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Measuring Acquired Capability for Suicide Within an Ideation-to-Action Framework

Taylor A. Burke, Brooke A. Ammerman, Anne C. Knorr, Lauren B. Alloy, and Michael S. McCloskey
Temple University

Objective: Despite the large literature on risk factors for suicide-related outcomes, few studies have examined risk for acting on suicidal thoughts among suicide ideators. The current study aimed to fill this gap by examining the role of acquired capability, as well as its hypothesized facilitator, painful and provocative events (PPEs), as motivators for behavior among individuals along the suicide continuum. ***Method:*** Undergraduates reporting suicidal ideation, suicide plans, suicide attempts without intent to die, or suicide attempts with intent to die ($N = 546$) completed a measure of acquired capability for suicide, as well as assessments of exposure to PPEs. ***Results:*** Our findings demonstrated that acquired capability for suicide did not distinguish between individuals falling along the ideation-to-action spectrum. Among the several PPEs assessed, the frequency of nonsuicidal self-injury, and the presence of childhood emotional abuse, physical abuse, and physical neglect each significantly differentiated between groups, with individuals having a history of a suicide attempt with the intent to die reporting the highest levels. ***Conclusions:*** These findings implicate the PPEs that may be most important to assess in determining suicide risk, and, further, call into question the utility of acquired capability in differentiating between individuals along the suicide continuum.

Keywords: suicidal ideation, suicide planning, suicide attempts, suicide intent, painful and provocative events

Given the prevalence and gravity of suicidal behavior (Centers for Disease Control and Prevention, 2010), a large literature has identified many risk factors for both suicidal ideation and suicidal behavior; however, very few studies have examined risk for acting on suicidal thoughts among suicide ideators. This is a major gap in the literature given that a relatively high number of individuals exhibit suicidal ideation over their lifetimes (approximately 9%–13%; Bolton et al., 2013; Nock et al., 2008), with roughly only one third of ideators taking action on their suicidal thoughts (Nock et al., 2009). The critical importance of understanding what differentiates ideators from attempters has been demonstrated by May and Klonsky (2016) in a recent meta-analysis of studies examining risk factors that differentiate between ideators and actors. The meta-analysis identified relatively few studies (out of thousands of studies empirically examining suicide-related constructs) that were able to statistically address what factors differentiate suicidal ideators and actors. Importantly, the authors found that many well-known risk factors for suicidal behavior were not actually significantly different between ideators and actors, with only anxiety disorders, posttraumatic stress disorder, drug use disorders, and sexual abuse history exhibiting moderate effect sizes in differentiating ideators and attempters. In fact, no identified risk factors evidenced a large effect size. Thus, the authors called for the use of an ideation-to-action framework in future suicide research, one which emphasizes research methods that permit conclusions to be drawn regarding which suicidal ideators go on to attempt suicide. The present study sought to adopt this framework to advance knowledge of specific predictors of suicidal actions among ideators.

Three extant theories conceptualize suicide within such a framework, and may be used to investigate novel variables that may more effectively differentiate ideators and attempters. Joiner's (2005) interpersonal psychological theory of suicide (IPTS) suggests that to engage in suicidal behavior, one must not only have the desire for suicide, but also have the ability to enact lethal behavior, labeled acquired capability. Given that enacting such lethal behavior is typically fear inducing and associated with a great deal of pain, acquired capability for suicide is defined as having a greater habituation to both the fear and the pain associated with carrying out suicidal acts (Joiner, 2005). The two additional theories of suicide (O'Connor's (2011) integrated motivational-volitional model [IMV] and Klonsky & May's (2015) three-step theory of suicide [3ST]) also propose unique formulations of what active ingredients may cause the transition from ideation to action, including both one's environment and genetic make-up (Klonsky & May, 2015). Although each theory highlights the importance of different elements in inciting suicidal ideation, the commonality is

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Taylor A. Burke, Brooke A. Ammerman, Anne C. Knorr, Lauren B. Alloy, and Michael S. McCloskey, Department of Psychology, Temple University.

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Correspondence concerning this article should be addressed to Taylor A. Burke, Department of Psychology, Temple University, Weiss Hall, 1701 North 13th Street, Philadelphia, PA 19122. E-mail: taylor.burke@temple.edu

that each hypothesizes that acquired capability is a pivotal ingredient in motivating suicidal behavior among suicidal ideators. Empirical evidence has supported the role of acquired capability, in interaction with the theorized construct of suicidal desire, in predicting clinician rated suicide risk (Van Orden, Witte, Gordon, Bender, & Joiner, 2008) and a greater number of suicide attempts (Anestis & Joiner, 2011). Furthermore, greater acquired capability is independently associated with greater numbers of suicide attempts (Van Orden et al., 2008). Taken together, findings support the role of acquired capability in suicidal behavior, warranting further attention within the suicide literature.

