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What Is the Role of Dissociation and Emptiness in the Occurrence of Nonsuicidal Self-Injury?

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Many episodes of nonsuicidal self-injury (NSSI) are reportedly performed for the purpose of feeling generation; however, little is known about the pathways through which such behavior emerges. To address this knowledge gap, we examined the relations among childhood abuse, self-reported feelings of dissociation and emptiness, and the occurrence of NSSI. Eighty-six adolescents were included in this study and completed self-report measures of each construct. The results support a model in which dissociation and emptiness separately mediate the relation between childhood emotional abuse and the occurrence of NSSI. Moreover, as hypothesized, emotional abuse, dissociation, and emptiness all are significantly associated with the intrapersonal positive reinforcement function of NSSI (i.e., NSSI for feeling generation) but are not associated with the other 3 previously identified functions of NSSI. These results provide preliminary information about how NSSI may arise in some cases and suggest that treatment components aimed at teaching noninjurious strategies for generating positive feelings/affect may decrease the occurrence of NSSI.

Keywords: self-harm; suicide; abuse; maltreatment; function

Recent research on the form and function of nonsuicidal self-injury (NSSI) has advanced the understanding of why people purposely hurt themselves with no intention of dying (Favazza, 2011; Nock, 2009a). Most people who engage in NSSI do so in order to regulate their cognitive/affective experience or their social relationships (Favazza, 2011; Nock, 2009b, 2010). More specifically, NSSI serves to regulate emotions either by decreasing negative emotions (i.e., intrapersonal negative reinforcement) or by feeling generation (i.e., intrapersonal positive reinforcement) and helps individuals to communicate with others either to get attention (i.e., interpersonal positive reinforcement) or to remove themselves from a situation that they perceive as adverse (i.e., interpersonal negative reinforcement; Brown, Comtois, & Linehan, 2002; Nock & Prinstein, 2004, 2005). Research must now move beyond looking at the functional roles of NSSI to investigate: (a) what types of experiences lead some people to engage in NSSI for affective and social regulation, and (b) what factors might help to explain the pathway from such experiences to the occurrence of self-injury.

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To date, most studies have focused on factors that lead to increased aversive arousal and the use of NSSI as a means of decreasing such arousal (i.e., intrapersonal negative reinforcement). For instance, one recent study showed that adolescents who engage in NSSI experience greater physiological arousal in response to stressful events and show a poorer ability to tolerate such distress, suggesting that such factors may play a role in the use of NSSI as a means of escaping aversive arousal (Nock & Mendes, 2008). In contrast, very few studies have examined factors that might lead to the *low* arousal that also can precipitate engagement in NSSI as a means of feeling generation (i.e., intrapersonal positive reinforcement). This is an important area for investigation given that approximately 25% of NSSI episodes are performed for the purpose of feeling generation (Nock, Prinstein, & Sterba, 2009).

What factors may set the stage for engaging in NSSI for the purpose of feeling generation? Clinical anecdotes suggest that many people who engage in NSSI report doing so in response to states described as "dissociation" or "emptiness" (e.g., Conterio & Lader, 1998; Favazza, 2011; Strong, 1998). Such states (and terms) are not well or consistently described in the research literature. The *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) defines dissociation as "a disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment" (p. 822). Emptiness is less studied and less defined in the research literature. The construct of emptiness has been conceptualized as a state of low positive affect and encompasses descriptions of lacking feeling/sensation or lacking purpose or substance (Conterio & Lader, 1998; Favazza, 2011; Klonsky, 2008). Although not consistently defined, there clearly is some overlap between the constructs of dissociation and emptiness in that both describe states in which there is an absence of positive affect or of any feeling/sensation at all. However, there also appear to be some differences, such as that dissociation is sometimes described as involving amnesic states, whereas emptiness does not. It is probably most accurate to think of these as related, but distinct, constructs—both of which may set the stage for engaging in NSSI as a means of increasing the experience of feeling/sensation. Indeed, many prior studies have shown that dissociation is associated with the occurrence of NSSI (Brodsky, Cloitre, & Dulit, 1995; Gratz, Conrad, & Roemer, 2002; Zlotnick et al., 1996; Zweig-Frank, Paris, & Guzder, 1994). Fewer studies have examined the association between emptiness and NSSI, although it has been linked with the experience of suicidal ideation and attempt (Klonsky, 2008).

