $F_{(2,35)} = .90, P = .416$.

Contrast coefficients indicated that EMG reactivity to neutral images was greater than that for positive ($P = .002$) and suicide-related ($P = .008$) images. Reactivity

TABLE 3. Descriptive statistics of measures explicitly designed to assess the acquired capability component of the interpersonal-psychological theory of suicide by group

	Suicide ideator group		Suicide attempter group		Control group	
ACSS	57.67 ^a	(15.16)	71.13 ^b	(11.74)	64.43 ^a	(15.20)
PPES/IBS	30.20 ^a	(16.66)	61.80 ^b	(20.23)	30.29 ^a	(9.35)
LES	12.47 ^a	(13.05)	2.47 ^b	(14.98)	-4.36 ^b	(5.68)

ACSS, Acquired Capability for Suicide Scale; PPES/IBS, Painful and Provocative Life Events/Impulsive Behaviors Scale; LES, Life Events Survey; different superscript letters indicate a significant difference between the groups on the individual measure, $P < .05$.

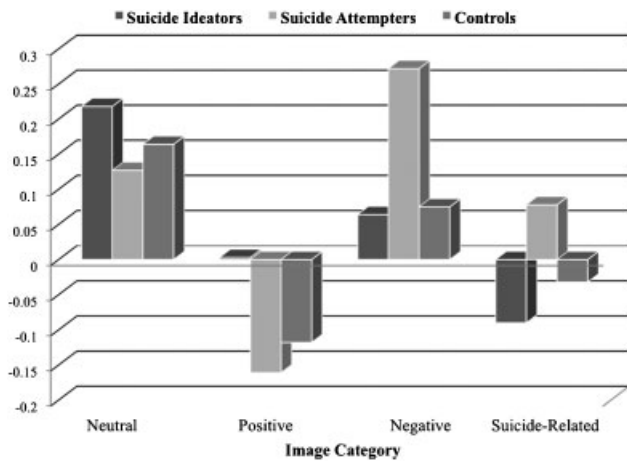


Figure 1. Standardized EMG startle reflex magnitudes by image category and group.

to negative images was greater than that for positive images ($P = .017$). Reactivity to suicide-related images was less than that for negative images, though this comparison was just beyond the boundary of conventional significance ($P = .080$). No other comparisons were significant.

DISCUSSION

This study examined the acquired capability component of the Interpersonal Theory of Suicide using self-report and an objective measure of aversion. Hypotheses were generally supported. Suicide attempters viewed themselves as more fearless and insensitive to pain than suicide ideators, and reported a greater history of painful and provocative life events than ideators and controls. As predicted, it was the specifically painful and provocative life events rather than general negative life events that were associated with suicide attempts. This finding supports the functional primacy of pain and provocation in the development of acquired capability.^[3] Although controls were not different from suicide attempters on self-reported acquired capability, this is consistent with the theory's description of acquired capability as independent from the desire for death. Acquired capability can develop in response to life events that are not associated with psychopathology (e.g., skydiving, accidental injury). Furthermore, it could be argued that

college students represent a fearless population (as indicated by reckless and impulsive behavior, such as unprotected sex and substance use). Regardless, these findings support the role of acquired capability as a limiting factor in distinguishing those who may desire death by suicide, but do not go on to make a suicide attempt.^[2]

Another aim of this study was to further explore the nature of the fearlessness involved in acquired capability and to provide an objective test of the theory. It was predicted that suicide attempters would exhibit less aversion to suicide-related images compared to negative images; a pattern not expected for suicide ideators and controls. This hypothesis was not supported. All participants showed less aversion to suicide-related images compared to neutral and negative images. This indicates that suicide attempters, ideators, and controls did not react to suicide-related images with aversion.

This lack of aversion to suicide-related images for all groups is interesting when considered in the context of the self-report data. Self-report data represents an individual's perception of him or herself; in this case, the subjective experience of fearlessness and pain insensitivity. This is consistent with an individual's self-referent thoughts or beliefs (i.e., cognitions). The disparity in results between self-report and psychophysiological measures suggests that one's beliefs regarding their fearlessness and pain insensitivity may be most functionally relevant to their actual capability for suicide and related suicide risk.

