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An Aspect of the Capability for Suicide—Fearlessness of the Pain Involved in Dying—Amplifies the Association between Suicide Ideation and Attempts

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Abstract

The interpersonal theory of suicide posits that individuals who experience suicide ideation will only develop suicidal intent, and subsequently engage in suicidal behavior when they have concomitant fearlessness about death and tolerance for physical pain (i.e., the capability for suicide). Objective: The current studies examined the hypothesis that one aspect of the capability for suicide—fearlessness of the pain involved in dying—would amplify the positive association between current suicide ideation and a previous suicide attempt in two samples at high risk for experiencing suicide ideation and suicide attempts. Methods: Study 1 examined this relation using self-report methods in a sample of adults entering treatment in a mental health outpatient clinic. Study 2 utilized similar methods in a sample of adults admitted to inpatient psychiatry. Results: Both studies indicated that those individuals who reported suicide ideation were more likely than non-ideators to report having attempted suicide only if they also reported greater fearlessness of the pain involved in dying. Conclusions: The current findings support the theorized role of the capability for suicide in the transition from ideation to attempt and also support assessing the capability for suicide in risk assessment.

Keywords

Interpersonal theory of suicide; acquired capability; fearlessness about death; suicide ideation; suicide attempts

Suicide is a leading cause of death in the United States and worldwide (World Health Organization; WHO, 2014). Despite advances in the development and dissemination of suicide prevention efforts (e.g., means restriction and safety planning; Hawton, 2007; Stanley & Brown, 2012) and interventions for suicide risk (Jobes, Wong, Conrad, Drozd, & Neal-Walden, 2005; Linehan et al., 2006; Rudd et al., 2015), the annual suicide rate in the U.S. has increased every year since 2002 (Centers for Disease Control and Prevention; CDC, 2015). A greater understanding of suicide informed by an empirically supported theory may inform suicide prevention efforts (Prinstein, 2008). Such a theory would be of particular value if it could identify those individuals who are risk for transitioning from suicide ideation to suicide attempts. Indeed, there are scant data regarding factors implicated in the transition from suicide ideation to attempts (Klonsky & May, 2014).

The interpersonal theory of suicide (IPTs) holds as its major assumption that death by suicide can only occur in the combined presence of suicidal desire coupled with the vulnerabilities of fearlessness about death and tolerance for physical pain (Joiner, 2005; Van Orden et al., 2010). These vulnerabilities are dimensions of the capability for suicide, and are presumed to result from the interaction of biological/genetic dispositions with repeated exposure to what the theory calls painful and provocative life events (A. R. Smith et al., 2012; P. N. Smith & Cukrowicz, 2010). Such events facilitate habituation to the fear and pain involved in suicide. This habituation process may also involve opponent-processes (Solomon, 1980), in which the initial responses of fear and pain are overtaken by less aversive states, such as calmness and relief (Van Orden et al., 2010). Thus, the capability for suicide involves both dispositional and acquired elements, and likely involves reciprocal relationships between these elements.

A growing literature supports predictions of the interpersonal theory as it relates to the construct of the capability for suicide. Multiple suicide attempts and more frequent non-suicidal self-harm are presumed to be the most direct means by which to facilitate development of the capability for suicide. A previous suicide attempt is one of the strongest predictors of suicide (Brown, Beck, Steer, & Grisham, 2000) and an emerging literature is linking non-suicidal self-harm to suicide as well (Asarnow et al., 2011; Hawton, Zahl, & Weatherall, 2003; Klonsky, May, & Glenn, 2013; Wilkinson, Kelvin, Roberts, Dubicka, & Goodyear, 2011). Suicide attempters also report greater capability compared to suicide ideators and controls (P. N. Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Most importantly for the theory's purported ability to explain death by suicide, the capability for suicide and painful and provocative life events differentiate suicide decedents from living controls in psychological autopsy studies (Nademin et al., 2008; Van Orden, Smith, Chen, & Conwell, 2015).