If dissociation and emptiness are associated with the occurrence of NSSI, the next question to be addressed is how these states arise. Multiple studies have shown that both dissociation and emptiness are significantly associated with a history of childhood abuse (Brodsky et al., 1995; Kisiel & Lyons, 2001; Oldham, Skodol, Gallaher, & Kroll, 1996; Teicher, Samson, Polcari, & McGreenery, 2006; Yates, Carlson, & Egeland, 2008). Most of these studies suggest that such states emerge as a result of abuse. For instance, one may use dissociation to cope with episodes of abuse; alternatively, an abusive environment may preclude one from opportunities to learn how to effectively understand, integrate, and use emotional information (e.g., Yates et al., 2008). However, the retrospective nature of these studies does not allow for tests of the causal or even temporal nature of these associations.

Putting this all together, it is possible that the well-known association between childhood abuse and adolescent/adult NSSI is explained, at least in part, by the experiences of dissociation and emptiness. That is, people who have experienced significant abuse during childhood appear to be at an increased risk for experiencing dissociation and emptiness during adolescence and adulthood—states that consequently are believed to increase the likelihood of engaging in NSSI, especially in cases where NSSI is performed for feeling generation (i.e., to end the experience of dissociation or emptiness). Several recent studies provide preliminary support for such a model. A recent meta-analysis (Klonsky & Moyer, 2008) revealed that the significant association

between childhood sexual abuse and the development of NSSI (aggregate phi coefficient across 45 samples = 0.23) decreases when psychological risk factors such as dissociation and hopelessness are taken into account, pointing toward potential mediators of this association. Other recent studies have gone a bit further to directly test potential mediators of the association between childhood abuse and NSSI. For instance, Weierich and Nock (2008) reported that symptoms of posttraumatic stress disorder (PTSD), including avoidance or numbing, statistically mediated the association between childhood sexual abuse and NSSI. Similarly, Yates et al. (2008) reported that self-reported dissociation mediated the association between childhood sexual abuse and recurrent NSSI.

Overall, these findings suggest that NSSI may serve an affective regulatory function for those experiencing dissociation or emptiness in the wake of childhood abuse. This study was designed to replicate and extend this earlier work by directly testing whether dissociation and emptiness mediate the association between childhood abuse and the occurrence of adolescent/adult NSSI. This study extends prior work by: (a) testing several different types of childhood abuse, (b) including measures of both dissociation and emptiness (and examining the relation between them), (c) testing both the presence and frequency of NSSI, and (d) focusing on an adolescent sample given the high rates of NSSI during this developmental period.

Method

Participants

Ninety-four adolescents aged 12–19 years were recruited for participation in this study through advertisements for a comprehensive laboratory-based study of self-injurious behavior in local psychiatric clinics, newspapers, community bulletin boards, and on the Internet. Of the 94 participants recruited, 86 (56 with a history of NSSI, 30 controls matched on age, sex, and ethnicity) completed the self-report assessments administered in this study and therefore were included in our analyses (see Table 1 for characteristics). The participants of this study have been included in several prior studies of NSSI (e.g., Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; Nock, Holmberg, Photos, & Michel, 2007; Weierich & Nock, 2008); however, the current examination tests unique hypotheses and analyses.

Measures

Nonsuicidal Self-Injury. Presence, frequency, and functions of NSSI were assessed using the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007), a clinician-administered interview that assesses suicidal behaviors and NSSI. Prior studies have supported the reliability and validity of the SITBI (e.g., Nock et al., 2007). Our dependent variables in this study were the presence and frequency of NSSI as reported on the SITBI.

Childhood Abuse. Each participant completed the Child Trauma Questionnaire (CTQ; Bernstein, Ahluvalia, Pogge, & Handelsman, 1997). This measure includes 28 items regarding five different forms of potentially traumatic experiences during childhood, including emotional abuse, sexual abuse, physical abuse, physical neglect, and emotional neglect. Participants were asked to rate each item on a scale of "never true" to "very often true." This measure has been tested and supported for reliability and validity (Bernstein et al., 1997). Our independent variables in this study were participants' average scores on each of the emotional, sexual, and physical abuse subscales. Each subscale showed good internal consistency reliability in this sample (Cronbach's α = .88, .93, and .88, respectively).