One posited environmentally determined ingredient in acquired capability is the experience of painful and provocative events (PPEs), which are theorized to increase one's acquired capability through habituation to the pain and fear associated with enacting lethal behavior. In line with the theoretical implications of PPEs, many researchers have investigated whether specific behaviors that expose (and therefore habituate) an individual to PPEs, may be predictive of suicidal behavior. Discrete PPEs that have received research support in augmenting one's risk for suicidal behaviors include nonsuicidal self-injury (NSSI), past suicidal behaviors, combat experiences, and fasting behaviors (e.g., Kang & Bullman, 2009; Whitlock et al., 2013; Zuromski & Witte, 2015). Indeed, research has found that NSSI, direct self-injury without associated suicide intent, is one of the strongest prospective predictors of suicidal behaviors (Hamza, Willoughby, & Good, 2013), and theory suggests that exposure to this particular PPE may be the most direct means, aside from engaging in previous suicide attempts, in habituating individuals to both the pain and fear involved in enacting lethal self-injury. Further supporting the role of discrete PPEs in the capability for suicide, a measure of numerous individual PPEs has been shown to be predictive of acquired capability (Van Orden et al., 2008). Overall, research has supported the role of both acquired capability and PPEs in enacting suicidal behavior.

Acquired Capability Within the Ideation to Action Framework

Despite significant research on acquired capability, and the theorized importance of acquired capability in the progression from ideation to suicide attempt, only two studies to date have specifically examined acquired capability within the ideation-to-action framework. Both supported the relationship between acquired capability and suicide attempt status among ideators, albeit to modest degrees (Klonsky & May, 2015; Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010). Although informative, these studies did not examine the role of PPEs, highlighting an important gap in the literature. Given the mixed evidence regarding the relationship between aspects of acquired capability and PPEs (Bender, Gordon, Bresin, & Joiner, 2011; Bryan, Hernandez, Allison, & Clemans, 2013; Ribeiro et al., 2014; Zuromski & Witte, 2015), more research is needed to determine whether acquired capability and PPEs are similarly effective in quantifying suicide risk among ideators. Indeed, the experience of discrete PPEs may yield stronger effect sizes in differentiating ideators from attempters than a measure of general acquired capability, given the weak-moderate effect size of acquired capability found when examined in the ideation-to-action framework (Klonsky & May, 2015).

One potential reason for the weaker than expected relationship between acquired capability and suicidal behavior among ideators is that researchers may be losing important information about individuals who may fall on the suicide continuum between suicidal ideation and attempt. Suicide planning is predictive of suicide attempts among ideators (Borges et al., 2006; Nock et al., 2008); therefore, individuals with suicide plans are a high-risk group, and as such, are important to differentiate from both ideators and attempters. Contrary to this literature, a recent meta-analysis found that suicide planning may not be more predictive of death by suicide as compared to suicidal ideation (Ribeiro et al., 2016), calling into question the notion that planning is further along the suicide continuum than suicidal ideation. However, due to an insufficient number of cases, the meta-analysis was unable to provide estimates for the relationship between planning and other suicide-relevant outcomes (e.g., suicide ideation, suicide attempts). Another important limitation of this meta-analysis, acknowledged by the authors, is that most of the studies included in this meta-analysis used the planning subscale of the Suicide Intent Scale, thus conflating the construct of suicide intent and suicide planning. Moreover, acquired capability may help discriminate between suicide ideators and planners given that planners may require a higher capability for suicide in order to mentally prepare for self-inflicted lethal behavior. Although to date no research has studied the relationship between acquired capability and the transition from suicidal ideation to planning, one study has shown that a history of a specific PPE (i.e., NSSI) predicted suicidal ideation, plans, gestures, and attempts, with an incremental increase in strength of relationship along the continuum (Whitlock & Knox, 2007).

In addition to assessing suicide planning, assessing intent to die at the time of a suicide attempt similarly may have the potential to provide more nuanced information regarding prediction between individuals along the ideation-to-action continuum. Indeed, research suggests that some individuals with a suicide attempt endorse low to no intent during a past attempt (Nock & Kessler, 2006; Suominen, Isometsä, Ostamo, & Lönnqvist, 2004). However, prior research examining acquired capability within the ideation-to-action framework has not discriminated between suicide attempters who report having little/no intent to die from those with high intent at the time of attempt. It is likely that those taking action with greater intent to die may have acquired a greater ability to enact lethal behavior, potentially increasing their likelihood of using more severe suicide methods and dying by suicide (e.g., Dorpat & Boswell, 1963). Supporting this, research indicates that intent to die at the time of suicide attempt is associated with repeated exposure to discrete PPEs (Jordan & Samuelson, 2015; Kessler et al., 2006). The examination of these two additional distinctions (planning and intent) along the suicide continuum within the context of acquired capability may help quantify suicide risk with greater specificity within the ideation-to-action framework.