Consistent with the theory's description of the development of the capability for suicide, more frequent exposure to painful and provocative life experiences, many of which are themselves risk factors for suicide (e.g., euthanatizing animals [in the case of veterinarians], and physical and sexual abuse), are associated with greater self-perceived capability (Bender, Anestis, Anestis, Gordon, & Joiner, 2012; Bryan & Cukrowicz, 2011; Bryan, Cukrowicz, West, & Morrow, 2010; P. N. Smith, Wolford-Clevenger, Mandracchia, & Jahn, 2013; Witte, Correia, & Angarano, 2013). Personality traits associated with suicide and

greater exposure to painful and provocative experiences, such as impulsivity and sensation seeking, are also correlated with self-perceived capability (Anestis, Soberay, Gutierrez, Hernandez, & Joiner, 2014; Bender, Gordon, Bresin, & Joiner, 2011; Witte, Gordon, Smith, & Van Orden, 2012). Consistent with the notion that mental disorders influence suicide risk via their relationship with IPTS constructs (Van Orden et al., 2010), disorders associated with pain and provocation (e.g., PTSD, drug abuse) are uniquely associated with the capability for suicide compared to other disorders (Silva, Ribeiro, & Joiner, 2015) and are associated with the transition from ideation to attempt (Nock et al., 2015).

Though these data are compelling, they are limited. Few studies have examined the central hypotheses postulated by the IPTS. In particular, two of the key, falsifiable hypotheses proposed by Van Orden et al. (2010) were: (1) that fearlessness about death amplifies the relation between suicide ideation and suicidal intent; and (2) that elevated physical pain tolerance is necessary for the emergence of a lethal (or near lethal) suicide attempt. Stated differently, suicide ideation is most likely to result in death by suicide when combined with fearlessness about death and tolerance for physical pain (see Van Orden et al., 2010). A corollary of these hypotheses is that individuals experiencing suicide ideation will only be able to attempt suicide when they also experience a nonzero level of fearlessness about death and tolerance for physical pain. As such, it is important that studies examine the capability for suicide as a moderator of the relation between suicide ideation and suicide attempts.

In one such study, the capability for suicide (assessed by a proxy of past-year deliberate self-harm) interacted with suicide ideation to statistically predict past year suicide plans and attempts in a large community sample (Christensen, Batterham, Soubelet, & Mackinnon, 2013). Self-reported capability for suicide was also shown to interact with perceived burdensomeness—which the theory posits is, alongside thwarted belongingness, one of the proximal causes of suicide ideation—to predict clinician rated suicide risk (Van Orden et al., 2008). Lastly, the three-way interaction of perceived burdensomeness, thwarted belongingness, and the capability for suicide (assessed by a proxy of number of previous suicide attempts) predicted current suicide attempts (vs. ideation) among mental health patients experiencing an acute suicidal crisis (Joiner, Van Orden, Witte, Selby, et al., 2009). Though these findings support that the capability for suicide may serve as a vulnerability to the transition from suicide ideation to suicide attempts, these studies are limited. Of these three studies, two relied on past suicide attempts or self-harm behaviors as proxy measures for the capability for suicide (Christensen et al., 2013; Joiner, Van Orden, Witte, Selby, et al., 2009). Thus, they are unable to determine that fearlessness about death or pain tolerance, specifically, is critical in this role. The remaining study did not use suicidal behavior as an outcome, but rather relied on clinician assessed suicide risk status (Van Orden et al., 2008).

