

Why Do People Hurt Themselves?

New Insights Into the Nature and Functions of Self-Injury

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ABSTRACT—Nonsuicidal self-injury (NSSI) is a prevalent but perplexing behavior problem in which people deliberately harm themselves without lethal intent. Research reveals that NSSI typically has its onset during early adolescence; most often involves cutting or carving the skin; and appears equally prevalent across sexes, ethnicities, and socioeconomic statuses. Less is known about why people engage in NSSI. This article presents a theoretical model of the development and maintenance of NSSI. Rather than a symptom of mental disorder, NSSI is conceptualized as a harmful behavior that can serve several intrapersonal (e.g., affect regulation) and interpersonal (e.g., help-seeking) functions. Risk of NSSI is increased by general factors that contribute to problems with affect regulation or interpersonal communication (e.g., childhood abuse) and by specific factors that influence the decision to use NSSI rather than some other behavior to serve these functions (e.g., social modeling). This model synthesizes research from several different areas of the literature and points toward several lines of research needed to further advance the understanding of why people hurt themselves.

KEYWORDS—self-injury; self-harm; self-mutilation; suicide; function; nonsuicidal

Humans are endowed with a drive for survival, yet we often do things that impede this drive. Suicide is the most extreme case. In less extreme instances, people deliberately injure themselves without wanting to die. Reports of such behavior have appeared for thousands of years; however, there appears to have been a dramatic increase in this perplexing behavior over the past few decades. Recent findings from psychological science have provided new insights into the nature and functions of nonsuicidal self-injury (NSSI).

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WHAT IS NSSI?

NSSI is the direct, deliberate destruction of one's own body tissue in the absence of intent to die. These features distinguish it from behavior whose harmful consequences are unintended (e.g., lung cancer from smoking) and from suicidal behavior, whose prevalence, correlates, course, and response to treatment differ. Culturally sanctioned bodily modification, such as tattooing or body piercing, is not classified as NSSI.

Approximately 1 to 4% of adults and 13 to 23% of adolescents report a history of NSSI at some point in their lives (Jacobson & Gould, 2007). The higher rates among adolescents suggest that either the rate of NSSI is increasing or that there are reporting biases among adults causing them to deny their history of NSSI, or both. NSSI most often involves cutting oneself with a knife or razor; typically begins in early adolescence; occurs among people with a wide range of psychiatric disorders (and in some cases in those with no disorder); is associated with an increased risk of suicide attempt; and does not appear to differ as a function of sex, ethnicity, or socioeconomic status (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Despite the prevalence of NSSI, little is known about why people engage in this behavior.

WHY DO PEOPLE HURT THEMSELVES?

Many theoretical models of NSSI have been proposed. Psychodynamic theorists suggest that NSSI is performed as a way of gaining control over urges for sex or death. Folk explanations invoke concepts like manipulation of other people, impulsiveness, and low self-esteem. Empirical work on NSSI has aimed at identifying correlates of this behavior, with childhood abuse and psychiatric disorders emerging most consistently in the literature. The strong relation between psychiatric disorders and NSSI has led many to conceptualize NSSI as a symptom of a psychiatric disorder. However, such a perspective is unsatisfying given that NSSI occurs across many disorders and is not symptomatic of any one disorder (Nock et al., 2006). Moreover, suggesting that people engage in NSSI because it is a symptom of a disorder provides little explanatory power.