CLINICAL IMPLICATIONS

Acquired capability has been discussed primarily in terms of its role in the assessment of suicidal patients due to its "relatively fixed and static" nature (p 18).^[25] These data support the use of self-report assessment of acquired capability to differentiate those who desire suicide from those who are capable of attempting suicide. Acquired capability may also serve as a point of psychoeducation for suicidal patients.^[25] Such education may include a form of a stimulus-control intervention where patients identify specific behaviors and situations that would further facilitate acquired capability, and therefore, should be avoided.^[25] Acquired capability may also be used to reorient patients to the function of pain and fear. For example, a patient can relearn to use (e.g., by

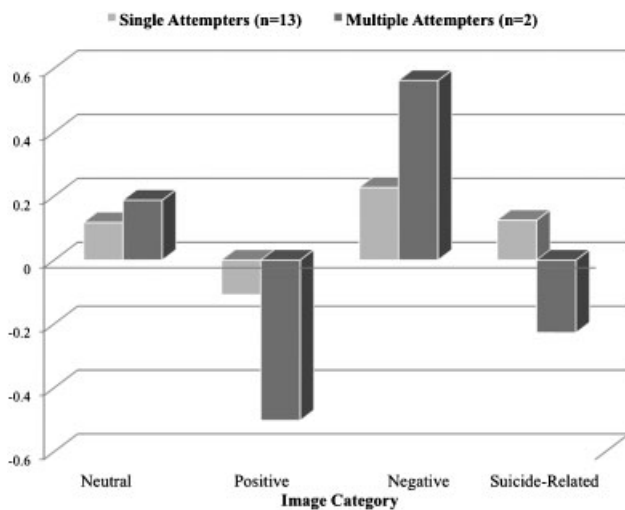


Figure 2. Standardized EMG startle reflex magnitudes by image category for single and multiple suicide attempters.

identifying other aspects of events) painful and provocative experiences as messengers to indicate the need to cease behaviors.

LIMITATIONS, ALTERNATIVE INTERPRETATIONS, AND FUTURE DIRECTIONS

This study suffered from some limitations. Only two participants attempted suicide more than once. Given the important differences between single and multiple attempters, these groups would be expected to differ in their reactivity to suicide-related images.^[26] Although the low number of multiple attempters precludes statistical analysis, multiple attempters demonstrated less aversion to suicide-related images compared to single attempters (see Fig. 2). This tentative finding indicates that future research should compare the psychophysiological reactivity of never, single, and multiple attempters.

The operational definition of suicide ideation (i.e., BSSI score ≥ 4) may have resulted in a sample of suicide ideators who exhibited elevated acquired capability. This is due to the BSSIs inclusion of items on the resolved plans/preparations for suicide factor,^[27] which are more predictive of suicide attempts and are consistent with higher acquired capability. Suicide attempters and ideators were not different in their endorsement of items on the plans/preparations factor ($M = 5.47$ [$SD = 3.56$] versus attempters $M = 4.00$ [$SD = 3.21$] $t_{(28)} = 1.185$, $P = .246$). However, the BSSI assesses suicide ideation over the previous four weeks. Given the lack of acute or imminent risk demonstrated by the current sample, they would not be expected to be planning for suicide at the time of the study. Nonetheless, the use of the BSSI as our definition of suicide ideation remains a limitation of this study.

The suicide-related images used, although carefully selected, were not from a standardized database and have not previously been tested in terms of psychophysiological reactivity. These images may not have been emotionally evocative or personally salient enough to activate participants' suicide-related schema. Further research is required to identify whether these or other images of suicide might result in greater psychophysiological reactivity. Alternatively, it may be necessary to engage in an action or be presented with personally salient cues. The lack of group differences may also have been a result of having completed assessment instruments before the startle task. Completing these assessments may have primed participants to be less reactive to suicide-related images.

SUMMARY

This study tested the acquired capability component of Joiner's^[2] Interpersonal Theory of suicide. These data support that acquired capability is an important factor in distinguishing individuals who may wish to die by suicide from those who both desire death and are capable (i.e., at risk) of attempting suicide. These data also indicate that painful and provocative life events are more functionally important than general negative life events in the development of acquired capability. Considering the self-report and psychophysiological data together, it seems that beliefs about fearlessness and pain insensitivity may be more relevant to acquired capability and suicide risk.

Acknowledgments. The authors thank Erin Schlegel, Matt Jacobs, and Danielle Jahn for their assistance in recruiting participants, conducting clinical interviews, and administering the psychophysiological data recording sessions.