The current study examined whether acquired capability for suicide can effectively differentiate between individuals along the suicide continuum (Drum, Brownson, Burton Denmark, & Smith, 2009; Kessler et al., 2005; Nock et al., 2008): suicidal ideation, suicide planning, suicide attempts without intent to die, and suicide attempts with intent to die, employing an ideation-to-action frame-

work. We measured acquired capability both via self-reported fearlessness about death and pain habituation (e.g., general acquired capability) and via its hypothesized facilitator, the experience of discrete painful and provocative events (PPEs; i.e., substance abuse [i.e., alcohol abuse, drug abuse]; Joiner, 2005), eating restraint (Zuromski & Witte, 2015), physical aggression (Van Orden et al., 2008), NSSI frequency (Whitlock et al., 2013), childhood abuse (i.e., childhood emotional abuse and neglect, childhood physical abuse and neglect, childhood sexual abuse; Van Orden et al., 2008). As mentioned previously, Joiner (2005) defined *painful and provocative events* as experiences that lead one to be exposed to fear and/or pain. Thus, we chose to examine the above discrete events, hypothesizing that each directly and/or indirectly causes varying degrees of fear and/or pain. Moreover, research supports the theoretical link between these proposed PPEs and suicidal behavior. For example, among other experiences, the scale developed to assess Joiner's painful and provocative events construct assesses childhood abuse and physical aggression and this scale has been linked with suicidal and nonsuicidal self-injurious behaviors (Selby, Connell, & Joiner, 2010; Van Orden et al., 2008). Moreover, eating restraint has demonstrated a significant association with suicide attempts (Zuromski & Witte, 2015). Finally, substance users are more likely than nonsubstance users to experience painful and fear-provoking events directly due to their use of substances (e.g., risky sex, operating heavy machinery under the influence, physical fights, accidental injury; e.g., Borges et al., 2006; McLeod, Stockwell, Stevens, & Philips, 1999; Tapert, Aarons, Sedlar, & Brown, 2001) and are also more likely to attempt suicide (e.g., Brent, 1995; Esposito-Smythers & Spirito, 2004).

1. We hypothesized that acquired capability for suicide will differentiate between suicidal ideators, planners, and attempters with and without intent. Specifically, we hypothesized that each successive point along the suicide continuum would be associated with greater acquired capability (greater pain habituation and fearlessness about death).

2. Additionally, we hypothesized that each successive point along the suicide continuum would be associated with greater exposure to specific PPEs, acquired capability's theorized facilitator.

Method

Participants and Procedures

Participants were 520 undergraduate students from a large, urban university. Participants were part of a larger, online study on correlates of emotion regulation (n = 4,394, recruitment over 5 years via Psychology Subject Pool). Participants were included in the current analysis if they reported experiencing at least suicidal ideation, with some participants also reporting having a suicide plan or suicide attempt over their lifetimes. Participants were classified into one of four groups: reporting only suicidal ideation (n = 329), having a suicide plan (n = 125), attempting suicide without the intent to die (n = 36), and attempting suicide with the intent to die (n = 30). See Table 1 for demographic characteristics by group. All participants provided informed consent and received course credit for their participation. All participants were provided with contact information they could utilize to receive mental health referrals. All procedures were approved by the university institutional review board.

Measures

Suicidal thoughts and behaviors. The Suicide Behavior Questionnaire–Revised (SBQ-R; Osman et al., 2001), a 4-item self-report questionnaire measuring dimensions of suicidality, was used to assess the presence of suicidality. Only one item was used in the current study (e.g., "Have you ever thought about or attempted to kill yourself"). Response options included: never; it was a brief passing thought; I have had a plan at least once to kill myself; I have attempted to kill myself, but did not want to die; I have attempted to kill myself and really hoped to die. Participants were categorized into groups based on their response to this item. The SBQ-R assesses the lifetime occurrence of these events, and does not include more detailed information, such as recency of events. When using all 4 items, both the validity and internal consistency has been established in an undergraduate sample (α = .76; Osman et al., 2001).

Table 1
Demographic Variables by Group Status

Variable	Suicide ideation (n = 329)	Suicide plan (n = 125)	Suicide attempt w/o intent (n = 36)	Suicide attempt w/intent (n = 30)	Test statistic[a]	p
Gender[b]					6.51	.09
Female	75.8%	71.3%	91.7%	79.3%		
Male	24.2%	28.7%	8.3%	20.7%		
Age	20.53 (2.67)	20.80 (3.35)	20.78 (2.60)	20.60 (1.94)	.32	.81
Race[b]					10.02	.82
Caucasian	60.4%	68.9%	52.8%	59.5%		
African American	13.5%	13.9%	13.9%	18.5%		
Asian	12.6%	8.2%	13.9%	11%		
Biracial	.9%	0%	0%	0%		
Other	7.7%	5.7%	13.9%	11%		
No answer	4.9%	3.3%	5.5%	0%		

Note. w/o = without; w/ = with.
[a] For gender and race chi-square test statistics are reported; for age, F statistic is reported. [b] Percentage endorsed reported.

Alcohol use. The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) is a 10-item self-report measure of alcohol use problems, including the domains of alcohol consumption (two items, i.e., frequency, quantity), drinking behavior indicative of alcohol dependence (six items, e.g., "How often during the last year have you found that you were not able to stop drinking once you started?"), and alcohol related problems (two items, e.g., "Have you or someone else ever been injured because of your drinking?"). All items are summed to create a total score where high scores represent greater alcohol use problems. The internal consistency (Saunders et al., 1993) and concurrent, construct, and discriminant validity (Bohn, Babor, & Kranzler, 1995) of the measure have been supported. In the current study, the measure demonstrated good reliability ($\alpha = .87$).