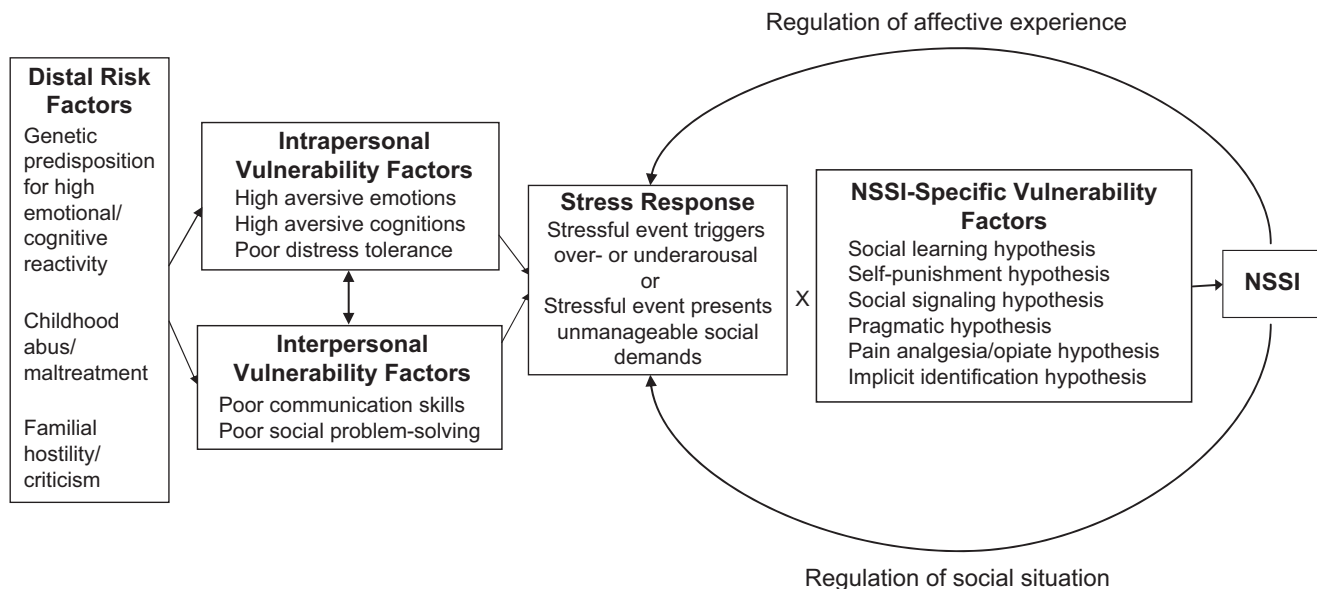


Fig. 1. An integrated theoretical model of the development and maintenance of nonsuicidal self-injury (NSSI). This model proposes that NSSI is maintained because it is an effective means of immediately regulating aversive affective experiences and social situations. The risk of NSSI is increased by the presence of distal factors (e.g., childhood maltreatment) that can lead to intrapersonal and interpersonal vulnerabilities (e.g., poor communication skills) to respond to stressful life events in an ineffective manner (e.g., inability to effectively communicate the need for help). Although these risk factors could predispose a person to a number of forms of psychopathology, the likelihood of engaging in NSSI is increased by an additional set of NSSI-specific vulnerability factors (e.g., social learning).

This article presents an alternative explanation for the development and maintenance of NSSI. The proposed theoretical model integrates findings from several different areas of the literature, explains why factors such as childhood abuse and psychiatric disorders are associated with NSSI, and highlights new questions and directions for research on this topic. This model proposes that (a) NSSI functions as a means both of regulating one's emotional/cognitive experiences and of communicating with or influencing others, (b) risk for NSSI is increased by the presence of distal risk factors (e.g., childhood abuse) that contribute to problems with affect regulation and interpersonal communication, and (c) several more specific factors (e.g., social modeling) explain why some people specifically use NSSI to serve these functions (see Fig. 1).

What Are the Functions of NSSI?

A functional approach assumes that behaviors are determined by their immediate antecedents and consequents. By focusing on local determinants, this approach cannot account for the full range of causal factors that influence a behavior. Nevertheless, research using a functional perspective has led to significant advances in the understanding and treatment of various forms of psychopathology, including depression, anxiety, substance use, and child conduct problems (e.g., Hayes, Wilson, Gifford, Follette, & Strosahl, 1996).

A functional approach suggests that NSSI is maintained by several reinforcement processes: intrapersonal negative reinforcement (i.e., NSSI decreases or distracts from aversive thoughts or feelings), intrapersonal positive reinforcement (i.e.,

NSSI generates desired feelings or stimulation), interpersonal positive reinforcement (i.e., NSSI facilitates help-seeking), or interpersonal negative reinforcement (i.e., NSSI facilitates escape from undesired social situations). Several lines of research provide empirical evidence for each of these four processes. First, experimental studies among people with developmental disabilities have shown that applying and removing desired and aversive stimuli immediately following NSSI increases or decreases this behavior in patterns consistent with the functional model I outlined (e.g., Iwata et al., 1994). Second, studies among typically developing adolescents and adults have demonstrated that the motives cited by self-injurers for their behavior fit closely (e.g., in confirmatory factor analyses) with the four-function model (Nock & Prinstein, 2004) and that the four functions correlate in expected ways with other clinical constructs (see Nock & Prinstein, 2005). Third, studies have supported hypotheses derived directly from this model. For instance, self-injurers show decreases in physiological arousal following imaginary exposure to NSSI (Haines, Williams, Brain, & Wilson, 1995) and improvements in familial relationships following engagement in NSSI (Hilt, Nock, et al., 2008). Although these studies provide information about the functions served by NSSI, they do not address the etiologic question of why some people experience the affective and social dysregulation that serve as antecedents to NSSI.

