



Recent advances in differentiating suicide attempters from suicide ideators

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Purpose of review

This article summarizes findings from recent studies (published since 2015) examining differences between suicide attempters and suicide ideators.

Recent findings

Converging evidence suggests that the capability to attempt suicide (e.g., acquired capability, painful and provocative experiences, high tolerance for pain and distress) is higher in suicide attempters than suicide ideators. Other psychosocial and biological differences have also been identified but require replication.

Summary

Recent literature reviews find that traditional risk factors for suicide – such as depression, hopelessness, most psychiatric disorders, and even impulsivity – robustly predict suicide ideation but poorly predict suicide attempts among ideators. To address this knowledge gap, studies are increasingly employing an ideation-to-action framework. This framework views the development of suicide ideation and the progression from ideation to potentially lethal attempts as distinct processes with distinct explanations and predictors. Converging evidence suggests that factors associated with diminished fear of pain, injury, and death can increase one's capability to attempt suicide and facilitate the progression from suicidal thoughts to suicidal acts. Recent studies have also identified other variables that may differentiate attempters from ideators, but these require replication. Theories of suicide positioned within the ideation-to-action framework provide testable and promising hypotheses about the progression from ideation to attempts. These include the Interpersonal Theory, Integrated Motivational-Volitional Model, and Three-Step Theory.

Keywords

ideation-to-action framework, suicide, suicide attempts, suicide ideation, suicide prevention

INTRODUCTION

Recent research suggests that oft-cited risk factors for suicide fail to meaningfully differentiate suicide attempters from suicide ideators [1,2^{***}]. This distinction is important since most people who think about suicide do not act on their thoughts. Epidemiological [3,4] and meta-analytic studies [2^{***}] have repeatedly demonstrated that variables such as depression, hopelessness, psychiatric disorders, and even impulsivity are robustly associated with suicide ideation but only weakly predict suicide attempts among ideators. A better understanding of the variables associated with suicide attempts is therefore crucial in predicting and preventing suicide attempts.

To address this need, Klonsky and May [1] proposed that an ideation-to-action framework should guide suicide research, theory, and prevention. From this perspective, first, the development of suicide ideation and second, the progression from suicide ideation to suicide attempts are viewed as distinct processes with different predictors and

explanations. For example, researchers examining predictors of suicide attempts are encouraged to identify variables that relate to suicide attempts over and above their relationship to suicide ideation. Similarly, theorists are encouraged to follow the example of Joiner [5] and offer separate explanations for the development of suicide ideation and suicide attempts. The framework should also inform practice and prevention: risk factors should be distinguished based on their contribution to suicide ideation and/or attempts, and treatment and prevention professionals should be clear about which aspects of programs seek to reduce ideation and

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KEY POINTS

- The majority of traditionally cited risk factors for suicide – including depression, hopelessness, most psychiatric disorders, and even impulsivity – predict suicidal ideation but do not distinguish suicide attempters from suicide ideators.
- The ideation-to-action framework stipulates that the development of suicidal ideation and the progression from suicide ideation to attempts are distinct processes with distinct explanations and predictors.
- The capability to attempt suicide (including increased fearlessness about death, persistence through pain and distress, knowledge about and access to lethal means, and experience with self-inflicted injury) is consistently linked to attempts among ideators.
- Research on other potential factors and additional research on suicide capability, including longitudinal study designs, is urgently needed to further elucidate the transition from suicide ideation to actions.
- Theories of suicide positioned within the ideation-to-action framework include the ITPS, the IMV model, and the 3ST; these theories offer testable and promising ideas about the development of ideation and the transition from ideation to potentially lethal attempts.

which aim to prevent suicide attempts among ideators (for elaboration see [2^{••},6^{••}]).

Since the publication of the ideation-to-action framework [1], a large number of studies have sought to better differentiate suicide attempters from ideators. The purpose of the present article is to summarize these recent findings and advances.

TRADITIONALLY CITED RISK FACTORS

Recent studies continue to find that traditionally cited risk factors for suicide predict suicide ideation, but weakly distinguish attempters from ideators. For example, a meta-analysis of 27 studies by May and Klonsky [2^{••}] found that depression and hopelessness robustly predicted suicide ideation, but negligibly predicted suicide attempts among ideators. Studies too new to be included in this meta-analysis exhibit a similar pattern, including studies of social connectedness, bullying victimization, bullying perpetration [7], anhedonia [8], emotion dysregulation, low belongingness, burdensomeness [9], burdensomeness, belongingness, defeat, and entrapment [10], and major depression [11]. Given the weak relationship of these variables to suicide attempts, there is clear and urgent need to identify variables that are more strongly and specifically related to suicide attempts.

