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The relationship between entrapment and suicidal behavior through the lens of the integrated motivational-volitional model of suicidal behavior

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Abstract

Suicide and suicidal behavior are major public health concerns. As a result, a number of psychological models have been developed to better understand the emergence of suicidal ideation and suicide attempts. One such model is the integrated motivational-volitional model, a tri-partite model of suicidal behavior, which posits that entrapment is central to the final common pathway to suicide. In this review we summarize the extant research evidence for the relationship between entrapment and suicidal ideation and behavior. Although there is robust evidence for the relationship between entrapment and suicidal ideation and behavior, there are gaps in our knowledge. We discuss the clinical implications and suggest key directions for future research.

Highlights

- This article reviews research into the relationship between entrapment and suicidal ideation and behavior.
- Findings are interpreted within the integrated motivational–volitional of suicidal behavior.
- There is robust evidence for the entrapment–suicidality relationship.
- More prospective studies of suicidal behavior are required.
- Future directions for research into entrapment and suicidal behavior are discussed.

Introduction

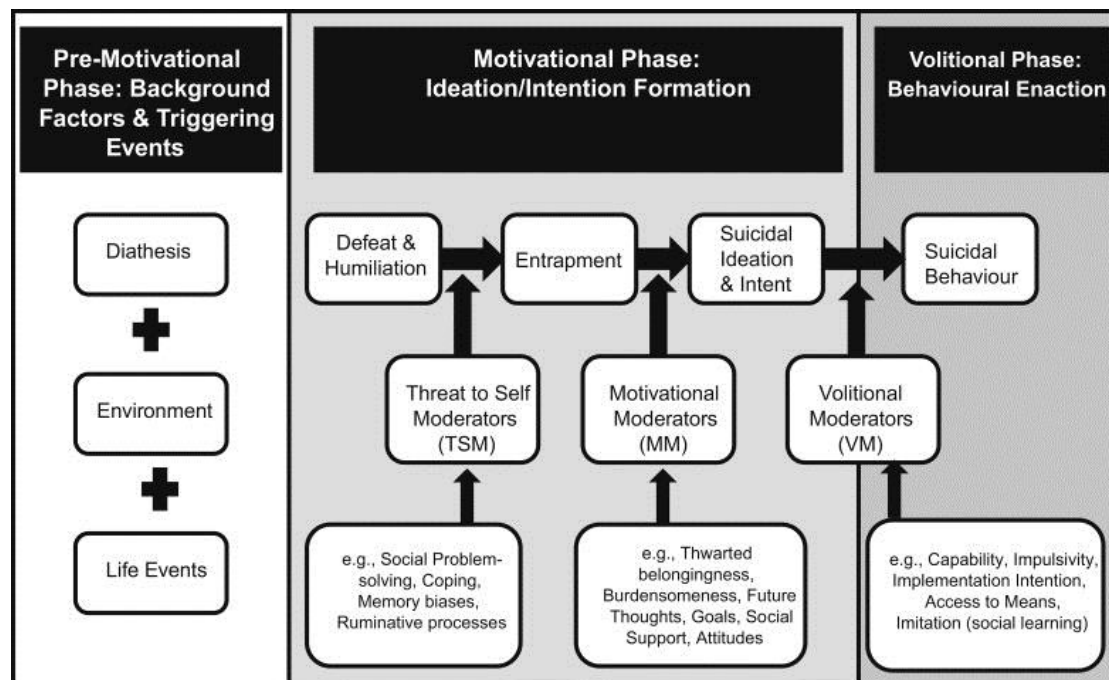
Suicide and suicidal behavior are major public health concerns, with at least 804,000 people dying by suicide each year across the globe [1]. As past suicidal behavior is one of the strongest predictors of suicide [2,3], research has focused on better identifying the correlates of suicide attempts. Although the factors leading to suicide are complex and our ability to predict suicidal behavior is limited [4-6], given that an individual makes a decision to end their own life, understanding the psychological processes implicated in risk is crucial to prevention and intervention.

Entrapment and the integrated motivational-volitional model of suicidal behavior

In recent years, a number of psychological models have been developed to better understand the emergence of suicidal ideation and suicide attempts [7-12]. One such predominant model is the integrated motivational-volitional (IMV) model of suicidal behavior [8,13], which is grounded within the ideation to action framework [14]. The IMV model, a tri-partite model that builds upon Williams' [12] work on defeat and entrapment, describes the final common pathway to suicidal behavior (see Figure 1;[12]). At its core, the IMV model posits that the experience of defeat/humiliation from which there is no escape, i.e., entrapment, is the key driver of suicidal ideation [13,15]. The IMV model also describes the factors that facilitate the transition from defeat/humiliation to entrapment, from entrapment to suicidal ideation and from ideation to suicide attempt. In effect, suicidal behavior is an individual's attempt to end their pain or escape from unbearable life circumstances. In this paper we use the IMV model as an

overarching framework to summarize the latest research into the relationship between entrapment and suicidal behavior.

