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Number and violence of suicide attempt methods: A preliminary investigation of the associations with fearlessness of suicide and fearlessness about death

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ABSTRACT

The Interpersonal Psychological Theory of Suicide (IPTS) proposes that to attempt suicide one must not only desire death, but must also have acquired the capability to act on that desire. The IPTS states capability for suicide can be acquired through exposure to painful and provocative events, with events most closely related to suicide (e.g., non-fatal attempt) having the strongest effects on capability. We tested the effects of two aspects of suicide attempt history—number and violence of methods—on acquired capability, operationalized as both fearlessness about death and fearlessness of suicide, in a sample of psychiatric inpatients with a history of multiple suicide attempts. Results from three separate models suggest that number of methods and number of violent methods, but not history of *ever* using a violent method, are associated with increased fearlessness of suicide, even after accounting for hopelessness, general painful and provocative events, NSSI, and number of attempts. Few variables were associated with fearlessness about death. Our results raise the possibility that fearlessness of death and suicide may not be synonymous constructs. They also indicate that number of methods, and/or number of violent methods, may be important markers of fearlessness of suicide among those at high risk.

1. Introduction

Suicide claims the lives of over 40,000 Americans annually (Drapeau et al., 2016), yet this represents only a fraction of those experiencing suicidal thoughts each year (Klonsky et al., 2016). Theories following the ideation-to-action framework (Klonsky and May 2014) propose the discrepancy between rates of ideation and of attempt and death is due to differences in suicide capability. While multiple factors contribute to suicide capability (Klonsky et al., 2016), the first introduced, as well as most researched aspect of suicide capability is *acquired capability* (Joiner, 2005; Van Orden et al., 2010).

In line with the ideation-to-action framework, the Interpersonal Psychological Theory of Suicide (IPTS) describes lethal or near-lethal suicide attempt as resulting from the interaction of constructs associated with suicide desire (i.e., perceived burdensomeness, thwarted belongingness, and hopelessness about these states) and acquired capability (Joiner, 2005; Van Orden et al., 2010). Acquired capability is described as a multifaceted construct, consisting of both reduced fear of suicide (i.e., fearlessness) and heightened pain tolerance (Van Orden et al., 2010). As depicted in Fig. 1, each facet is posited as monotonic in nature, and described as increasing as a function of repeated exposure to painful and provocative events (Van Orden et al., 2010). While a variety of painful and provocative events may contribute to increases in acquired capability, repeated suicidal behavior is proposed as having the strongest effect (e.g., non-suicidal self-injury [NSSI], non-fatal attempts; Van Orden et al., 2010). Further, the IPTS asserts acquired capability is unlikely to generalize across methods for suicide, specifically proposing that those capable of utilizing low-lethality (e.g., non-violent) methods, will not necessarily be capable of using more frightening/ painful ones (e.g., violent methods; Van Orden et al., 2010). Thus, it is possible that those who utilize a single non-violent method across attempts will not have the capability to utilize other, likely more lethal, means, whereas those who have developed a more generalized capability may be at heightened risk for death due to their ability to use various lethal means. Spurred by these aspects of the IPTS, in recent NSSI-focused work some have speculated that *number of self-harm methods* may be more important than self-harm frequency with regards to acquired capability, as the use of more methods may be linked to reduced fear of bodily harm in general, and thus particularly high suicide capability (Anestis et al., 2015; Matney et al., 2017; Muehlenkamp et al., 2015; Turner et al., 2013). Although in most studies of acquired capability the two facets (fearlessness and pain

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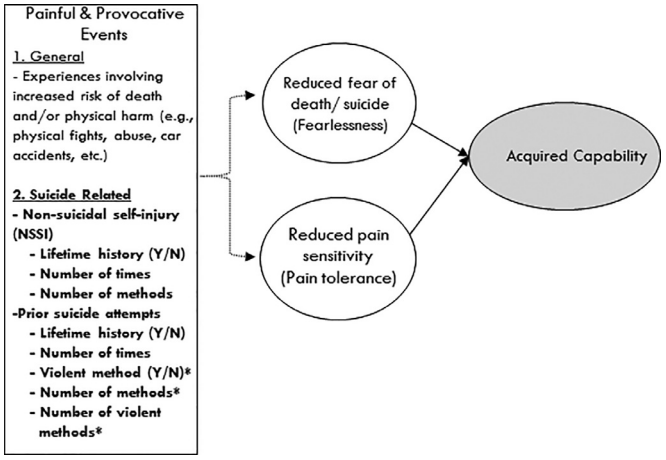

Fig. 1. Model of theoretical aspects of acquired capability, adapted from Van Orden et al. (2010). Dotted arrows represent theorized habituation to pain and death (see Van Orden et al., 2010) through experience with painful and provocative events. Bold represents painful and provocative events theorized to have the most potent impacts on the facets of acquired capability. * Novel aspects of suicide attempt history investigated in the current study.

tolerance) have been assessed jointly, recent work stresses the distinctiveness of the facets (i.e., Riberio et al., 2014), as well as the need to investigate specific components of fearlessness (e.g., fearlessness of *suicide* specifically [George et al., 2016]). In line with these recommendations and building from ideas proposed both in the initial presentation of the IPTS, and in relation to NSSI, we examined the association between two aspects of suicidal behavior—number and violence of suicide attempt methods— and two operational definitions of the fearlessness facet of acquired capability (i.e., fearlessness about death and fearlessness of suicide) in a sample of psychiatric inpatients with a history of multiple suicide attempts. A better understanding of the associations between number and violence of prior suicide attempt methods and fearlessness may aid in risk assessment and safety planning with those at high risk for suicide.