REFERENCES

- Center for Disease Control and Prevention. WISQARS (Web-based Injury Statistics Query and Reporting System). Available from: <http://www.cdc.gov/ncipc/wisqars/default.htm> (accessed: December 25, 2009).
- Joiner T. Why People die by suicide. Cambridge, MA: Harvard University Press; 2005.
- Smith PN, Cukrowicz KC. Capable of suicide: a functional model of the acquired capability component of the interpersonal-psychological theory of suicide. *Suicide Life Threat Behav*, in press.
- Christiansen E, Jensen BF. Risk of repetition of suicide attempt, suicide or all deaths after an episode of attempted suicide: a register-based survival analysis. *Aust N Z J Psychiatry* 2007;41:257-265.
- Haw C, Bergen H, Casey D, Hawton K. Repetition of deliberate self-harm: a study of the characteristics and subsequent deaths in patients presenting to a general hospital according to extent of repetition. *Suicide Life Threat Behav* 2007;37:379-396.
- Joiner TE, Conwell Y, Fitzpatrick KK, et al. Four studies on how past and current suicidality relate even when "everything but the kitchen sink" is covaried. *J Abnorm Psychol* 2005;114:291-303.

7. Orbach I, Palgi Y, Stein D, et al. Tolerance for physical pain in suicidal subjects. *Death Studies* 1996;20:327–341.
8. Van Orden KA, Witte TK, Gordon KH, et al. Suicidal desire and the capability for suicide: tests of the interpersonal-psychological theory of suicidal behavior among adults. *J Consult Clin Psychol* 2008;76:72.
9. Vrana SR. Emotional modulation of skin-conductance and eyeblink responses to a startle probe. *Psychophysiology* 1995;32:351–357.
10. Lang PJ, Bradley MM, Cuthbert BN. Emotion, attention, and the startle reflex. *Psychol Rev* 1990;97:377–395.
11. Vrana SR, Spence EL, Lang PJ. The startle probe response—a new measure of emotion. *J Abnorm Psychol* 1988;97:487–491.
12. Larsen JT, Berntson GG, Poehlmann KM, et al. The Psychophysiology of Emotion. In: Lewis R, Haviland-Jones JM, Barrett LF, eds. *The Handbook of Emotions*. 3rd ed. New York: Guilford; 2008.
13. First MB, Spitzer RL, Gibbon M, Williams JBW. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders*. New York: Biometrics Research Department, New York State Psychiatric Institute; 2005.
14. Silverman MM, Berman AL, Sanddal ND, et al. Rebuilding the Tower of Babel: a revised nomenclature for the study of suicide and suicidal behaviors—part 2: suicide-related ideations, communications, and behaviors. *Suicide Life Threat Behav* 2007;37:264–277.
15. Beck AT, Steer RA. *Manual for the Beck Scale for Suicide Ideation*. San Antonio, TX: Psychological Corporation; 1991.
16. Beck AT, Steer RA, Brown GK. *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation; 1996.
17. Beck AT, Steer RA. *Manual for the Beck Hopelessness Scale*. San Antonio, TX: Psychological Corporation; 1988.
18. Sarason IG, Johnson JH, Siegel JM. Assessing impact of life changes—development of life experiences survey. *J Consult Clin Psychol* 1978;46:932–946.
19. Bradley MM, Lang PJ. Measuring emotion—the self-assessment mannequin and the semantic differential. *J Behav Ther Exp Psychiatry* 1994;25:49–59.
20. Bradley MM, Lang PJ. The international affective picture system (IAPS) in the study of emotion and attention. In: Coan JA, Allen JJ editors. *Handbook of Emotion Elicitation and Assessment*. New York, NY: Oxford University Press; 2007.
21. Libkuman TM, Otani H, Kern R, et al. Multidimensional normative ratings for the international affective picture system. *Behav Res Methods* 2007;39:326–334.
22. Lang PJ, Bradley MM, Cuthbert BN. *International Affective Picture System (IAPS): Affective Ratings of Pictures and Instruction Manual*. Technical Report A-8. University of Florida, Gainesville, FL; 2008.
23. Reynolds SK, Lindenboim N, Comtois KA, et al. Risky assessments: participant suicidality and distress associated with research assessments in a treatment study of suicidal behavior. *Suicide Life Threat Behav* 2006;36:19–34.
24. Blumenthal TD, Cuthbert BN, Filion DL, et al. Committee report: guidelines for human startle eyeblink electro-myographic studies. *Psychophysiology* 2005;42:1–15.
25. Joiner Jr TE, Van Orden KA, Witte TK, Rudd MD. *The Interpersonal Theory of Suicide: Guidance for Working with Suicidal Clients*. Washington, DC: American Psychological Association; 2009.
26. Rudd MD, Joiner T, Rajab, MH. Relationships among suicide ideators, attempters, and multiple attempters in a young-adult sample. *J Abnorm Psychol* 1996;105:541.
27. Joiner Jr TE, Rudd MD, Rajab MH. The modified scale for suicidal ideation: factors of suicidality and their relation to clinical and diagnostic variables. *J Abnorm Psychol* 1997;106:260.

Copyright of Depression & Anxiety (1091-4269) is the property of John Wiley & Sons, Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.