Dissociation. Dissociation was assessed using the Adolescent Dissociative Experiences Scale (A-DES; Armstrong, Putnam, Carlson, Libero, & Smith, 1997). The A-DES is designed to detect

TABLE 1. Descriptive Statistics for the Study Sample

Variable	Participants (N = 86)	Range
Mean (*SD*) Age in Years	17.0 (1.9)	12–19
Sex (% Female)	77.9	
Race/Ethnicity (%)		
European American	73.3	
African American	3.5	
Hispanic	7.0	
Asian	4.7	
Other	11.6	
Lifetime NSSI		
Presence (%)	65.1	
Frequency (*SD*)	508.8 (3,502.4)	0–32,229
Childhood Abuse (*SD*)		
Emotional	2.0 (1.0)	1.0–5.0
Sexual	1.3 (0.7)	1.0–5.0
Physical	1.3 (0.7)	1.0–5.0
Dissociation (*SD*)	2.4 (1.7)	0.1–7.2
Emptiness (%)	48.2	
Functions of NSSI (*SD*)		
Intrapersonal Negative Reinforcement	3.1 (1.1)	0–4
Intrapersonal Positive Reinforcement	2.0 (1.5)	0–4
Interpersonal Negative Reinforcement	0.4 (0.9)	0–4
Interpersonal Positive Reinforcement	0.9 (1.2)	0–4

Note. *SD* = standard deviation; NSSI = nonsuicidal self-injury.

dissociative behavior among adolescents. This self-report measure contains 30 items to which participants respond on a scale of 0 (*never*) to 10 (*always*). The A-DES showed good internal consistency reliability in this sample (Cronbach's α = .95).

Emptiness. Subjective feelings of emptiness were assessed using the Structured Clinical Interview for *DSM-IV-II* (SCID II)—Personality Questionnaire (First, Gibbon, Spitzer, Williams, & Benjamin, 1997). The SCID II is a semistructured interview for making Axis II personality disorder diagnoses. For the purposes of this study, we examined participants' "yes/no" responses to the question: "Do you often feel empty inside?"

Data Analysis

Prior to performing analyses to test our study hypotheses, all variables were checked for missing data, outliers, and normality. Three participants did not provide data on the emptiness measure and so were excluded from analyses involving that variable. The frequency of NSSI variable showed extreme positive skewness; therefore, the highest 10% of values were Winsorized (i.e., reassigned the next highest unit of each most extreme nonoutlier) and the variable was then square root transformed to more closely approximate a normal distribution. Scores on the A-DES also were square root transformed to more closely approximate normality. We report raw scores of these variables in Table 1 but use the transformed values in subsequent analyses.

To test our study hypotheses, we first examined the zero-order correlations among childhood abuse, dissociation, emptiness, and the lifetime presence and frequency of NSSI. Next, in instances where dissociation or emptiness correlated with the other variables, we tested mediation models following the methods outlined in prior research (Baron & Kenny, 1986; Kazdin & Nock, 2003). In such tests, the independent variable must be significantly correlated with both the mediator and the dependent variable, and the potential mediator must be correlated with the dependent variable. Once the first three conditions were met, we tested whether the relation between the independent and dependent variables decreased significantly when the potential mediator was included in the model, whereas the relation between the mediator and dependent variable remained significant using multiple linear regression analyses in the case of continuous dependent variables and partial correlations in the case of dichotomous dependent variables. In separate analyses, we tested the associations between the independent variable, the proposed mediators, and the function of NSSI.

Results

Relations Among Childhood Abuse, Dissociation, Emptiness, and Nonsuicidal Self-Injury

Analyses revealed that childhood emotional abuse is significantly associated with both dissociation and emptiness (*r*s = .39 and .42, respectively), as well as with the frequency of NSSI (r = .30; see Table 2). Childhood sexual abuse is significantly, although slightly less strongly, associated with emptiness (r = .25) and the presence of NSSI (r = .22). Childhood physical abuse is significantly associated with dissociation (r = .28) but not with emptiness or the presence or frequency of NSSI. Dissociation and emptiness are significantly correlated with one another (r = .56); however, they are not completely overlapping (27% shared variance), suggesting that they are related but distinct constructs. Finally, both dissociation (*r*s = .36–.44) and emptiness (*r*s = .56–.59) are significantly associated with the presence and frequency of NSSI.