Figure 1. The integrated motivational–volitional model of suicidal behavior[8]



The concept of entrapment and its importance in the etiology of mental health problems is not new. It emerged from the arrested flight literature as a model of depression that was subsequently applied to suicidal behavior [12,16,17]. Since then numerous research groups have endeavored to determine the nature and extent of the relationship between entrapment and suicidal behavior. The first suicidal case-control study to demonstrate empirically the role of escape potential (or entrapment) within a clinical sample was published in 2003 [18]. Most studies assess entrapment via Gilbert and Allan’s 16-item entrapment scale [16] and also include their measure of defeat as these constructs are related conceptually as well as both being core components of the IMV model [16]. A

total entrapment score is most often reported but the scale also comprises internal (perceptions of entrapment by one's own thoughts and feelings) and external (perceptions of entrapment by external situations) entrapment subscales.

The growth in interest into the role of entrapment in mental health has led to the publication of a systematic review [19] and a more recent meta-analysis, both of which have described the role of entrapment transdiagnostically [20]. Each of these critiques concludes that entrapment is central to the development of suicide ideation and behavior, which is consistent with the IMV model.

Consequently, we do not detail the entire literature on entrapment and suicide risk here (see [19,20]); rather we focus on key findings and implications while prioritizing research that has been published in the past 2/3 years.

Relationship between entrapment and suicidal ideation/behavior

In 2011, Taylor et al. [19] concluded in their review that across clinical and non-clinical samples (n=8) there was converging evidence that entrapment (and defeat) was associated with increased suicidality. However, none of the studies included in this review had utilized prospective study designs. In the more recent meta-analysis, Siddaway et al. [20] employed more stringent inclusion criteria and quantified the size and consistency of the population effect in the relationship between entrapment and suicidality. They concluded that the effect size was large and that publication bias is unlikely to have artificially inflated the relationship, so it can be considered robust [20]. That noted, however, this meta-analysis only included six suicide-related studies comprised of 479 participants, of which 36% were college students [21-26] and only two studies were

longitudinal [21,24]. In one of the longitudinal studies, of college students, entrapment did not predict suicidal ideation over 12 months whereas it did when combined with defeat [24]. As the authors note, inadequate power is the most likely explanation as to why it was not possible to detect a differential effect of entrapment over defeat.

In the other prospective study, entrapment predicted repeat suicidal behavior in the 4 years after an index hospital-treated suicide attempt [21]. This finding is particularly important as the outcome (repeat suicidal behavior or death by suicide) was actual suicidal behavior (not self-reported) and because the finding held even after controlling for past suicide attempts, baseline depression, hopelessness and suicidal ideation. Indeed, entrapment was the only potentially modifiable risk factor to predict future suicide attempts in the multivariate analyses.

Three studies not included in the meta-analysis are also worthy of comment. The first two explored the role of entrapment in post-traumatic disorder [27,28] and the third focused on adolescents [29]. Panagioti and colleagues found that entrapment was significantly higher among trauma victims with PTSD compared to those without [28] and that defeat and entrapment fully mediated the relationship between PTSD symptom severity and suicidal behavior [27].

Despite being consistent with the IMV model, these findings need to be replicated prospectively. In their adolescent study of 11,393 students in South Korea, Park et al. found that entrapment was most strongly associated with suicidal ideation (when considered alongside trait anger, psychosomatic

symptoms, depression and resilience)[29]. These latter findings highlight the fact that entrapment affects people across the lifespan. An obvious related question is which factors contribute to a sense of entrapment in adolescence. Although there are many potential candidates, being a victim of bullying has been suggested as a key contributor as it involves exposure to defeat from which escape may not have been possible [30]; other adverse childhood experiences are also likely to play a key role [31] and warrant investigation.

New directions in understanding the entrapment–suicidal ideation/behavior relationship

Since the Siddaway et al. meta-analysis, three novel prospective studies have been published [32-34]. The first focuses on the concept of suicidal flash-forwards which are mental images of suicide including images of death [32]. In this study, 82 suicidal participants and 80 non-suicidal participants from the Hong Kong Mental Morbidity Survey completed psychological measures including of flash-forwards, suicidal ideation and entrapment at baseline and seven weeks later. At baseline, entrapment was associated with suicidal ideation but it did not mediate the relationship between defeat and suicidal ideation. Suicidal flash-forwards and entrapment were lower among those suicidal participants who were non-suicidal at follow-up. In addition, the presence of suicidal flash-forwards interacted with entrapment to predict suicidal ideation at baseline and at the seven week follow-up.