CAPABILITY FOR SUICIDE

Perhaps one of the most promising variables to differentiate suicide ideators and suicide attempters is capability for suicide. The concept of capability for suicide was first introduced by Thomas Joiner as part of his Interpersonal-Psychological Theory of Suicide (ITPS; [5,12]). This theory posits that people are biologically and evolutionarily wired to fear pain, injury, and death. Thus, in order to attempt suicide, one must overcome one's fear of pain, injury, and death. Joiner [5,12] postulated that the capability to overcome the fear of attempting suicide is acquired through experiences that habituate a person to pain, injury, and death. These experiences can take many forms, including nonsuicidal self-injury, exposure to trauma and violence, and a myriad of other 'painful and provocative events' [12].

Klonsky and May [13[•]] recently expanded the concept of capability for suicide to include dispositional, acquired, and practical contributors. Dispositional contributors refer to biological/genetic factors that may increase suicide capability. One such example is pain sensitivity [14]; individuals with lower pain sensitivities and/or higher pain thresholds may be more likely to attempt suicide since they are less afraid of inflicting pain on themselves. Acquired contributors refer to the variables emphasized by Joiner [5,12] and include experiences that habituate people to pain, injury, and fear of death. Practical contributors are concrete or instrumental factors that make suicide attempts easier, such as knowledge of and access to lethal means. For example, someone with access to a firearm and knowledge about how to operate the firearm has clearly increased their capability for attempting suicide. Similarly, learning about the potential lethality of an over-the-counter medication may increase someone's capability to attempt suicide.

As described below, support for the importance of capability for suicide in differentiating suicide attempters from suicide ideators can be found in numerous recently published studies across diverse samples such as undergraduate students, community participants, psychiatric patients, and military personnel. For example, Cheek *et al.* [15] examined a national sample of adults and found that injection drug use was associated with suicide attempts but not suicide ideation or planning. A possible explanation for this finding is that injection drug use, in contrast to other forms of drug consumption, habituates individuals to self-inflicted violence and thereby increases their capability for suicide. Anestis and Capron [16] showed that the link between suicide ideation and suicide attempts was strongest among individuals showing high

persistence through pain and distress on a behavioral task. Their results indicate that suicide ideators with a greater ability to tolerate pain and distress are more likely to attempt suicide. Likewise, Smith *et al.* [17] found that the link between suicide ideation and suicide attempts was amplified by fearlessness about the pain involved in dying. Similar findings were reported by Chu *et al.* [18] in a military sample whereby a history of major depression was associated with a history of suicide attempts among those with a high capability for suicide, but was unrelated to suicide attempts among those low on capability.

Although the aforementioned studies examined the link between capability for suicide and nonfatal suicide attempts, Ribeiro *et al.* [19¹¹] examined the relationship between capability for suicide and suicide deaths. This study used a database to compare those who died by suicide to those who died by other causes, and found that heightened arousal predicted suicide death only when capability for suicide was high. Moreover, the interaction between arousal and capability for suicide predicted suicide death over and above depression and hopelessness. These results are consistent with previous findings that many factors (e.g., depression, hopelessness) may make an individual more likely to think about suicide, but that other factors (e.g., capability for suicide) facilitates the progression from thinking about suicide to attempting and potentially dying by suicide.

It is important to note that not all studies provided unequivocal findings regarding capability variables. Khazem and Anestis [9] examined a large online sample of adults in the United States and found that painful and provocative events, but not fearlessness about death, distinguished attempters from ideators. A complex relationship was also apparent in a review of emotion regulation and suicide by Law *et al.* [20¹²]. On the one hand, emotion dysregulation and related variables such as low distress tolerance demonstrate a robust link to suicide ideation. Moreover, there is evidence that emotion dysregulation disposes individuals to experience painful and provocative events, which in turn increases capability for suicide and hastens the transition from ideation to attempts. On the other hand, low distress tolerance appears to slow or block progression from ideation to attempts, probably because low distress tolerance makes it more difficult to overcome the fear of pain, injury, and death associated with attempting suicide. In other words, low distress tolerance appears to be a risk factor for ideation, but high distress tolerance appears to confer risk for attempts among those with ideation. This pattern provides further support for the ideation-to-action framework, which encourages separate

listings of risk factors for suicidal ideation vs. suicide attempts.