Drug use. The Drug Use Disorder Identification Test (DUDIT; Berman, Bergman, Palmstierna, & Schlyter, 2005) is an 11-item self-report measure of nonalcohol substance use problems, which evaluates level of drug consumption (three items, i.e., frequency, poly drug use), drug use behavior indicative of dependence (six items, e.g., "Over the last year, have you felt that your longing for drugs was so strong that you could not resist it?"), and drug related problems (two items, e.g., "Have you or anyone else been hurt because you used drugs?"). All items are summed to create a total score where high scores represent greater drug use problems. The internal consistency and construct, convergent, and discriminant validity of this measure have been supported (Berman et al., 2005; Voluse et al., 2012). In this study, the DUDIT demonstrated excellent reliability ($\alpha = .90$).

Eating restraint behavior. The Eating Disorder Examination–Questionnaire (EDE-Q; Fairburn & Beglin, 1994) is a 28-item self-report questionnaire version of the Eating Disorder Examination (Cooper & Fairburn, 1993), a widely used interview to assess eating disorder diagnoses. The measure consists of four subscales; however, given previous research specific to the relationship between fasting and suicidal behavior (Zuromski & Witte, 2015), only the subscale assessing eating restraint was used in the current study. This subscale consists of five items and questions assessing the frequency of restraint behaviors over the previous four weeks. Response options include no days, 1 to 5 days, 6 to 12 days, 13 to 15 days, 16 to 22 days, 23 to 27 days, and everyday; items are summed, where higher scores represent greater eating restraint behavior. The EDE-Q has demonstrated good concurrent and adequate criterion validity (Mond, Hay, Rodgers, Owen, & Beumont, 2004b), as well as high internal consistency (Mond, Hay, Rodgers, Owen, & Beumont, 2004a). In the current study, the EDE-Q restraint subscale demonstrated excellent reliability ($\alpha = .95$).

Childhood abuse. The Childhood Trauma Questionnaire–Short Form (CTQ-SF; Bernstein et al., 2003) is a 28-item retrospective self-report questionnaire that assesses physical, emotional, and sexual abuse, and physical and emotional neglect. In the current study, all five subscales were used. Response options for all items consist of never true, rarely true, sometimes true, often true, and very often true. Items are summed, where higher scores on each subscale represent higher levels of that specific form of childhood abuse. This measure has been found to have strong psychometric properties (Bernstein et al., 2003). In this study, internal consistencies were as follows: emotional abuse, $\alpha = .87$; emotional neglect, $\alpha = .74$; physical abuse, $\alpha = .84$; physical neglect, $\alpha = .74$; sexual abuse, $\alpha = .66$.

Physical aggression. The Lifetime History of Aggression (LHA; Coccaro, Berman, & Kavoussi, 1997) is an 11-item self-report measure assessing the frequency of perpetrating aggressive behavior. Responses on the LHA were scored on a 5-point Likert scale, ranging from 0 = *no events*, 1 = *one event*, 2 = *a couple or a few (i.e., 2–3) events*, 3 = *several or some (i.e., 4–9) events*, 4 = *many or numerous (i.e., 10+) events*, 5 = *so many events they cannot be counted.* The two LHA items addressing physical aggression (i.e., nonspecific fighting [e.g., physical fights with other people] and physical assault against others [e.g., aggression toward people and animals]) were summed to get a physical aggression total score. The LHA's psychometric properties have been previously established (Coccaro et al., 1997). The reliability for the two items used in the current study was acceptable ($\alpha = .79$).

Self-injury. NSSI history was assessed with the Form and Function of Self-Injury Scale (FAFSI; Jenkins, Connor, & Alloy, 2011), a self-report measure that inquires about 13 different forms of NSSI. Participants are asked if they have engaged in any NSSI behaviors, in addition to number of lifetime acts. Potential NSSI acts included cutting self, carving skin, burning self, and banging head, in addition to eight other behaviors. To reduce variability in NSSI frequency estimates, number of lifetime NSSI acts were categorized (Burke et al., 2015; Whitlock et al., 2013) by the following frequencies: 1 act, 2 to 4 acts, 5 to 10 acts, 11 to 20 acts, 21 to 49 acts, and 50 or more acts. The internal consistency of the measure has been supported (Jenkins et al., 2011). In the current study, KR-20 = 0.81.

Acquired capability. The Acquired Capability for Suicide Scale (ACSS; Van Orden et al., 2008) is a 20-item measure of acquired capability for lethal self-injury based on Joiner's (2005) ITPS. This measure does not explicitly assess actual suicide behaviors or exposure to PPEs but rather assesses factors theorized to allow individuals to acquire the ability to engage in a suicidal act (i.e., fearlessness about death and habituation to pain). Sample items include, "I am not at all afraid to die," "I can tolerate a lot more pain than most people," and "I could kill myself if I wanted to." Items are answered on a 5-point Likert scale where 0 = *not at all like me* and 4 = *very much like me.* The recently developed subscale, fearlessness about death (FAD; Ribeiro et al., 2014), also was examined in the current study. The subscale comprises 7-items from the total ACSS scale that specifically address attitudes regarding death (e.g., "The prospect of my own death arouses anxiety in me"). Items for both the total score and FAD subscale are summed, where higher scores represent higher levels of acquired capability. In the current study, the reliability was $\alpha = .80$ for the ACSS total score and $\alpha = .81$ for the FAD subscale.