In terms of the IMV model, it was surprising that entrapment did not mediate the defeat–suicidal ideation relationship but this may be accounted by the small

sample size and low levels of suicidal ideation. By contrast, the evidence that the flash-forwards interacted with entrapment to increase suicidal ideation is potentially exciting and consistent with the IMV model. As mental imagery may be even more important in the transition from suicidal ideation to suicide attempts, future mental imagery research ought to be extended to suicidal behavior.

The other two prospective studies extended the study of entrapment to new populations: prisoners and people with bipolar disorder [33,34]. Both of these populations are interesting in the context of entrapment as the prisoners are physically trapped (i.e., in a prison) and, arguably, those with bipolar disorder may feel trapped by their illness. Slade and colleagues [33] recruited 181 new prisoners during their induction to an adult male prison where they completed a range of psychological measures including the defeat and entrapment scales [16]. At follow-up, approximately 10% of the sample reported having self-harmed in the 4 months since arrival. Although some of the findings were as expected (e.g., higher levels of defeat associated with self-harm), the finding that *lower* levels of entrapment were predictive of self-harm was a surprise. The authors argue that this may reflect the undue influence of the prison environment (physical captivity) on one's sense of external entrapment and point to other indices of entrapment like external locus of control and less seeking guidance as being predictive of self-harm. This is indeed plausible, but it would be good to replicate these findings with a larger sample or with fewer measures, as the main analyses included the same number of predictors as there were episodes of self-harm during the follow-up period.

In the final longitudinal study, Owen and colleagues investigated, for the first time, whether defeat and entrapment underpin the development of suicidal ideation in people with bipolar disorder [34]. To do so, they recruited 80 participants with a primary diagnosis of bipolar disorder and past experience of suicidal ideation and/or a previous suicide attempt. Their findings were clear: not only did defeat and entrapment predict suicidal ideation at four month follow-up but, consistent with the IMV model, entrapment mediated the relationship between defeat and suicidal ideation. In addition, when the entrapment sub-scales were considered, internal but not external entrapment also mediated the defeat–suicidal ideation relationship. This differential effect of entrapment, with internal being more important than external entrapment, is consistent with findings from a previous case-control study of people admitted to hospital following self-harm [26].

Positive future thinking, entrapment and suicidal behavior

All of the previous studies have employed traditional correlational designs or case comparisons. However, future research should embrace new study designs including experimental manipulation studies. For example, O'Connor and Williams [35] employed an analogue experimental design to investigate whether a recognized suicide risk factor, positive future thinking (impaired positive future thinking is an established correlate of suicide risk [36-38]), was associated with defeat and entrapment. To do so, they assessed positive future thinking before and after a negative mood and defeat induction. Positive future thinking decreased following the mood/defeat induction but the effect was most pronounced among those high on entrapment. These findings are consistent

with the IMV model and crucially they help advance our understanding of how entrapment could increase suicide risk via its association with a cognitive factor (i.e., positive future thinking). In another recent study of US college students, hope, a trait related to positive future thinking weakened the relationship between entrapment and suicidal ideation [39].

Another recent study [40], though, has highlighted that the relationship between positive future thinking and suicide risk may be more complicated than originally envisaged. In a 15 month prospective study, high (rather than low) levels of a particular type of positive future thinking, intrapersonal positive future thinking (thoughts focused on the individual), predicted repeat suicide attempts. The authors reasoned that the intrapersonal future thoughts may be akin to unrealistic positive expectations about the self, which when not realized may increase risk of repeat suicide attempts as they contribute to an individual's sense of entrapment. As it was not possible to test this hypothesis directly in the latter study, future research ought to address this.

Sleep, rumination and entrapment

There has been growing interest in the relationship between different types of sleep problems and self-harm and suicide risk, with entrapment posited as a potential explanatory mechanism [41-44]. In one recent study, Littlewood and colleagues investigated whether they could explain why nightmares were associated with suicidal behavior [43]. In a sample of 91 participants who had experienced trauma and post-traumatic disorder, the relationship between nightmares and suicidal behaviors was mediated by defeat, entrapment and

hopelessness. Although sleep problems are not explicitly included within the IMV model, the findings are consistent with its central tenets as nightmares act as a vulnerability factor affecting defeat and entrapment, in turn. As this was a cross-sectional study, it is important to replicate these findings prospectively. A recent qualitative study of 18 people with major depression and suicidal thoughts and behaviors, conducted by the same research group, highlighted the relationship between sleep, an aspect of entrapment and suicide risk. One of the themes to emerge from the interviews revolved around escape, specifically that sleep served as an alternative to suicide and a way of escaping life's problems.