ADDITIONAL PSYCHOSOCIAL FACTORS

In addition to capability for suicide, other psychosocial variables have been also found in recent studies to differentiate attempters from ideators. Because these findings have not been widely replicated they should be considered preliminary. However, they may represent fruitful targets of future research on differences between attempters and ideators.

McFeeters *et al.* [21] examined a subset of adults reporting lifetime suicidal ideation as part of a large epidemiological study in England, and found that stressful life events were more common among suicide attempters than suicide ideators without attempts. Similarly, Saffer *et al.* [22] found that lower parental support was reported by adolescents with a history suicide attempts compared with adolescents with a history of suicide ideation. de Araújo and Lara [23] found that emotional abuse, but not emotional neglect or physical abuse, distinguished those who had made severe suicide attempts from those with suicide ideation. Sexual abuse was weakly related to both ideation and to attempts among ideators. Bryan *et al.* [24] reported that self-forgiveness was lower among suicide attempters compared with ideators in a military sample, although the effect size was small.

Findings from two recent studies suggest that psychotic symptoms may help differentiate suicide attempters from suicide ideators. In examining data from three longitudinal European databases, Honings *et al.* [25] found that among individuals with mental disorders, psychotic experiences increased the odds of a suicide attempt by 8.9, whereas psychotic experiences were only minimally related to suicide ideation. Similarly, Fujita *et al.* [26] found that auditory verbal hallucinations, but not depression, increased the odds of a suicide attempt by 3.4 among adolescents with suicidal ideation.

NEUROCOGNITIVE AND NEURAL CONNECTIVITY FACTORS

There has also been recent interest in whether neurocognitive abilities might help explain the transition from suicide ideation to suicide attempts. Executive functions are cognitive abilities crucial for everyday goal-directed behaviors [27] such as planning and decision-making. Impaired executive functions are likely to lead to poor decision-making which, in turn, may increase the likelihood that suicidal thoughts translate into suicidal actions [28]. Saffer and Klonsky [29] have recently provided

support for this relationship. Specifically, using a large online sample of adults residing in the United States, Saffer and Klonsky [29] found that individuals with past-year suicide attempts reported worse executive functioning than those with past-year suicide ideation. Moreover, this relationship remained robust after controlling for participant reports of depression, self-efficacy, drug use, or brain injury. Similarly, Gujral *et al.* [30] found that suicide attempters exhibited worse performance on a behavioral measure of executive functioning over a 2-year follow-up period. Szanto *et al.* [31] examined decision-making differences between suicide attempters and suicide ideators and observed that suicide attempters were more susceptible to sunk cost biases and framing effects than suicide ideators. However, the same study also observed that suicide attempters and suicide ideators exhibited minimal differences on other aspects of decision-making abilities including underconfidence/overconfidence and consistency in risk perception. Executive functioning and decision-making characteristics therefore appear to warrant further attention.

At the same time, there is evidence that a variable related to executive functioning – impulsivity – does not help explain the transition from suicide ideation to attempts. A recent review of research [32] describes several studies showing that impulsivity is similar between attempters and ideators. Moreover, in these studies, individuals who make the most ‘impulsive’ attempts (e.g., little forethought or planning) are not the ones scoring highest on measures of trait impulsivity. A more recent study by May and Klonsky [33] assessed several metrics of impulsivity in 205 adults who had attempted suicide, and provided further evidence that trait impulsivity is unconnected to attempt impulsivity. In particular, trait impulsivity was negligibly correlated with the amount of preparation or contemplation before an attempt, suggesting that – contrary to intuition – impulsivity does not appear connected to suicidal behavior.

Several recent studies identified potential neural connectivity difference between suicide attempters and ideators. In one study [34], different patterns of dorsal anterior cingulate cortex connectivity during a cognitive control task differentiated attempters from ideators. In a second study, Minzenberg *et al.* [35] found that greater activation of the right ventrolateral prefrontal cortex differentiated suicide attempters from suicide ideators. Furthermore, suicide ideation was associated with higher activation in the orbitofrontal cortex, rostral insula, and dorsal striatum whereas suicide attempt was associated with lower activity in midline parietal regions, including cuneus and precuneus. A third

study by Minzenberg *et al.* [36] observed that suicide attempters exhibited greater activation in the left-hemisphere supplementary motor area, presupplementary motor area, premotor cortex, and dorsolateral prefrontal cortex. These findings encourage future research, but are limited by the very small numbers of ideators and attempters used in both studies (<20).