Data Analysis

Chi-square tests were conducted for categorical dependent variables (sex, race), and one-way ANOVAs were conducted for continuous variables (age) to determine whether there were group differences. Primary study outcomes included levels of specific PPEs (i.e., alcohol use, drug use, eating restraint, childhood abuse (emotional neglect, emotional abuse, physical neglect, physical abuse, sexual abuse), physical aggression, nonsuicidal self-injury), overall acquired capability (ACSS total score), and fearlessness

about death (ACSS–FAD). Group differences were examined using analyses of variance (ANOVAs) for all outcomes, with the exception of childhood abuse where the five subscales were examined via multivariate analysis of variance (MANOVA), given their strong associations with one another. Bonferroni corrections ($p = .004$) were applied to all analyses. Several of the dependent variables demonstrated a non-normal distribution (skewness = 0.13–2.15, $SE = .11$; kurtosis = −0.92–5.35, $SE = .21$–.22). Further, several variables demonstrated a violation of the homogeneity assumption as indicated by the Levene's test ($ps = < .001$–.22). To account for the violations of both the normality and homogeneity assumptions, all primary analyses also were completed using Welch's ANOVA. However, the pattern of results did not differ between the Welch's ANOVA test and proposed ANOVA and MANOVA procedures; for ease of interpretation, results determined from the ANOVAs and MANOVA are presented.

Results

Preliminary Analyses

Initial correlational analysis showed a pattern of modest to moderate correlations between many of the study variables; see Table 2. Of note, acquired capability only was associated with the specific PPEs of alcohol use, drug use, and NSSI frequency (positively), and childhood sexual abuse (negatively). Acquired capability FAD subscale was positively associated with general acquired capability and negatively associated with eating restraint. There were no significant differences between individuals in each of the 4 categories of suicidal thoughts and behaviors on sex, race, or age. See Table 1.

> *Hypothesis 1:* Is each successive point along the suicide continuum associated with greater acquired capability for suicide?

Individuals in each of the 4 categories were compared on acquired capability (see Table 2). No differences were found between the four groups on overall acquired capability ($p = .08$). Further, no group differences were found on the acquired capability FAD subscale ($p = .14$).

> *Hypothesis 2:* Is each successive point along the suicide continuum associated with greater exposure to specific painful and provocative events?

Individuals in each of the 4 categories were compared on discrete PPEs (see Table 3). There were no differences between groups on alcohol use problems ($p = .28$) or drug use problems ($p = .01$). Furthermore, there were no group differences on eating restraint ($p = .28$). There was a multivariate group effect for childhood abuse (Wilk's $\lambda = .87$), $F(15, 480) = 4.54$, $p < .001$. There were no significant differences between groups on childhood emotional neglect ($p = .06$) or childhood sexual abuse ($p = .46$), but significant differences were found on levels of childhood emotional abuse ($p < .001$), childhood physical abuse ($p < .001$), and physical neglect ($p = .002$). Pairwise comparisons for childhood emotional abuse revealed that individuals who reported a suicide attempt with the intent to die reported higher levels of emotional abuse than those reporting only suicidal ideation ($p < .001$, $d = 1.19$) and those reporting a suicide plan ($p < .001$, $d = .78$). Further, those who reported a suicide plan reported higher levels of emotional abuse than those reporting only suicidal ideation ($p = .002$, $d = .39$). Pairwise comparisons for childhood physical abuse revealed that individuals who reported a suicide attempt with the intent to die reported higher levels of physical abuse than those reporting only suicidal ideation ($p < .001$, $d = 0.67$). Pairwise comparisons for childhood physical neglect revealed that individuals who reported a suicide attempt with the intent to die reported higher levels of physical neglect than those reporting only suicidal ideation ($p = .003$, $d = 0.53$).

Groups then were compared on levels of physical aggression; no significant group differences were found ($p = .02$). Finally, there were significant group differences on nonsuicidal self-injury (NSSI) lifetime frequency ($p < .001$). Pairwise comparisons revealed that all groups were significantly different from each other (all $ps < .001$, $ds = 0.68$–1.50), with the exception of those who reported a suicide attempt without an intent to die and those with a suicide plan ($p = .75$).

Discussion

The current study examined the ability of acquired capability for suicide to differentiate between discrete groups of individuals

Table 2
Correlation Table of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Alcohol use	—										
2. Drug use	.48***	—									
3. Eating restraint	.28***	.14**	—								
4. Emotional abuse	.01	.12**	.07	—							
5. Emotional neglect	−.05	.08	−.01	.41***	—						
6. Physical abuse	.02	.10*	.02	.62***	.33***	—					
7. Physical neglect	.09*	.11*	.03	.47***	.59**	.55***	—				
8. Sexual abuse	.07	.06	.08	.21***	−.28***	.32***	.17***	—			
9. Physical aggression	.16***	.18***	.02	.13**	.90*	.13**	.09*	.07	—		
10. NSSI frequency	.09*	.17***	.11*	.35***	.03	.12*	.03	.02	.12**	—	
11. Acquired capability	.13**	.13**	−.01	−.07	.01	.04	−.05	−.10*	.07	.10*	—
12. FAD	.05	.08	−.01*	−.08	−.02	.01	−.08	−.08	−.01	.05	.76***