The purpose of the current studies is to test the hypothesis, derived from the IPTS, that one aspect of the capability for suicide that includes elements of both fear and pain—fearlessness of the pain involved in dying—would amplify the association between suicide ideation and behavior. Specifically, we tested whether this aspect of the capability for suicide would be associated with a greater likelihood of having attempted suicide among suicide ideators. Given that one of the major criticisms of nearly all risk factors for suicide is that they do not differentiate suicide ideators from suicide attempters (i.e., they have poor

specificity), knowledge of variables that explain the transition from suicide ideation to attempts would greatly inform risk assessment (Klonsky & May, 2014). As such, a finding that the capability for suicide differentiates ideators from attempters would add further empirical corroboration regarding the importance of integrating this construct into existing suicide risk assessment frameworks (Chu et al., 2015). In Study 1, this question was addressed in a sample of individuals seeking outpatient mental health treatment. In Study 2, we sampled a group of psychiatric inpatients.

STUDY 1

Study 1 examined the aforementioned question in a sample of outpatients entering treatment at a community mental health training clinic located in the southeastern United States. We hypothesized that the relationship between the reporting of current suicide ideation and suicide attempt history would be moderated by (i.e., amplified by) greater capability for suicide. We predicted that the likelihood of a suicide attempt would be greatest among current suicide ideators with elevated capability for suicide.

Methods

Participants and Procedures—Participants included 813 adults who presented to a University-based outpatient community mental health training clinic. Participants were predominately female (472; 58.1%) and ranged in age from 17 to 65 years ($M = 26.60$; $SD = 10.01$); data on sex and age were missing for one and four individuals, respectively. Most indicated they are non-Hispanic White (579; 71.2%), followed by Black (100; 12.3%), Hispanic (77; 9.5%), Asian or Pacific Islander (19; 2.3%), American Indian or Alaskan Native (14; 1.7%), and Other (3; 0.4%); data on race/ethnicity were missing for 21 (2.6%) participants. The majority of participants were single (628; 77.2%), with others reporting being married (81; 10.0%), separated (15; 1.8%), divorced (78; 9.6%), or widowed (8; 1.0%); 3 (0.4%) individuals did not report marital status. The mean level of self-reported income was \$23,589 ($SD = \$45,137$). Participants' level of education attainment was high, with the majority reporting some college or more (660; 81.2%).

Patients gave informed consent to participate in research. Data collection was approved by the Institutional Review Board at Florida State University.

Measures

The capability for suicide: The Acquired Capability for Suicide Scale (ACSS; Ribeiro et al., 2014; Van Orden et al., 2008) assesses the capability for suicide construct of the IPTS (see Van Orden et al., 2010). Responses range from 1 (“not at all like me”) to 5 (“very much like me”). Although the ACSS has been used in 20-, 7-, and 5-item forms in past research (Ribeiro et al., 2014; P. N. Smith et al., 2010; Van Orden et al., 2008), a single item from the ACSS was used in the current study (i.e., “The pain involved in dying frightens me” [higher scores indicate lower capability]). This decision was made, in part, to include elements of both facets of the multidimensional construct of the capability for suicide. Further, because of differences in the forms of the ACSS used between our two samples we were unable to obtain a replicable complete measure.

Suicide ideation: The Depressive Symptom Inventory—Suicide Subscale (DSI-SS; Metalsky & Joiner, 1997) is a 4-item measure of the frequency and intensity of suicide ideation and impulses in the past two weeks. Respondents are asked to respond to each item on a 4-point scale (e.g., 0 = “I do not have thoughts of killing myself,” 1 = “Sometimes I have thoughts of killing myself,” 2 = “Most of the time I have thoughts of killing myself,” 3 = “I always have thoughts of killing myself.”). Scores are summed (range: 0–12), and consistent with previous conservative guidelines (e.g., Joiner, Pfaff, & Acres, 2002), any non-zero level of suicide ideation on the DSI-SS was coded as the presence of current suicide ideation. The scale has demonstrated psychometric properties, including internal consistency and construct validity (Joiner et al., 2002).

Suicide attempt: Individuals were queried regarding their suicide attempt history as part of a structured intake questionnaire. Patients were asked, “Have you ever attempted suicide?” Responses were dichotomized such that 0 = no previous attempt, and 1 = a previous attempt.