What Factors Increase the Risk of NSSI?

The proposed model suggests that some people develop intra- or interpersonal vulnerabilities that predispose them to respond to

challenging or stressful events with affective or social dysregulation, creating a need to use NSSI or some other extreme behavior to modulate their experience. Preliminary evidence for such vulnerabilities comes from laboratory-based studies. For instance, relative to noninjurers, self-injurers display elevated physiological arousal (skin conductance) in response to a laboratory-based stressor (Fig. 2), and this effect is especially pronounced for those who report that they engage in NSSI in response to high aversive arousal (Nock & Mendes, 2008). Self-injurers also elect to discontinue or escape the stressful task significantly sooner than do noninjurers (Nock & Mendes, 2008) and report greater efforts to suppress aversive thoughts and feelings in their everyday life (Najmi, Wegner, & Nock, 2007). Most of this work has focused on intrapersonal correlates of NSSI; however, evidence for interpersonal vulnerability factors has been revealed in studies showing deficits in social problem solving and communication among self-injurers (e.g., Nock & Mendes, 2008).

These vulnerability factors are believed to be caused by more distal risk factors such as childhood abuse and genetic predispositions to high emotion reactivity. For instance, childhood maltreatment is associated with subsequent neurobiological abnormalities characterized by reduced activity in the frontal cortex and an increased stress response (e.g., Kaufman & Charney, 2001). Such abnormalities represent a pathway through which childhood abuse may lead to increased emotional reactivity and an inability to manage such a response, which is then (maladaptively) managed using NSSI. Factors such as childhood abuse also can prevent the developing child from learning effective social-problem-solving or communication skills, thus contributing to the interpersonal vulnerabilities I mentioned.

Of course, these vulnerability factors are not specific to NSSI and have been shown to increase the risk of a number of psychiatric disorders. This model suggests that NSSI is related to psychiatric disorders *because* they share these etiologic pathways. In fact, when factors such as high emotional or physiological reactivity are statistically controlled, childhood abuse (Weierich & Nock, 2008) and psychiatric disorders (Nock, Wedig, Holmberg, & Hooley, 2008) are no longer associated with NSSI. If NSSI and some psychiatric disorders share

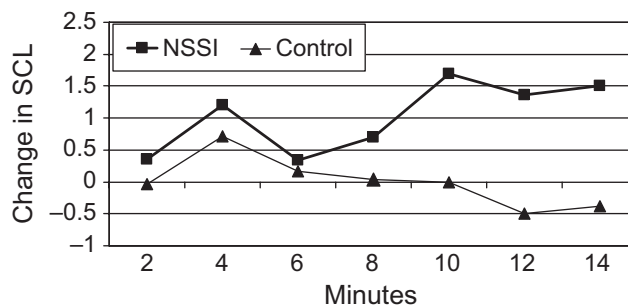


Fig. 2. Change in skin conductance level (SCL) during a distressing/frustrating card-sorting task for those with a recent history of NSSI ($n = 62$) compared to a noninjurious control group ($n = 30$). The full study is reported in Nock and Mendes (2008).

an etiologic pathway and represent different forms of behavior that can serve the same function, one is left wondering why some people select NSSI rather than another pathological behavior to regulate their affective and social experiences.

Why Use NSSI to Serve These Functions?

There are many noninjurious ways to regulate emotions (e.g., exercise, alcohol) or communicate with others (e.g., talking, gesturing). So why use NSSI? Below I present several specific processes proposed to increase the likelihood that a person will use NSSI to serve these functions. These hypothesized processes each have preliminary empirical support and represent some of the most intriguing current directions for NSSI research.

Social Learning Hypothesis

The decision to engage in NSSI undoubtedly is influenced by observing the behavior being used by others. Indeed, most self-injurers report first learning about the behavior from friends, family, and the media. Interestingly, there has been a sharp increase in references to NSSI in movies, songs, print media, and the Internet over the past decade (Whitlock, Purington, & Gershkovich, 2009), which may help explain the apparent increase in this behavior over the same period.