Note. FAD = fearlessness about death.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
Group Differences on Study Variables by Suicide Status

Variable	Suicide ideation (n = 325)	Suicide plan (n = 123)	Suicide attempt w/o intent (n = 36)	Suicide attempt w/intent (n = 30)	F	Effect size
Alcohol use	6.05 (5.38)$_a$	6.10 (5.45)$_a$	5.42 (5.97)$_a$	7.90 (5.48)$_a$	1.27	.01
Drug use	3.81 (5.75)$_a$	4.61 (6.32)$_a$	5.125 (7.82)$_a$	7.81 (8.60)$_a$	4.18	.02
Eating restraint	1.34 (1.59)$_a$	1.35 (1.60)$_a$	1.01 (1.36)$_a$	1.77 (2.00)$_a$	1.28	.01
Childhood emotional abuse	8.88 (4.36)$_a$	10.79 (5.35)$_b$	11.53 (4.94)$_{a,b,c}$	15.31 (6.27)$_c$	19.85***	.11
Childhood emotional neglect	12.78 (4.14)$_a$	13.52 (3.92)$_a$	14.23 (4.36)$_a$	14.17 (3.88)$_a$	2.54	.02
Childhood sexual abuse	8.90 (2.89)$_a$	9.31 (3.52)$_a$	9.06 (3.22)$_a$	9.69 (4.38)$_a$	.87	.01
Childhood physical abuse	7.18 (3.54)$_a$	7.67 (3.80)$_{a,b}$	7.76 (4.48)$_{a,b}$	10.31 (5.59)$_b$	6.11***	.04
Childhood physical neglect	7.54 (3.36)$_a$	7.96 (3.47)$_{a,b}$	8.88 (4.15)$_{a,b}$	10.00 (5.61)$_b$	5.16†	.03
Physical aggression	1.06 (1.23)$_a$	1.14 (1.27)$_a$	1.54 (1.04)$_a$	1.40 (1.38)$_a$	2.11	.01
NSSI frequency	1.26 (1.78)$_a$	2.70 (2.32)$_b$	2.58 (2.16)$_{bc}$	4.23 (1.92)$_c$	4.08***	.17
Acquired capability	38.63 (.92)$_a$	41.28 (12.59)$_a$	40.42 (10.39)$_a$	42.133 (11.71)$_a$	2.26	.01
Acquired capability FAD	13.50 (5.93)$_a$	14.88 (7.00)$_a$	14.88 (5.25)$_a$	14.30 (5.76)$_a$	1.86	.01

Note. Different subscripts represent statistically significant ($p < .004$) group differences. NSSI = nonsuicidal self-injury; FAD = fearlessness about death; w/o = without; w/ = with.
† $p < .004$. *** $p < .001$.

falling along the ideation-to-action continuum, thereby informing extant ideation-to-action theories. Measuring acquired capability and measuring its theorized ingredients, discrete PPEs, we examined group differences between individuals with a lifetime history of suicidal ideation, suicide planning, suicide attempt without intent to die, and suicide attempt with intent to die. In line with a recent meta-analysis examining risk factors that differentiate between ideators and actors, many well-known risk factors for suicidal behavior did not significantly differentiate between ideators and actors (May & Klonsky, 2016). Specifically, our results indicated that acquired capability for suicide and fearlessness about death did not distinguish between these groups. Similarly, several discrete PPEs (hypothesized to contribute to acquired capability) including alcohol abuse, drug abuse, engaging in physical aggression, eating restraint, childhood emotional neglect, and experiencing childhood sexual abuse did not distinguish between groups along the suicide continuum. However, our results suggested that several other discrete PPEs that similarly were hypothesized to contribute to acquired capability did significantly distinguish between groups along the continuum. Specifically, NSSI frequency and experiencing childhood emotional abuse, physical abuse, and physical neglect each significantly differentiated between groups.

The current study found that NSSI frequency predicted group differences among ideators, planners, and attempters without and with intent to die. Specifically, suicide attempters with intent to die reported a greater frequency of NSSI than those (a) who reported having attempted suicide without intent to die, (b) having developed suicide plans in their past, and (c) having a history of suicidal ideation. Furthermore, those with a suicide attempt without intent to die reported greater NSSI frequency than those with only suicidal ideation. Finally, individuals reporting a suicide plan also engaged in NSSI at a greater frequency than those with only a history of suicidal ideation. NSSI frequency, therefore, appears to discriminate between groups along the suicide continuum in the expected hierarchical pattern, with the exception of suicide planners and suicide attempters without intent. These results are in line with research finding that a positive history of NSSI predicts suicide ideation, planning, gestures, and attempts, with increasing adjusted odds-ratios along the continuum (Whitlock & Knox, 2007). However, our results build on this finding by suggesting that NSSI frequency predicts group status with increasing effect sizes along the continuum, increasing from moderate to large effect sizes (ds = 0.64 – 1.5), and further, this is true between suicide attempters with and without intent to die. Few studies to date have examined differences in the experience of specific PPEs among suicide attempters with a range of intent; it was found that engaging in repeated acts of violence (Jordan & Samuelson, 2015) and experiencing repeated incidents of sexual trauma or physical assault (Nock & Kessler, 2006) distinguish between those with high and low intent to die. Our results are generally in line with these findings, such that with greater repeated NSSI, one is more likely to report a suicide attempt with intent versus without intent to die. Overall, the current study found that NSSI differentiated ideators and actors with a very large effect size, far surpassing those found for other risk factors in a recent ideation-to-action meta-analysis (May & Klonsky, 2016). Moreover, our results build on numerous studies finding that NSSI is one of the most important risk factors to assess in quantifying suicide risk (e.g., Hamza et al., 2013) as NSSI frequency may be able to effectively differentiate between ideators who do and do not take action on their suicidal thoughts.

