



# Cross-sectional and temporal association between non-suicidal self-injury and suicidal ideation in young adults: The explanatory roles of thwarted belongingness and perceived burdensomeness



Carol Chu\*, Megan L. Rogers, Thomas E. Joiner

Florida State University, Department of Psychology, Tallahassee, FL 32304, USA

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## ABSTRACT

Non-suicidal self-injury (NSSI) is a strong predictor of suicidal ideation and attempts. Consistent with the interpersonal theory of suicide, preliminary evidence suggests that NSSI is associated with higher levels of perceived burdensomeness (PB) and thwarted belongingness (TB). However, no study to date has examined the cross-sectional and prospective relationships between NSSI, TB, PB, and suicidal ideation (SI). To fill this gap, this study examined the mediating role of TB and PB in the relationship between NSSI and SI at baseline and follow-up. Young adults ( $N=49$ ) with and without histories of NSSI completed self-report measures of TB, PB, and SI at three time points over two months. NSSI history was associated with higher levels of PB, TB, and SI at all time points. TB and PB significantly accounted for the relationship between NSSI history and SI at baseline. However, the relationship between NSSI history and SI at follow-up was mediated by PB, not TB. Findings provide evidence for the roles of TB and PB in the relationship between NSSI and SI, and partial support for the interpersonal theory of suicide. Future research and clinical implications are discussed.

## 1. Introduction

*Non-suicidal self-injury* (NSSI), or the intentional destruction of one's own body tissue without the desire to die (Silverman et al., 2007), is increasingly common among young adults in the United States. Researchers estimate that approximately 5.9% of individuals report lifetime NSSI (Klonsky, 2011), with even higher rates of NSSI among older adolescent and young adult populations (12–38%; Gratz et al., 2002; Heath et al., 2008; Jacobson and Gould, 2007; Polk and Liss, 2007; Whitlock et al., 2006). Although there is consistent evidence that NSSI is a robust predictor of suicide-related behaviors and that these behaviors co-occur (Andover and Gibb, 2010; Asarnow et al., 2011; Klonsky et al., 2013; Klonsky and Muehlenkamp, 2007; Muehlenkamp and Gutierrez, 2007; Nock et al., 2006; Wilkinson et al., 2011), not all self-injurers exhibit suicide-related symptoms. In some studies, researchers report that only 34–45% of older adolescents and young adults engaging in NSSI also report suicidal ideation (Hawton, Rodham, Evans, and Weatherall, 2002; Muehlenkamp and Kerr, 2010; Whitlock et al., 2009), and in other studies, the majority of individual engaging in NSSI did not exhibit any suicide-related behaviors (Muehlenkamp and Gutierrez, 2004; Whitlock and Knox, 2007). This suggests that while there is significant overlap, there are

also important differences between those who self-harm with and without suicidal intent.

Previous studies seeking to examine the distinction between NSSI and suicide-related behaviors have taken two main approaches. Some have compared individuals who only engage in NSSI to those who only exhibit suicide-related behaviors. These studies have found that compared to individuals with a history of suicide attempts, individuals engaging in NSSI are more interpersonally sensitive and report more stress during interpersonal conflicts (Kim et al., 2015), identify more strongly with death and suicide (Dickstein et al., 2015), and are at greater risk for attempting suicide in the future (Asarnow et al., 2011). Other studies have examined this overlap by comparing individuals who engage in NSSI only to those who have a history of both NSSI and suicide attempts. These studies have found that in adolescent and adult samples, individuals with both NSSI and suicide attempt histories report more severe symptoms of psychopathology than individuals with either of those self-harming behaviors alone (Dougherty et al., 2009; Guertin et al., 2001; Muehlenkamp and Gutierrez, 2007; Stanley et al., 2001). Overall, these findings indicate correlational links between suicidality and NSSI; however, there is a lack of emphasis on the mechanisms underlying this relationship, which limits our ability to understand factors that can predict future suicide-related symptoms

\* Corresponding author.

E-mail address: [chu@psy.fsu.edu](mailto:chu@psy.fsu.edu) (C. Chu).

among those engaging in NSSI.

In an effort to better understand these behaviors, theories of suicidal behavior may provide insight. One theoretical approach that may shed light on the overlap between these behaviors is the interpersonal theory of suicide (Joiner, 2005; Van Orden et al., 2010). Briefly, the interpersonal theory posits that the combination of *perceived burdensomeness* (i.e., feeling that others would be better off without the self) and *thwarted belongingness* (i.e., social disconnection and loneliness) represents severe suicidal desire. When combined with the *acquired capability for suicide* (i.e., fearlessness about death and elevated physical pain tolerance), an individual is said to be at risk for engaging in a lethal or near-lethal suicide attempt.

From the lens of the interpersonal theory, the connection between NSSI and suicidal behavior is driven largely by the influence of NSSI on the acquired capability for suicide (Joiner et al., 2012). The interpersonal theory postulates that repeated NSSI engagement decreases fear of death and injury and increases tolerance for pain, thereby elevating capability for suicide and facilitating suicidal behavior. Converging evidence supports these conjectures. For example, previous research has reported that individuals with a history of NSSI show increased pain endurance (Hooley et al., 2010), lower pain ratings, and greater pain thresholds (Schmahl et al., 2004). These findings suggest that NSSI engagement, which repeatedly exposes individuals to a painful and provocative event, may be associated with elevated levels of acquired capability for suicide. Indeed, individuals with a history of NSSI demonstrate higher levels of acquired capability than those without such experiences cross-sectionally (Bender et al., 2011; Franklin et al., 2011; Hooley et al., 2010; Van Orden et al., 2008) and longitudinally, one year later (Willoughby et al., 2015). Overall, these findings appear to support the relationship between acquired capability and NSSI.