Mediating Roles of Dissociation and Emptiness

We followed the significant correlations among types of childhood abuse (emotional and sexual abuse), dissociation or emptiness, and the presence or frequency of NSSI with a series of mediation analyses. The first mediation model, examining the associations among childhood emotional abuse, dissociation, and the frequency of NSSI, reveals that dissociation acts as a statistical mediator of the association between childhood emotional abuse and NSSI such that these two constructs are no longer significantly associated when dissociation is in the model (see Figure 1). The second mediation analysis, examining the associations among childhood emotional abuse, emptiness, and the frequency of NSSI, reveals that emptiness also mediates the association between childhood emotional abuse and NSSI, such that these two constructs are no longer significantly associated when emptiness is in the model (see Figure 2). The third and final mediation analysis examining the associations among childhood sexual abuse, emptiness, and the presence of NSSI, reveals that although the association between childhood sexual abuse and the presence of NSSI decreases when emptiness is included in the model, the decrease in the effect of childhood sexual abuse does not quite reach statistical significance (p = .075; see Figure 3).

Specificity of the Associations Among Abuse, Dissociation or Emptiness, and Nonsuicidal Self-Injury Function

In a final set of analyses, we examined whether the associations observed among childhood abuse, dissociation or emptiness, and NSSI are specific to NSSI performed for intrapersonal positive

TABLE 2. Correlations Among Childhood Abuse, Dissociation, Emptiness, and NSSI

Variable	Childhood Emotional Abuse	Childhood Sexual Abuse	Childhood Physical Abuse	Dissociation	Emptiness	Lifetime Presence of NSSI	Lifetime Frequency of NSSI
Childhood Emotional Abuse	—						
Childhood Sexual Abuse	.46***	—					
Childhood Physical Abuse	.57***	.34**	—				
Dissociation	.39***	.09	.28**	—			
Emptiness	.42***	.25*	.20	.56***	—		
Lifetime Presence of NSSI	.21	.22*	.14	.36**	.56***	—	
Lifetime Frequency of NSSI	.30**	.20	.04	.44***	.59***	.66***	—

Note. NSSI = nonsuicidal self-injury.
*$p < .05$. **$p < .01$. ***$p < .001$.

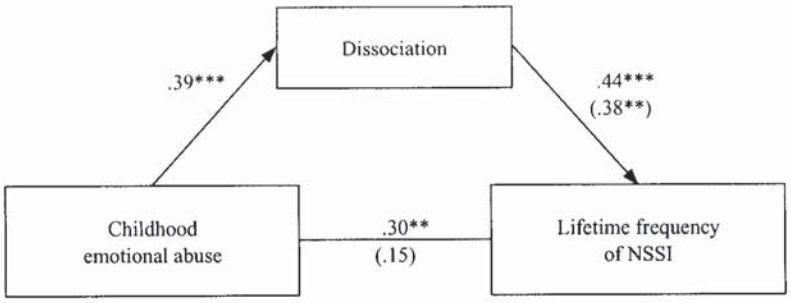

FIGURE 1. Dissociation mediates the relation between childhood emotional abuse and the frequency of nonsuicidal self-injury (NSSI).
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.
Sobel, $z = 2.65$, $p = .008$.

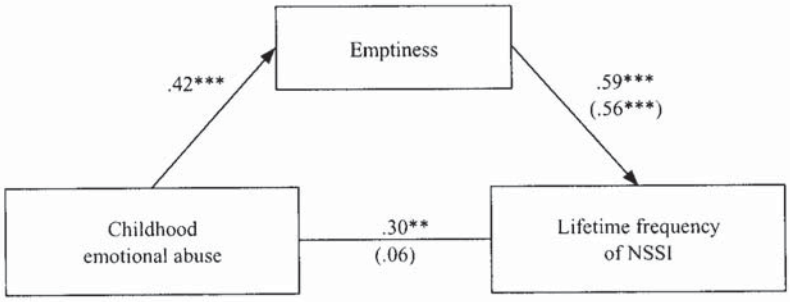

FIGURE 2. Emptiness mediates the relation between childhood emotional abuse and the frequency of nonsuicidal self-injury (NSSI).
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.
Sobel, $z = 2.98$, $p = .003$.

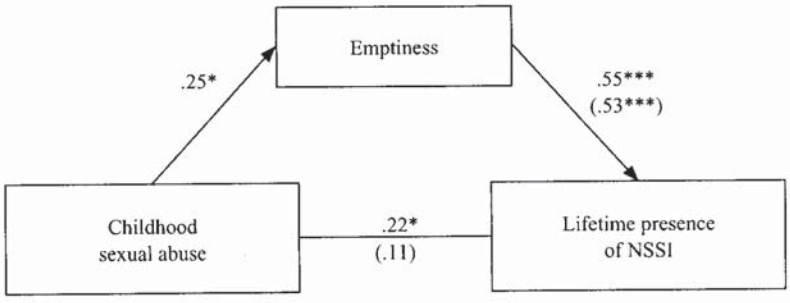

FIGURE 3. Emptiness does not mediate the relation between childhood sexual abuse and the presence of nonsuicidal self-injury (NSSI).
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.
Sobel, $z = 1.78$, $p = .075$.