Self-Punishment Hypothesis

Self-punishment or self-deprecation also may motivate NSSI, with NSSI representing a form of self-directed abuse learned via repeated abuse or criticism by others. This would explain further how and why childhood abuse is associated with the behavior. Recent research supports this hypothesis, by showing that the relation between childhood abuse and NSSI is mediated by adolescent self-criticism (Glassman, Weierich, Hooley, Deliberto, & Nock, 2007). Moreover, many self-injurers endorse self-punishment as a primary motivator for NSSI (Nock & Prinstein, 2004).

Social Signaling Hypothesis

People may escalate to the use of NSSI as a means of communication when less intense strategies (e.g., speaking, yelling) have failed due to poor signal quality or clarity, or when such strategies have not produced the desired effect due to an unresponsive or invalidating environment (Nock, 2008; Wedig & Nock, 2007). In addition to providing a more intense signal, NSSI may be especially effective as a means of social communication and influence precisely because it is a harmful, and thus costly, behavior (Hagen, Watson, & Hammerstein, 2008; Nock, 2008). As demonstrated in research on animal communication, signaling behaviors that are costly to perform are more likely to be believed by other animals because otherwise producing them would not pay off (Hauser, 1996). Translating this principle to humans, high-intensity or high-cost behaviors (e.g., aggressive gestures, NSSI) are more likely to elicit desired responses from

others than are low-intensity or low-cost behaviors (e.g., verbal requests).

Pragmatic Hypothesis

Perhaps the most parsimonious explanation for why some people choose NSSI is that it is a relatively fast and easily accessible method of serving the proposed functions. NSSI can be performed quickly in virtually any context and does not require the time and materials involved in other behaviors that may serve a similar function (e.g., alcohol or drug use), making it an attractive behavior for adolescents and young adults who lack the executive control to regulate their emotions and behavior and who may not have ready access to alcohol or drugs.

Pain Analgesia/Opiate Hypothesis

It also is important to consider what stops some people at risk for NSSI from engaging in this behavior: the pain involved in the act. Interestingly, self-injurers report little or no pain during NSSI and show pain analgesia on lab-based tests of pain tolerance. It is unclear if this pain analgesia is a dispositional factor perhaps resulting from elevated levels of endorphins in the body, emerges via habituation as a result of earlier abuse, or is a by-product of the release of endogenous opiates that results from repeated NSSI. The presence of pain analgesia has been reported consistently across studies of NSSI and represents one of the most intriguing directions for future research on this topic.

Implicit Identification Hypothesis

Once NSSI is performed, some people may come to identify with NSSI and value it as an effective means of achieving one of the functions described. This identification may foster selection of this behavior over other behaviors, thereby maintaining it. For instance, when I want to regulate my emotions (e.g., decrease anxiety), I do not smoke cigarettes because I am not a smoker, instead I go for a run because I see myself as a runner—perhaps because that behavior has served me well when attempting to regulate my emotions in the past. In the same way, some people may select NSSI because they identify with this behavior. Consistently with such a view, we recently demonstrated that self-injurers hold a stronger implicit identification with self-injury than do noninjurers, as shown by their performance on the Implicit Association Test—a brief, computerized reaction-time test of the associations people hold about different constructs (Fig. 3a; Nock & Banaji, 2007a). Interestingly, a similar identification with self-injury emerged among those with suicidal thoughts, with an especially strong identification among those making suicide attempts (Fig. 3b; Nock & Banaji, 2007b). It is not yet clear if implicit identification with self-injury influences the initial decision to use the behavior or develops as a result of the behavior. This represents one key question for future research.