Data Analytic Strategy—Logistic regression analyses were conducted to determine the association between current suicide ideation and a history of a suicide attempt, in addition to the moderating effect of the capability for suicide. For regression analyses, the capability for suicide was centered around its mean. In addition, we depicted the interaction by plotting the probabilities and 95% confidence intervals of reporting a suicide attempt at each level of the capability for suicide. All analyses were conducted with Stata SE version 12.0 (StataCorp, 2011).

Results and Discussion

Overall, 220 patients (27.1%) reported a non-zero level of current suicide ideation, and 146 patients (18.0%) reported a suicide attempt history. Among these patients, 80 individuals (9.8% of total sample) reported both current ideation and a previous suicide attempt. The mean score for the capability for suicide was 3.09 (SD = 1.40, range = 1–5), indicating respondents as a whole had moderate levels of capability.

The logistic regression indicated that the main effect of suicide ideation was statistically significant, such that reporting current suicide ideation was associated with a greater likelihood of reporting a past suicide attempt (OR = 4.45, $z = 7.68$, $p < .001$, 95% CI 3.04–6.52). The main effect of the capability for suicide on past suicide attempt was not significant ($p > .05$). There was a statistically significant interaction between current suicide ideation and the capability for suicide, such that the odds of reporting a previous suicide attempt depended on both current suicide ideation and the capability for suicide (OR = 0.73, $z = -2.30$, $p = .021$, 95% CI 0.55–0.95). Consistent with our hypothesis, the form of the interaction suggested that individuals with suicide ideation were significantly more likely to report a previous suicide attempt compared to non-ideators only if they simultaneously reported elevated levels of the capability for suicide (see Figure 1). Participants who reported suicide ideation and the *least* amount (i.e., a zero level) of the capability for suicide were no more likely to have attempted suicide than non-ideators.

These findings conform to the study hypothesis and support the role of the fearlessness of the pain involved in dying aspect of the capability for suicide as a moderator of the relation

of suicide ideation and suicide attempts in mental health outpatients. The current results add to the existing literature supporting the role of the capability for suicide as a vulnerability to the risk of engaging in a suicide attempt for suicide ideators (Christensen et al., 2013; Joiner, Van Orden, Witte, Selby, et al., 2009; Van Orden et al., 2008). Although Study 1's focus on mental health outpatients extends a literature predominantly consisting of community samples (Christensen et al., 2013) or undergraduate students (Anestis, Bender, Selby, Ribeiro, & Joiner, 2011), it remains limited in that it fails to address these relations among individuals at high acute risk for suicide (e.g., psychiatric inpatients). Examining acutely suicidal individuals is important for multiple reasons. First, acutely suicidal samples will present with greater variability in what is typically a low base-rate event. Secondly, it is important to examine whether results will generalize to additional clinical populations.

Study 2

To address these limitations, we examined the same research question in a sample of adult psychiatric inpatients. Although not all inpatients are admitted for suicide risk, this population exhibits greater rates and severity of suicide ideation and attempts and provides a good opportunity to ensure generalizability of findings to inform the assessment of acute suicide risk in inpatient psychiatry settings. As such, Study 2 examined the moderating role of the same aspect of the capability for suicide—fearlessness of the pain involved in dying—in the relation between current suicide ideation and previous suicide attempts in a sample of adult psychiatric inpatients. As before, we expected that the likelihood of reporting a past suicide attempt would be greatest for those who reported current suicide ideation in combination with elevated levels of the capability for suicide.