TABLE 3. CORRELATIONS BETWEEN THE FUNCTIONS OF NSSI, CHILDHOOD ABUSE, DISSOCIATION, AND EMPTINESS AMONG SELF-INJURERS ($n = 56$)

Variable	Childhood Emotional Abuse	Childhood Sexual Abuse	Dissociation	Emptiness
Intrapersonal Negative Reinforcement	.02	−.04	.10	−.07
Intrapersonal Positive Reinforcement	.29*	.31*	.28*	.33*
Interpersonal Negative Reinforcement	.13	−.08	.14	−.07
Interpersonal Positive Reinforcement	−.04	−.08	−.18	−.20

*$p < .05$. **$p < .01$. ***$p < .001$.

reinforcement—as suggested by our guiding theoretical model. As shown in Table 3 and consistent with study hypotheses, both forms of abuse, dissociation, and emptiness are specifically correlated with the intrapersonal positive reinforcement function of NSSI but not with the other three functions.

DISCUSSION

Previous research has illuminated the functions of NSSI and has shown that children who experience abuse are at an elevated risk for engaging in NSSI later in life. However, the pathways through which abuse might lead to NSSI are unclear. The results of this study suggest that the experiences of dissociation and emptiness may help to explain how it is that childhood abuse is related to NSSI. More specifically, the experience of emotional or sexual abuse during childhood is associated with increased self-reports of dissociation and emptiness, which in turn are associated with an increased presence and frequency of NSSI. Results also reveal that dissociation and emptiness are especially predictive of NSSI performed as a means of feeling generation but not of NSSI performed to decrease negative thoughts/feelings or to communicate with others. Although dissociation and emptiness are significantly associated with one another, they are not completely overlapping constructs. Furthermore, our results show that these two distinct constructs both mediate the associations between childhood emotional abuse and the frequency of NSSI. Several aspects of these findings warrant additional comment.

The primary contribution of this study is that it sheds light on the pathways through which people may engage in NSSI as a means of feeling generation. Most of the recent research on NSSI has focused on instances in which NSSI functions to decrease aversive arousal (Chapman, Gratz, & Brown, 2006; Klonsky, 2009; Suyemoto, 1998), whereas very little work has examined the extent to which NSSI is used to generate feelings. This is problematic given that ecological momentary assessment studies indicate that approximately one quarter of NSSI episodes are performed for feeling generation (Nock et al., 2009). This study illuminates two pathways through which childhood abuse may lead to NSSI. It has been known for some time that childhood abuse is associated with NSSI, but the reason for this association is not well-understood. The results from this study support a model in which early abuse gives rise to feelings of dissociation and/or emptiness, which a person then attempts to resolve by engaging in NSSI. The findings of this study add to those from earlier studies suggesting that dissociation mediates the association between childhood

abuse and later psychiatric symptoms in general (Kisiel & Lyons, 2001) and NSSI in particular (Yates et al., 2008). This study also extends this prior work by examining multiple independent variables, mediators, and dependent variables. In the following text, we discuss the findings at each stage of the model in more detail and highlight areas of improvement for future work.

We found that of the various forms of childhood abuse, emotional and sexual abuse were the most strongly associated with dissociation and emptiness as well as with the presence and frequency of NSSI. These findings are consistent with prior research showing that emotional and sexual abuse (relative to physical abuse and neglect) are especially strong statistical predictors of such outcomes (e.g., Glassman et al., 2007; Oldham et al., 1996; Teicher et al., 2006; Weierich & Nock, 2008; Yates et al., 2008). However, other studies have reported that physical abuse also significantly predicts engagement in NSSI (e.g., Evren & Evren, 2005; Zoroglu et al., 2003). The discrepancy regarding the relative importance of physical abuse may be because of differences across studies regarding the types of samples included, the ways in which abuse and NSSI (e.g., presence vs. frequency) are measured, and statistical power (e.g., the correlation between physical abuse and presence of NSSI in this study was $r = .14$, which would be statistically significant if we used a much larger sample). An important task for future research is clarifying not only which types of abuse and neglect may play a role in the development of NSSI but also providing a better understanding of how, why, and under what circumstances childhood maltreatment leads to such adverse outcomes.