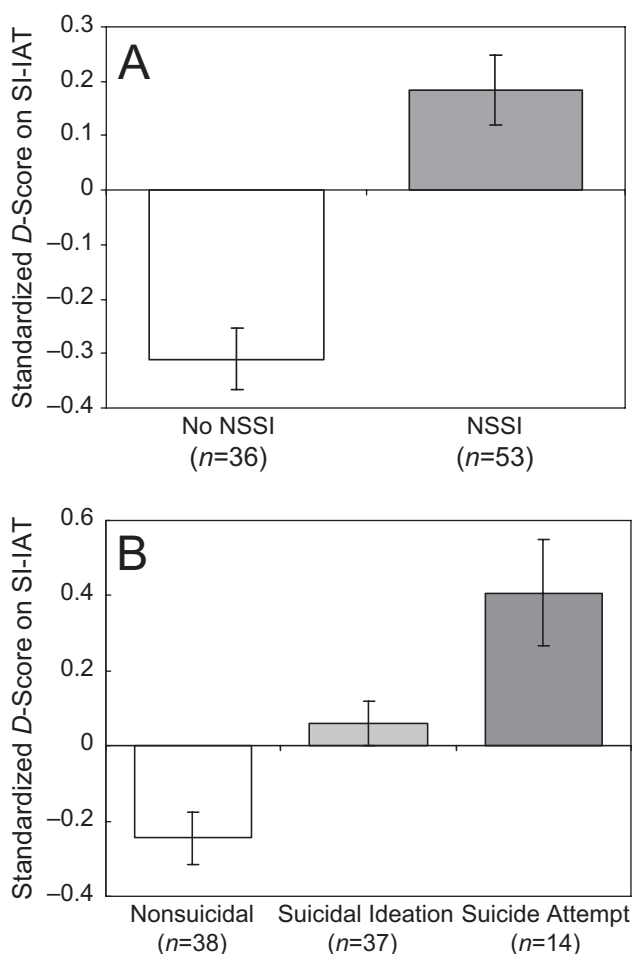


Fig. 3. Results of the Self-Injury Implicit Association Test (SI-IAT) measuring the strength of associations between self-injury and the self for those with and without a history of nonsuicidal self-injury (NSSI; A) and for those with or without a history of suicidal thoughts or suicide attempts (regardless of NSSI status; B). In both experiments, self-injury was represented by images of cut skin (versus images of non-cut skin) and the self was represented by words related to the self (“I,” “mine,” “me”) (versus words related to others, e.g., “they,” “them,” “their”). Positive scores represent a stronger association between self-injury and the self (i.e., faster responding on a computer-based test when self-injury and the self are paired on the same computer key), and negative scores represent a stronger association between noninjury and the self. The difference between self-injurers and noninjurers was large and statistically significant, as was the differences between each of the three groups in panel B. The full studies are reported in Nock and Banaji (2007a, b).

FUTURE DIRECTIONS

Recent research has answered many of the basic questions about NSSI, but many important questions and exciting directions remain. First, the evidence for the apparent increase in the behavior comes largely from anecdotal reports and estimates from small cross-sectional studies. Epidemiologic and longitudinal studies are needed to provide more accurate estimates of the base rate, trends, and long-term course of NSSI. Second, most of the evidence for the etiology of NSSI is from cross-sectional or retrospective studies. Research examining factors influencing

the development of NSSI will increase the understanding of this behavior and improve prevention efforts. Third, although a consensus is emerging on the functions of NSSI, the mechanisms through which NSSI influences affective and social events remain unknown. For instance, although it is clear that NSSI results in decreased negative affect, it is unclear if this occurs via the release of endorphins, distraction from a distressing thought/feeling, or some other process. Fourth, most studies have relied on retrospective self-report of NSSI or experimental manipulation of hypothesized processes in the laboratory. Studies examining episodes of this behavior as it occurs in real time—such as studies using ambulatory monitoring devices—are sorely needed. Fifth, although it has been proposed that NSSI and other potentially harmful behaviors serve similar functions, few studies have carefully examined their co-occurrence—a necessary step in testing this conceptualization. Sixth, initial evidence suggests that family and cultural factors influence NSSI, offering an important direction for additional investigation. Finally, there are currently no evidence-based treatments for NSSI. Efforts to prevent and treat NSSI may be most effective and efficient with the incorporation of recent findings from psychological science.

Recommended Reading

- Favazza, A.R. (1996). *Bodies under siege: Self-mutilation and body modification in culture and psychiatry* (2nd ed.). Baltimore, MD: Johns Hopkins University Press. The seminal book on NSSI; presents a comprehensive historical, anthropological, and clinical review of the topic.
- Hooley, J.M. (2008). Self-harming behavior: Introduction to the special series on non-suicidal self-injury. *Applied and Preventive Psychology, 12*, 155–158. Introduction to a special issue of this journal; each article in the issue provides an empirically based theoretical review of some aspect of why people hurt themselves and how to prevent these behaviors.
- Klonsky, E.D. (2007). Non-suicidal self-injury: An introduction. *Journal of Clinical Psychology, 63*, 1039–1043. A special issue devoted to NSSI; provides brief literature reviews geared primarily toward practicing clinicians.
- Nock, M.K. (Ed.). (2009). *Understanding nonsuicidal self-injury: Origins, assessment, and treatment*. Washington, DC: American Psychological Association. A comprehensive edited volume on NSSI geared toward researchers, scholars, and clinicians.
- Prinstein, M.J. (2008). Introduction to the special section on suicide and nonsuicidal self-injury: A review of unique challenges and important directions for self-injury science. *Journal of Consulting and Clinical Psychology, 76*, 1–8. A special issue of this journal devoted to NSSI and suicidal behavior that contains representative original research on this topic.
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REFERENCES