Experiencing childhood emotional abuse, physical abuse, and physical neglect were significantly different between groups across the ideation-to-action continuum. Specifically, emotional abuse was significantly higher among individuals who had attempted suicide with intent compared with those with only suicidal ideation and suicide plan; similarly, physical abuse was significantly higher among individuals who had attempted suicide with intent compared to all three other groups. Childhood physical neglect, on the other hand, distinguished between those who reported a suicide attempt with the intent to die and those reporting only suicidal ideation. These results are consistent with findings of childhood maltreatment being associated with risk for suicide attempt (e.g., Hadland et al., 2012; Rajalin, Hirvikoski, & Jokinen, 2013), including earlier and more frequent suicide attempts (Roy, 2004). Contrary to prediction, childhood sexual abuse did not significantly differentiate between ideators and actors. This finding is incongruent with results from May and Klonsky's (2016) meta-

analysis, which found sexual abuse to be a significant risk factor differentiating between ideators and actors. It is possible that our examination of childhood sexual abuse along the suicide continuum (vs. between only ideators and actors) may account for the lack of significant findings in the current study; future research should attempt to shed light on this inconsistency. Overall, however, our findings are supportive of previous research (Bornovalova, Tull, Gratz, Levy, & Lejuez, 2011) demonstrating that whereas emotional and physical abuse are specific forms of childhood maltreatment implicated in suicidal behavior, childhood sexual abuse may not be a driving factor in self-injurious behavior (Klonsky & Moyer, 2008). The examination of childhood maltreatment through the more stringent ideation-to-action research methodology offers greater evidence that such factors are important to assess when quantifying risk level of suicidal ideators.

Given the literature demonstrating a relationship between suicidal and violent behavior (e.g., Greening, Stoppelbein, Luebbe, & Fite, 2010; Keilp et al., 2006), it was surprising that engaging in physical aggression did not differ between groups in the current sample. Most previous research, however, has only examined how aggressing physically differs between those with and without a history of suicide attempts. As such, physical aggression may discriminate between those who do and do not attempt suicide, but may not be a good predictor of suicidal behavior among those with suicide ideation. It is of note, however, that a lack of group differences may be due to the relatively low aggression in the sample, with each group averaging two to three acts of lifetime physical aggression. Previous research found that it was only engaging in repetitive acts of violence that predicted suicide intent (Jordan & Samuelson, 2015). Further, physical aggression only was assessed through two self-reported items. Given this, it will be important for future research to replicate the current findings both in a more aggressive sample, and with a more comprehensive measure of physical aggression. Relatedly, there were no group differences on alcohol use, drug use, and eating restraint, which is inconsistent with literature suggesting that suicide attempts are related to alcohol use (Groves, Stanley, & Sher, 2007; McManama et al., 2014), drug use (Liu, Case, & Spirito, 2014; Wilcox, Conner, & Caine, 2004), and disordered eating (Stein, Lilenfeld, Wildman, & Marcus, 2004; Suokas et al., 2014; Zuromski & Witte, 2015). However, the majority of this literature has examined these risk factors by comparing levels among those with the presence versus absence of suicide attempts, which may largely be driving the findings. As with physical aggression, these events, even though potentially conceptualized as painful and provocative, may not discriminate between those with suicidal ideation and those who go on to make suicide plans or attempts. As such, the use of the ideation-to-action framework in the current study may have identified risk factors with greater specificity than in previous studies.

Given that the three prominent ideation-to-action theories (i.e., IPTS, IMV, 3ST) hypothesize a major risk factor differentiating ideators and actors is an acquired capability to carry out lethal behavior, the current study aimed to be one of the first studies to test this hypothesis directly along the suicide continuum, using the most well-known scale (ACSS) to measure the construct. Surprisingly, our results suggested that acquired capability for suicide did not significantly differentiate between groups along the ideation-to-action continuum. Our results are inconsistent with previous research suggesting that two separate measures of acquired capability (e.g., ACSS, Suicide Capability Scale; Klonsky & May, 2015) significantly, albeit modestly, distinguish between ideators and attempters in a nonclinical sample (Klonsky & May, 2015). The interpersonal psychological theory asserts that both pain tolerance and fearlessness about death are important factors contributing to acquired capability. Thus, the ACSS was developed to measure both of these factors. However, recent research aimed at improving the validity of the ACSS has found that although it measures fearlessness adequately, it may not provide a valid assessment of pain tolerance (Ribeiro et al., 2014). Given our findings that the fearlessness about death subscale (ACSS–FAD) also did not significantly differentiate between groups, it is possible that the scale's inadequate assessment of pain tolerance may be responsible for the absence of significant findings. Future studies should examine a wider range of items assessing pain tolerance in order to sufficiently measure the construct of acquired capability and, further, to determine whether the inadequate measurement of pain tolerance may have influenced the null findings between ideators and attempters.