Methods

Participants and Procedures—A total of 73 psychiatric inpatients admitted to one of three units in an academic medical center participated in the current study. These units included a general adult inpatient unit, a unit for those with complicated medical/surgical issues, and a geropsychiatry unit. Of the 73 inpatients, approximately half (39; 53.4%) were women. The ages of the participants ranged from 18 to 78 years ($M = 45$; $SD = 16$). The vast majority (61; 83.6%) of the participants self-identified as white with fewer as African American (7; 9.6%), Native American or Alaskan Native (2; 2.7%), and Native Hawaiian or Pacific Islander (1; 1.4%). Only one participant reported being of Hispanic ethnicity. Marital status of the sample was as follows: single (28; 38.4%), partnered (5; 6.8%), married (16; 31.9%), separated (7; 9.6%), divorced (11; 15.1%), or widowed (6; 8.2%). Nonetheless, the majority of participants (42; 58.3%) reported that they lived with someone else. Medical records indicated that 56 (76.7%) of the participants were admitted for suicide risk management and 47 (64.4%) were on suicide precautions at the time of the research assessment. The length of stay on the unit prior to the research assessment ranged from 1 to 40 days ($M = 6.62$ days, $SD = 7.09$).

All participants provided written informed consent and all study procedures were approved by the University of Rochester Medical Center Institutional Review Board. Potential participants were approached by hospital staff and asked whether they would be willing to

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Van Orden et al. (2010) proposed that in order to falsify hypotheses generated from the theory, a nonzero level of the capability for suicide would be sufficient to result in some degree of suicidal intent and a suicide attempt in the presence of suicide ideation. Participants in the current study who reported suicide ideation were no more likely to have attempted suicide than non-ideators when they also reported having low levels of the capability for suicide. Further, it is notable that the relations between the capability for suicide and suicide attempts differed strikingly for suicide ideators compared to non-ideators, such that increasing the capability for suicide increased the probability of a prior suicide attempt only among ideators.

Of the studies that have examined the relation of the capability for suicide and suicide attempt status, most have included a large proportion of suicide ideators (P. N. Smith et al., 2010) or individuals likely to be experiencing suicide ideation even if ideation was not measured (Joiner, Van Orden, Witte, Selby, et al., 2009). Our findings match one of the few studies to examine the interaction of the capability for suicide with perceived burdensomeness, which, as discussed previously, is a purported cause of suicide ideation (Van Orden et al., 2008). In that study, the capability for suicide predicted clinician rated suicide risk only for those who also experienced high levels of perceived burdensomeness. Given that our study utilized a more specific measure of suicide ideation and suicide attempts as the outcome variable, the convergence of these findings is compelling. Taken together, these studies support that the capability for suicide moderates the suicide ideation-suicide intent/non-lethal suicide attempt relation. Additional research will be required to more specifically identify how fearlessness about death and pain tolerance uniquely influence the transitions from suicide ideation to suicidal intent and from intent to a lethal (or near lethal) suicide attempt (Van Orden et al., 2010).

A potential implication of this finding is that the capability for suicide may develop and/or manifest itself differently (or potentially not develop at all) among those with and without a history of suicide ideation. Early operationalized forms of the capability for suicide were not wholly specific about whether the fearlessness discussed pertained to death exclusively or to fearlessness more generally (Joiner, 2005). Recent revisions to the theory and its measures have narrowed in on fearlessness about death and killing (Ribeiro et al., 2014; Van Orden et al., 2010). It may be that we also need to consider that individuals who have thought about suicide relate to and fear the idea of death differently than those who have never considered suicide. Such individuals may experience the thought of death in a more visceral, emotionally connected manner compared to others who may be emotionally avoidant of it (Hayes, Schimel, Arndt, & Faucher, 2010). Older adults who die by suicide have high rates of comorbid, serious health problems (Juurlink, Herrmann, Szalai, Kopp, & Redelmeier, 2004). Somatic illness appears to be an important stressor in elderly suicides, particularly for men (Heikkinen & Lönnqvist, 1995). This may be, at least in part, why older adults who experience greater death salience may have greater capability for suicide, thus explaining why older adults typically die by suicide in the absence of any history of suicide attempts or non-suicidal self-harm (O'Riley & Smith, 2011). Consequently, it may be that in order to truly be capable of suicide one must actually think about suicide or at least face death in a more emotionally engaged sense.