Given that the interpersonal theory does not directly delineate a link between NSSI, thwarted belongingness and perceived burdensomeness, less is known about the relationship between these variables. However, existing evidence suggests that NSSI may negatively impact these interpersonal needs. For one, previous research has suggested that one function of NSSI engagement is to obtain social reinforcement (e.g., to avoid social punishment or show others that they are experiencing negative emotions; Nock and Prinstein, 2004). According to the four-function model of NSSI, those engaging in NSSI for the purposes of social reinforcement may lack interpersonal effectiveness (Nock and Prinstein, 2004). Furthermore, previous research has indicated that individuals with a history of NSSI report poorer social support than individuals without such history (Heath et al., 2009). Thus, NSSI engagement may be related to poorer social functioning, which may increase isolation and feelings of loneliness. Relatedly, researchers have reported that over half of individuals with a history of NSSI report “always” engaging in NSSI alone and one-third of individuals report “sometimes” engaging in NSSI alone (Glenn and Klonsky, 2009). Overtime, poor social support and withdrawal from social interactions may directly contribute to feelings of thwarted belongingness (Van Orden et al., 2010).

A compatible explanation is that the tendency to engage in NSSI alone and reluctance to disclose NSSI may be explained by fears of burdening others. Anecdotally, studies have reported that some individuals engaging in NSSI express concerns that they are placing an emotional burden on friends and family (e.g., burdening parents with feelings of failure, worry, and guilt regarding their parenting skills; Rosenrot, 2015). These feelings may be justified given that research has found that parents of youth who engage in NSSI explicitly report increased burden and stress (Arbuthnott and Lewis, 2015), which may inadvertently reinforce the feelings of burden experienced by those engaging in NSSI. Previous research has suggested that individuals engaging in NSSI may experience shame regarding their behavior (Brown et al., 2009; Gilbert et al., 2010). Shame is associated with concealment of emotional distress and mental illness from others

(MacDonald and Morley, 2001). Further, they may also experience fears of social rejection and negative evaluation associated with disclosing self-harm behaviors. In the context of suicide risk, previous evidence has supported the connection between shame, fears of negative social evaluation, and feelings of thwarted belongingness and perceived burdensomeness (Chu et al., 2015a; Hill and Pettit, 2012; Wong et al., 2014; Van Orden et al., 2010). Thus, one possibility is that some individuals engaging in NSSI fear that they are burdening others.

Research directly testing a potential relationship between NSSI and thwarted belongingness and perceived burdensomeness is limited. In the only empirical test of this hypothesis to date, frequency of NSSI was positively associated with both perceived burdensomeness and thwarted belongingness cross-sectionally (Assavedo and Anestis, 2015). However, after controlling for symptoms of depression and borderline personality disorder, only the association between NSSI frequency and thwarted belongingness remained significant and this relationship was fully mediated by these covariates. This suggests that NSSI may be associated with suicidal desire directly through increased feelings of thwarted belongingness and indirectly through perceived burdensomeness. Interestingly, mounting evidence providing partial support for the interpersonal theory of suicide suggests that perceived burdensomeness, individually, may be a more robustly associated with suicidal ideation than thwarted belongingness only or their interaction (Bryan et al., 2012, 2010; Chu et al., 2016; Van Orden et al., 2008). Given these findings, research examining the individual relationships between NSSI and each construct of the interpersonal theory are needed. Additionally, as Assavedo and Anestis's (2015) study employed a cross-sectional approach and did not examine suicide-related behaviors, it is limited in its ability to make conclusions regarding the role of the interpersonal theory of suicide in understanding the ability of NSSI to predict future suicide-related behaviors. Therefore, more studies are needed to replicate and expand these findings to further understand these links.

To our knowledge, no prospective studies have directly examined suicide risk in individuals with a history of NSSI through the lens of the interpersonal theory of suicide. However, findings from previous longitudinal studies examining the association between NSSI and suicide-related behaviors are consistent with the interpersonal theory's hypotheses. For example, Prinstein and colleagues (2008) found that among recently hospitalized adolescents, NSSI history predicted weaker suicidal ideation remission following discharge. Their findings are useful for understanding the interpersonal theory as they are consistent with the idea that repeated engagement in NSSI may habituate adolescents to pain, thereby increasing the likelihood of future suicidal behaviors (Prinstein et al., 2008). However, this study did not assess the interpersonal theory of suicide constructs, and further research is needed to understand the prospective relationship between these variables.

In order to address these gaps in the previous literature on NSSI, this study cross-sectionally and prospectively evaluated the mediating role of the interpersonal theory of suicide variables in the relationship between NSSI on suicidal thoughts and behaviors. Given prevalence of NSSI and suicide-related behaviors among young adults (Barrios et al., 2000; Heath et al., 2008; Whitlock et al., 2009), we examined our research questions in an undergraduate sample. We hypothesized that a) individuals with a history of NSSI would report significantly higher levels of thwarted belongingness, perceived burdensomeness, and suicidal ideation in comparison to controls; b) thwarted belongingness and perceived burdensomeness would significantly mediate the relationship between NSSI and suicidal ideation at baseline; and c) thwarted belongingness and perceived burdensomeness would significantly mediate the relationship between NSSI and suicidal ideation at three- and six-week follow-ups. Fig. 1 summarizes the hypothesized explanatory model for the relationship between NSSI and suicidal behavior from the perspective of the interpersonal theory.

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