1.1. Operationalization of acquired capability

In the theoretical presentation of the IPTS acquired capability is described as consisting of the separate facets of fearlessness of *suicide* (Van Orden et al., 2010 p. 586) and increased pain tolerance. However, until recently studies used versions of a self-report scale on which items assessing pain tolerance (e.g., *I can tolerate a lot more pain than most people*), fearlessness about death in general (e.g., *I am not at all afraid to die*), and fearlessness of suicide (e.g., *I could kill myself if I wanted to*) were summed to reflect acquired capability (Ribeiro et al., 2014). Noting problems with construct specificity and the psychometrics of the various versions of this scale, Ribeiro et al. (2014) performed an extensive study from which a subscale assessing fearlessness about *death* was developed. Although the subscale demonstrated adequate psychometric properties, Ribeiro and colleagues and others (e.g., George et al., 2016) have raised concerns that the subscale may not adequately measure important aspects of acquired capability, most notably fearlessness of *suicide*. While death and suicide may seem synonymous among healthy populations, the difference between them becomes particularly relevant when distinguishing those experiencing what the IPTS calls passive ideation (e.g., *I wish I was dead*) from those with more active suicidal thoughts (e.g., *I want to kill myself*) or behavior (e.g., intent, attempts; Van Orden et al., 2010). With this in mind, fearlessness of suicide has the potential to be even more relevant for acquired capability than fearlessness about death, especially among those at high-risk for suicide.

1.2. Clarification of terminology

Due to continued efforts to improve measurement of acquired capability, existent findings on how various painful and provocative events are associated with acquired capability are based on studies using a variety of measures of the construct. To facilitate communication and integration of findings, the term *acquired capability* (indexing lower fear of death/suicide and lower pain tolerance) will be used when referencing previous work using a combined measure of the facets. In contrast, when the subscale developed by Riberio et al. (2014) was used, we will refer to this construct as *fearlessness about death*; when previous studies used a measure reflecting fear of suicide specifically (i.e., Reasons for Living - fear of suicide scale; Linehan et al., 1983), we will refer to this construct as *fearlessness of suicide*.

1.3. Empirical associations between painful and provocative events and acquired capability

Since the construct was first introduced a number of studies have demonstrated associations between general painful and provocative events (e.g., physical fights) and acquired capability (Bender et al., 2011; Franklin et al., 2011; Van Orden et al., 2008), and between painful and provocative events and fearlessness about death specifically (see Hagan et al., 2016). Empirical support for the association between suicide-related painful and provocative events (i.e., NSSI, attempt history) and acquired capability has also been established. Previous studies have found that any history of NSSI (Franklin et al., 2011), and greater engagement in NSSI (i.e., composite number of times/ number of methods; Muehlenkamp et al., 2015) are positively associated with acquired capability. Though associations between NSSI *frequency* and fearlessness about death have been inconsistent (c.f.., Brackman et al., 2016; Matney et al., 2017), in the only study in which *number of NSSI methods* was examined (i.e., Matney et al., 2017), a positive association with fearlessness about death emerged. Importantly, research has also established associations between acquired capability and non-fatal suicide attempts, with both presence (i.e., Klonsky and May, 2015; Smith et al., 2010) and frequency of lifetime attempts (Van Orden et al., 2008) being linked to greater capability. In studies that have examined this association using measures of fearlessness of suicide (i.e., Malone et al., 2000; Muehlenkamp and Gutierrez, 2007), similar findings have emerged; associations between number of suicide attempts and fearlessness about death have not been examined.

As noted above, work focused on NSSI has identified not only frequency of self-harm but also number of methods as potentially relevant to acquired capability. Whereas Van Orden et al. (2008) demonstrated partially parallel findings, showing that *frequency* of past attempts is positively related to acquired capability, no study has explored associations between *number of attempt methods* and any operationalization of acquired capability. Additionally, though Van Orden et al. (2010) describe a theoretical link between violence and/or lethality of methods and acquired capability, to our knowledge no study has examined this association. However, prior work focused on method switching among patients with multiple suicide attempts suggests that those who use different, and particularly violent, methods are at greater risk of dying by suicide than those who maintain the same method or who utilize non-violent methods (Chen et al., 2016; Isometsä and Lonnqvist, 1998; Miller et al., 2013; Wang et al., 2015). Taken together, hypotheses based in the IPTS and findings regarding increased suicide risk among those who have used violent and/or multiple methods suggests that acquired capability may not only be related to frequency of past suicide attempts, but also number and violence of methods used. In the current study, we aimed to examine the associations between the fearlessness facet of acquired capability and both number and violence of suicide attempt methods while controlling for known correlates of suicide risk (i.e., hopelessness) and acquired capability (general painful and provocative events, NSSI, number of attempts). In order to distinguish