The current findings also support a recent, broader movement within the study of suicide to examine factors that contribute to identifying who among those that think about suicide are at risk for engaging in suicidal behavior. For example, the Three-Step Theory of Suicide proposes that the relation between suicide ideation and suicidal behavior is moderated by dispositional (e.g., heritable), practical, (e.g., access to lethal means), and acquired elements of the capability for suicide (Klonsky & May, 2015). O'Connor's Integrated Motivational-Volitional Model of Suicide also includes the capability for suicide as one of its *volitional moderators* that promote transition from ideation to suicidal behavior (O'Connor, 2011). The IPTS, Three-Step Theory, and Integrated Motivational-Volitional Model, which can be broadly described as espousing an *ideation-to-action framework* (Klonsky & May, 2014), have the potential to correct the imbalance between sensitivity and specificity of traditional suicide risk factors and risk assessments such that false positives are reduced (Pokorny, 1983).

Clinical Implications

The IPTS is novel in its attempt to challenge models that assume that more severe suicide ideation or more risk factors equate to greater risk for suicide by specifying conditions under which suicide ideation might translate to suicidal behavior. These current findings suggest that at least one aspect of the capability for suicide—fearlessness of the pain involved in suicide—might function to identify among those reporting suicide ideation who will go on to attempt suicide. As such, clinicians should assess mental health outpatients and psychiatric inpatients for the capability for suicide to help inform risk assessment decisions. Such an approach is consistent with the risk assessment decision tree framework (Joiner, Walker, Rudd, & Jobes, 1999) and the adapted decision tree framework that incorporates the theory's constructs (Chu et al., 2015; Joiner, Van Orden, Witte, & Rudd, 2009). Importantly, in the current study a single item (i.e., "The pain involved in dying frightens me") was predictive of suicide attempt status, suggesting that the already cumbersome process of risk assessment does not need to be lengthened substantially.

Limitations

The current study was limited in the following ways. Most importantly, the current study relied on a retrospective report of prior suicide attempts. A more ideal test of the IPTS would examine the outcome of current/recent or future suicidal behavior. Secondly, we were forced to rely on a single item to represent the construct of the capability for suicide to replicate our study methods across the two samples of increasing clinical severity. Thus, the reliability of our measurement of the capability for suicide is questionable; yet, that our findings were replicated across distinct samples and settings attenuates concerns regarding a spurious finding. This item also combined aspects of perceived pain tolerance with fearlessness about death. As such, it is not clear which facet of the capability for suicide might be functional in the moderation of the relation of suicide ideation and suicide attempts. On the other hand, it may be that it is fearlessness about the pain involved in death, not the process of dying or being dead, that is key to the capability for suicide. Additional research clarifying which aspects of the construct of capability are most tightly linked to suicidal behavior is needed.

Conclusion

Despite these limitations, the current study is important in its addition to the growing support for one of the central hypotheses of the IPTS: suicide ideators are more likely to develop suicidal intent (and in our case suicidal behavior) only when they experience a nonzero level of the capability for suicide. These findings were observed in two clinically relevant groups recognized to be at higher risk for suicide compared to the general populations: mental health outpatients and psychiatric inpatients. Future research should consider that it might be necessary to assess suicide ideation and examine its interaction with the capability for suicide to best test hypotheses derived from the theory. Further, the current findings support assessing the capability for suicide when conducting risk assessment in these populations.

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Figure 1.
Probability of Reporting a Past Suicide Attempt as a Function of Current Suicidal Ideation
and the Capability for Suicide (Study 1)
Note. 1 = “not at all like me,” 5 = “very much like me”

Figure 2.
Probability of Reporting a Past Suicide Attempt as a Function of Current Suicidal Ideation
and the Capability for Suicide (Study 2)

Note. 1 = “not at all like me,” 5 = “very much like me”