LONGITUDINAL RESEARCH

Although findings from cross-sectional research provide useful information about differences between suicide attempters and suicide ideators, longitudinal research is required to determine whether the examined risk factors predict future suicide attempts. A recent longitudinal study by Cysz and King [37] obtained data from 376 adolescent psychiatric inpatients at four time-points over a 1-year period. The study used latent class growth modeling to examine three groups of suicide ideators: first, participants with subclinical suicide ideation; second, participants with elevated suicide ideation that declined over time; and third, participants with chronically elevated suicide ideation. The study found that those with chronically elevated suicide ideation were significantly more likely to attempt suicide during follow-up than the other groups. Results suggest that chronicity of suicide ideation, rather than baseline severity, might be most informative regarding future risk of suicide attempts. Unfortunately, longitudinal studies using the ideation-to-action framework are rare. There is a great need for longitudinal studies that identify variables that predict transition from suicide ideation to suicide attempts and death. Such studies could also benefit from the use of nontraditional methodological approaches that capture the real-time, nonlinear course of suicidal ideation, attempts, and associated risk factors [38].

IDEATION-TO-ACTION THEORIES OF SUICIDE

Much remains to be understood about the progression from suicide ideation to attempts. Fortunately, a new generation of suicide theories utilize the ideation-to-action framework and provide testable and promising hypotheses.

Thomas Joiner’s Interpersonal Theory of Suicide [5], which we described earlier in this article, was the first suicide theory to emphasize different explanations for suicidal desire and for acting on suicidal desire. The theory suggests that low belongingness and perceived burdensomeness cause desire for suicide, whereas the acquired capability for suicide

determines whether suicidal desire leads to a potentially lethal attempt. Although the specific tenets of the Interpersonal Theory have received significant attention, the framework itself may represent the theory's most important contribution [6[■]]. In fact, we view Joiner's theory as the first ideation-to-action theory of suicide, and credit it for having spawned a new generation of ideation-to-action theories of suicide.

In 2011, Rory O'Connor [39] proposed the Integrated Motivational Volitional (IMV) model, which also utilizes an ideation-to-action framework. The IMV proposes that 'motivational' factors, specifically defeat and entrapment, cause suicidal ideation, and that a collection of 'volitional' factors (e.g., acquired capability, access to lethal means, planning, impulsivity) predict and explain the progression from ideation to attempts. Dhingra *et al.* [40[■]] supports the main tenets of the IMV in a large sample of United Kingdom-based university students. Specifically, volitional factors (fearlessness about death, impulsivity, and exposure to suicidal behavior) but not motivational factors (defeat, entrapment, belongingness, and burdensomeness) reliably differentiated suicide attempters from ideators.

More recently, Klonsky and May [13[■]] proposed the Three-Step Theory (3ST) of suicide, which may be viewed as the third ideation-to-action theory of suicide. The 3ST holds that: first, suicide ideation results from the combination of emotional pain and hopelessness; second, ideation becomes strong/active when pain exceeds connectedness; and third, progression from ideation to attempts is facilitated by dispositional, learned, and practical contributors to the capacity to attempt suicide. Clinically, the 3ST suggests four targets for suicide prevention: reduce pain, increase hope, improve connection, and reduce capacity.

The 3ST has been empirically supported in several studies. For example, research on both adolescent and adult suicide attempters has found that suicide attempts are most often motivated by pain and hopelessness, as opposed to belongingness, burdensomeness, cry for help, or impulsivity [41,42]. In addition, a recent online study of United States adults [13[■]] found that the combination of pain and hopelessness strongly predicted suicidal ideation, but that individuals with either pain or hopelessness (but not both) reported minimal ideation. In addition, consistent with the 3ST, connectedness protected against the escalation of ideation in those high on both pain and hopelessness, but was minimally related to ideation among everyone else. Finally, dispositional, acquired, and practical contributors to the capacity for suicide each predicted suicide attempt history over and above current and

past suicide ideation [13[■]]. Thus, the 3ST has great potential to advance suicide research and prevention [6[■]].

CONCLUSION

It has become clear that most traditional correlates and risk factors for suicide are best characterized as correlates and risk factors for suicide ideation. Capability for suicide – including reduced fear of death and increased tolerance for distress and pain – is one of the few variables consistently shown to predict suicide attempts among ideators. Other potentially relevant psychosocial and biological factors have also been identified but require replication. Longitudinal studies positioned within the ideation-to-action framework are required to further advance knowledge about the transition from suicide ideation to suicide attempts and death.

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Conflicts of interest

There are no conflicts of interest.

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