Our finding that the fearlessness about death subscale did not demonstrate a relationship with several of our discretely measured PPEs (e.g., physical aggression, several forms of childhood abuse) is consistent, however with research finding that the subscale is similarly unrelated to a combined measure of a range of specific PPEs after controlling for gender (Ribeiro et al., 2014). Moreover, in other samples, fearlessness about death also has failed to demonstrate a relationship with other PPEs (e.g., Zuromski & Witte, 2015). One possible reason why this construct may have failed to differentiate ideators and actors along the suicide continuum is that the main construct assessed by our measure of acquired capability, fearlessness of death (Ribeiro et al., 2014), may not be as trait-like as once assumed and instead may be influenced by one's state experience (Franklin et al., 2015).

Limitations

It is important to take into account the current study's limitations. First, the current study's findings should be carefully considered in light of its cross-sectional design. Prospective studies are still needed to determine if the ACSS may predict the transition from ideation to action over time. Furthermore, a prospective design would permit the examination of a mediation model whereby increased exposure to PPE's increases one's progression along the suicide continuum via increased acquired capability. Although prospective studies would be ideal to address this potential limitation, future cross-sectional studies may benefit from assessing recency of suicide attempt, as it may be the case that acquired capability may differentiate between ideators and actors only when such action has recently taken place.

Further, although we analyzed a wide range of specific PPEs, we did not examine all possible PPEs in the current study. Future studies may consider simultaneously examining discrete PPEs that have received research support as predictive of suicidal behavior and/or acquired capability, but have not yet been examined utilizing an ideation-to-action framework. It also may be important for future studies to examine the predictive validity of general acquired capability measures in contrast to more objective measures of pain habituation, such as pain tolerance assessments, which have been impli-

cated in acquired capability (Franklin et al., 2011; Van Orden et al., 2010) but potentially may not be adequately assessed by more general measures (Ribeiro et al., 2015). Relatedly, it will be important for future research to replicate the current findings utilizing a more comprehensive assessment of suicidal behavior as the assessment of suicidality via single-item measures, as used in the current study, have been called into question (Millner, Lee, & Nock, 2015). Finally, the current study employed an undergraduate sample, thereby limiting the generalizability of the findings. Future studies should aim to replicate the current findings in community samples and clinical samples that include a more diverse age range.

Research Implications

The current study highlights the need of future research to use longitudinal designs, as recent research has highlighted that drawing unidirectional conclusions when measuring acquired capability cross-sectionally may result in faulty conclusions. For example, it has been suggested that acquired capability may both be a stable construct (Bryan, Sinclair, & Heron, 2016) and that it may increase over time under certain conditions (Willoughby, Heffer, & Hamza, 2015). This framework also would allow researchers to uncover potential mechanisms that may be at work longitudinally, but concealed in a cross-sectional design. Research in this area, whether cross-sectional or prospective, will greatly benefit from including more varied assessments of PPEs, particularly those not yet examined in an ideation-to-action framework (e.g., combat exposure, cyber bullying, physical bullying; Bryan, Cukrowicz, West, & Morrow, 2010; Hinduja & Patchin, 2010), in addition to more nuanced assessments of suicidal behaviors. For example, future studies also should consider assessing suicide attempt method, as it is possible that acquired capability may only differentiate between ideators and attempters when an attempt is of a particularly violent nature (i.e., hanging, cutting).

Clinical and Policy Implications

The current study benefits from several notable strengths. Very few studies have employed ideation-to-action research methodology to examine group differences along the suicide continuum, specifically in relation to the acquired capability hypothesis. The current study examined a fairly large sample of not only suicide ideators, but also suicide planners, and suicide attempters, with and without intent to die, in a large nonclinical sample. This cross-sectional design allowed for the examination, and ultimate questioning, of the utility of a commonly employed self-report acquired capability measure (ACSS) to differentiate ideators and attempters, thereby informing prominent claims of three ideation-to-action theories (i.e., IPTS, 3ST, IMV). The current study suggests important implications for the assessment of risk for suicidal behavior. Our finding that only approximately 10% of the current sample of ideators reported a suicide attempt highlights the main tenet of ideation-to-action theories, that to best assess suicide risk, factors that differentiate ideators from actors must be considered. This study found that acquired capability for suicide, as measured with the ACSS, may not be able to effectively differentiate between ideators and actors, despite the fact that all three ideation-to-action theories converge in their hypothesis that acquired capability is likely an important differentiating factor. Instead, our findings suggest that the individual painful and provocative experiences that may be most important for clinicians, hospital staff, and other mental health gatekeepers to assess include lifetime frequency of NSSI and childhood history of pysical abuse, physical neglect, and emotional abuse, as the presence of these experiences may aid in identifying which suicidal ideators are at greatest risk for acting on their thoughts.

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