- Glassman, L.H., Weierich, M.R., Hooley, J.M., Deliberto, T.L., & Nock, M.K. (2007). Child maltreatment, non-suicidal self-injury, and the mediating role of self-criticism. *Behaviour Research and Therapy, 45*, 2483–2490.
- Hagen, E.H., Watson, P., & Hammerstein, P. (2008). Gestures of despair and hope: A view on deliberate self-harm from economics and evolutionary biology. *Biological Theory, 3*, 123–138.
- Haines, J., Williams, C.L., Brain, K.L., & Wilson, G.V. (1995). The psychophysiology of self-mutilation. *Journal of Abnormal Psychology, 104*, 471–489.
- Hauser, M.D. (1996). *The evolution of communication*. Cambridge, MA: MIT Press.
- Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*, 1152–1168.
- Hilt, L.M., Nock, M.K., Lloyd-Richardson, E., & Prinstein, M.J. (2008). Longitudinal study of non-suicidal self-injury among young adolescents: Rates, correlates, and preliminary test of an interpersonal model. *Journal of Early Adolescence, 28*, 455–469.
- Iwata, B.A., Pace, G.M., Dorsey, M.F., Zarcone, J.R., Vollmer, T.R., Smith, R.G., et al. (1994). The functions of self-injurious behavior: An experimental-epidemiological analysis. *Journal of Applied Behavior Analysis, 27*, 215–240.
- Jacobson, C.M., & Gould, M. (2007). The epidemiology and phenomenology of non-suicidal self-injurious behavior among adolescents: A critical review of the literature. *Archives of Suicide Research, 11*, 129–147.
- Kaufman, J., & Charney, D. (2001). Effects of early stress on brain structure and function: Implications for understanding the relationship between child maltreatment and depression. *Development and Psychopathology, 13*, 451–471.
- Najmi, S., Wegner, D.M., & Nock, M.K. (2007). Thought suppression and self-injurious thoughts and behaviors. *Behaviour Research and Therapy, 45*, 1957–1965.
- Nock, M.K. (2008). Actions speak louder than words: An elaborated theoretical model of the social functions of self-injury and other harmful behaviors. *Applied and Preventive Psychology, 12*, 159–168.
- Nock, M.K., & Banaji, M.R. (2007a). Assessment of self-injurious thoughts using a behavioral test. *American Journal of Psychiatry, 164*, 820–823.
- Nock, M.K., & Banaji, M.R. (2007b). Prediction of suicide ideation and attempts among adolescents using a brief performance-based test. *Journal of Consulting and Clinical Psychology, 75*, 707–715.
- Nock, M.K., Joiner, T.E. Jr., Gordon, K.H., Lloyd-Richardson, E., & Prinstein, M.J. (2006). Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. *Psychiatry Research, 144*, 65–72.
- Nock, M.K., & Mendes, W.B. (2008). Physiological arousal, distress tolerance, and social problem-solving deficits among adolescent

- self-injurers. *Journal of Consulting and Clinical Psychology*, 76, 28–38.
- Nock, M.K., & Prinstein, M.J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology*, 72, 885–890.
- Nock, M.K., & Prinstein, M.J. (2005). Clinical features and behavioral functions of adolescent self-mutilation. *Journal of Abnormal Psychology*, 114, 140–146.
- Nock, M.K., Wedig, M.M., Holmberg, E.B., & Hooley, J.M. (2008). Emotion reactivity scale: Psychometric evaluation and relation to self-injurious thoughts and behaviors. *Behavior Therapy*, 39, 107–116.
- Wedig, M.M., & Nock, M.K. (2007). Parental expressed emotion and adolescent self-injury. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46, 1171–1178.
- Weierich, M.R., & Nock, M.K. (2008). Posttraumatic stress symptoms mediate the relation between childhood sexual abuse and non-suicidal self-injury. *Journal of Consulting and Clinical Psychology*, 76, 39–44.
- Whitlock, J., Purington, A., & Gershkovich, M. (2009). Media and the internet and non-suicidal self-injury In M.K. Nock (Ed.), *Understanding nonsuicidal self-injury: Origins, assessment, and treatment* (pp. 139–155). Washington, DC: American Psychological Association.