Rumination, another risk factor for suicidal behavior [45], has also received welcome attention as a cognitive mechanism that may contribute to suicide risk via its relationship with entrapment. Across two samples (an online sample and a clinical sample), Teismann and Forkmann found that entrapment fully mediated the association between ruminative thinking and suicidal ideation [46]. As they note, these findings support the IMV model, as rumination is a threat-to-self moderator hypothesized to influence entrapment.

Clinical Implications

In light of the research evidence, clinicians need to be aware of the importance of assessing and targeting entrapment in patients. Incorporating perceptions of both internal and external entrapment into the risk assessment of psychiatric patients could be useful to detect individuals at heightened risk of suicidal ideation and behavior. When suicidal thoughts are assessed with patients,

clinicians should also explore perceptions of entrapment, together with other established risk factors such as defeat, rumination and hopelessness.

Clinicians should also be mindful that targeting entrapment beliefs could be important for psychotherapeutic intervention, more generally. Indeed, as recommended by several authors, interventions could focus on reframing the defeating and entrapping situation, modifying unrealistic aspirations or by redirecting attention to other more positive domains and life events in the patient's life [19,47,48].

Although it is unclear whether mindfulness-based cognitive therapy (MBCT) has an effect on perceptions of entrapment, as Teismann and Forkmann [46] suggest, it might be interesting to investigate its potential effect. Indeed, their study demonstrated that the relationship between rumination and suicide ideation is fully explained by perceptions of entrapment. As MBCT has been shown to reduce ruminative thinking and suicide ideation [49,50], it might be relevant to examine the effects of MBCT on perceptions of entrapment.

The evidence regarding the relationship between sleep problems/nightmares and increased suicide risk, with entrapment as a potential explanatory mechanism, also holds interesting clinical implications. This is especially the case as sleep problems and sleep deprivation have a profound negative effect on the suicidal process [44]. Sleep-targeted interventions that also focus on entrapment may be of particular importance in the treatment of suicidal patients. For preventative and clinical purposes it is, however, crucial that research elucidates

the cognitive mechanisms that may contribute to the perceptions of entrapment and, consequently, which could be targeted in psychotherapeutic interventions.

Box 1. Conclusions and Key Future Directions

Although there is considerable evidence that entrapment is associated with suicidal ideation and behavior:

- The evidence is stronger for ideation than behavior.
- There is no direct evidence of the relationship between entrapment and suicide.
- Prospective studies of the entrapment–suicidal behavior relationship should be prioritized.
- The extent to which entrapment is affected or activated by negative mood and life stress needs to be explored.
- New technologies (e.g., apps) and statistical techniques (e.g., network analysis) should be harnessed to explore the daily fluctuations in entrapment and the extent to which it affects other risk factors.
- The factors hypothesized to moderate and mediate the defeat–entrapment–suicidality relationships, as specified in the IMV model, require further research attention.
- Novel research designs that take account of the reflective (e.g., social problem-solving) and automatic processes (e.g., implicit attitudes) likely to be involved in the etiology of entrapment are required.
- It is unclear whether entrapment is a culturally sensitive construct or whether it is more pernicious in men versus women and at different stages in life.
- Psychological treatments targeting entrapment should be developed and evaluated.

Conclusions and Future Directions

There is clear evidence that entrapment is an important factor in the etiology and course of suicidal ideation and suicidal behavior and thus holds interesting and promising implications for suicide prevention and intervention. However, more research is needed to target key gaps in our knowledge, as summarized in Box 1. As most research has been conducted on suicidal ideation rather than on suicidal behavior more studies of entrapment in patients who have attempted suicide are needed. There is no direct evidence yet that entrapment leads to suicide – though this should be interpreted as absence of evidence rather than evidence of absence. The relationship between entrapment and suicidality appears to be transdiagnostic. More research into the underlying cognitive mechanisms of entrapment is required to explain the phenomenology of suicidality and to explore the extent to which entrapment is affected or activated by negative mood, life stress, sleep problems, and positive future thinking. Prospective studies into the relationship between perceptions of entrapment and suicidal behavior should be prioritized. Novel research designs examining the relationship between entrapment and reflective (e.g. social problem-solving) and automatic processes (e.g. implicit attitudes) should also be considered. New technologies (e.g., apps) and statistical techniques (e.g., network analysis) should be harnessed to explore the daily fluctuations in entrapment and the extent to which it affects other risk factors [51-53]. Research examining whether entrapment is culturally sensitive, gender sensitive or age-sensitive is also recommended. Clinically, entrapment beliefs should be routinely incorporated into risk assessments and psychotherapeutic interventions. Finally, new psychological interventions targeting entrapment require urgent attention.

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