We also found that dissociation and emptiness are related—but distinct—constructs, and that both mediate the associations between childhood abuse and the frequency of NSSI. Perhaps the greatest need for future research in this area is to more clearly and consistently define each of these constructs and to develop more objective methods of measuring them. For instance, if dissociation truly involves an inability to integrate experiences and internal states into consciousness, then how could someone be expected to report on such an experience? Similarly, it is likely that questions about the experience of "emptiness" are interpreted very differently across respondents. Measures of emptiness must be developed and should provide clear descriptions about what we (as researchers and clinicians) mean by "emptiness."

Overall, the results showed that childhood abuse, dissociation, and emptiness were all associated with the occurrence of NSSI. Interestingly, however, results differed somewhat depending on whether we examined presence or frequency of NSSI and on whether we examined NSSI for intrapersonal positive reinforcement or for other functions. Differences in effects between analyses using presence versus frequency of NSSI are explained in part because of the obvious fact that one variable is dichotomous and one is continuous; however, it is possible that some factors are important in predicting whether people engage in NSSI, whereas others predict whether someone continues to engage in NSSI. In contrast, differences in results based on the function of self-injury cannot be explained based on the type of variables used (because they all are scored on the same scale) and instead reflect the varying processes that lead to this behavior. Research on NSSI is relatively young and there are not yet standard conventions regarding whether any given study examines presence versus frequency versus function of NSSI. However, given that such distinctions can yield different results, it will be important for future studies in this area to use increasing clarity and consistency regarding how NSSI is defined, which variables are used, and how effects differ based on these distinctions.

Several limitations to this study must be considered in interpreting these results. First, the data gathered in this study are cross-sectional; therefore, the directionality of the relations found among constructs remains unknown. Although we posited that childhood abuse leads to dissociation and emptiness, which in turn leads to NSSI, it is possible that engagement in NSSI produces feelings of dissociation and emptiness and that the feelings of depression that are associated with all of these constructs lead people to overreport a history of childhood abuse. Furthermore, the

correlational nature of this design precludes us from drawing any causal inferences regarding the relations among constructs.

Second, these data were obtained using retrospective self-report measures, which can introduce a well-known range of biases caused by factors such as social desirability, mood-dependent recall, or forgetting. A third and related limitation is that some of our measures used single items and in the case of emptiness relied on respondents' interpretation of what "emptiness" means to them. As mentioned earlier, it will be important in future studies to use clearer and more comprehensive assessments of these constructs. Fourth, we assessed a somewhat limited range of constructs in this study. For instance, we included only three types of childhood abuse (e.g., we excluded neglect and did not include characteristics of abuse such as frequency and type of perpetrator), two potential mediators (e.g., but not related constructs like loneliness and hopelessness), and focused only on NSSI (e.g., but not other forms of self-harm, such as suicidal behavior). Future studies should expand on this work to include other constructs in each part of the model. Fifth, we used a relatively small sample of adolescents who were willing to participate in a laboratory-based study. Therefore, these results may not generalize to the larger population of adolescents who engage in NSSI.

These limitations notwithstanding the findings from this study bear important implications for further NSSI research, as mentioned earlier, as well as for clinical work with those engaging in NSSI. First, given the significant associations between childhood abuse and NSSI, these findings highlight the importance of assessing for a history of childhood abuse in general and for a history of emotional and sexual abuse in particular when screening adolescents and adults for risk of NSSI. Second, and perhaps most importantly, these results underscore the significant role of dissociation and emptiness in the presence and frequency of NSSI. These results are correlational and so it is not known if these constructs lead to NSSI; however, an exciting direction for treatment research is to test whether teaching methods for decreasing dissociation and emptiness will decrease engagement in NSSI. This can include testing strategies designed to increase the experience of sensations that can "ground" a person (e.g., ice-cubes on the skin) or those designed to increase positive affect (e.g., exercise). Tests of such interventions do not require large-scale clinical trials but instead can consist of the use of single-case experiments to examine the effectiveness of such strategies (e.g., Barlow, Nock, & Hersen, 2009; Rizvi & Nock, 2008; Wallenstein & Nock, 2007). If such strategies are effective at decreasing experiences of dissociation and emptiness and in turn decreasing the occurrence of NSSI, this would not only provide stronger evidence for the causal role of such constructs in the occurrence of NSSI but also would provide valuable additions to the current treatment armamentarium used to help those who engage in this dangerous behavior.

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