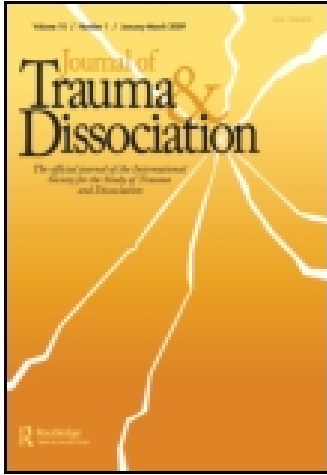


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### The Roles of Emotion Dysregulation and Dissociation in the Association Between Sexual Abuse and Self-Injury Among Juvenile Justice-Involved Youth

Shannon D. Chaplo MS<sup>a</sup>, Patricia K. Kerig PhD<sup>a</sup>, Diana C. Bennett MS<sup>a</sup> & Crosby A. Modrowski BA<sup>a</sup>

<sup>a</sup> Department of Psychology, University of Utah, Salt Lake City, Utah, USA

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## **The Roles of Emotion Dysregulation and Dissociation in the Association Between Sexual Abuse and Self-Injury Among Juvenile Justice–Involved Youth**

SHANNON D. CHAPLO, MS, PATRICIA K. KERIG, PhD,  
DIANA C. BENNETT, MS, and CROSBY A. MODROWSKI, BA  
*Department of Psychology, University of Utah, Salt Lake City, Utah, USA*

*To date, scholars have established associations among nonsuicidal self-injury and sexual abuse, posttraumatic stress symptoms, and dissociation. However, leading theoretical models of the mechanisms underlying the association between trauma and negative outcomes suggest a more parsimonious explanation in that deficits in emotion regulation may underlie these various risk factors for self-injury. This study examined whether sexual abuse was differentially associated with nonsuicidal self-injury over and above other forms of traumatic experiences and whether the association between sexual abuse and self-injury was statistically mediated by emotion dysregulation and dissociation. Participants included 525 youth (392 boys, 133 girls) recruited from the U.S. juvenile justice system who completed measures of self-reported trauma exposure, posttraumatic stress symptoms, dissociation, and emotion dysregulation. Results of a hierarchical regression demonstrated that sexual abuse predicted posttraumatic stress symptoms and self-injury over and above other forms of traumatic experiences. Results of bootstrapped mediation analyses indicated that emotion dysregulation and dissociation in combination were implicated in self-injury among youth. The results suggest that youth in the juvenile justice system who experience sexual abuse may be at risk for higher rates of posttraumatic stress symptoms and that self-injury*

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Address correspondence to Shannon D. Chaplo, MS, Department of Psychology, University of Utah, 380 S. 1530 E. BEHS 512, Salt Lake City, UT 84112. E-mail: [s.chaplo@utah.edu](mailto:s.chaplo@utah.edu)

*may be particularly salient for youth who experience sexual abuse. Furthermore, the results shed light on the role that dissociation and emotion dysregulation play in the relation between sexual abuse and self-injury, suggesting that a larger framework of self-regulation may have both empirical and clinical utility in helping to understand the underlying processes at play in these associations.*

**KEYWORDS** *delinquency, self-injury, sexual abuse, dissociation, emotion dysregulation*

Juvenile justice (JJ)-involved youth make up a previously understudied group that is receiving increasing attention in the study of trauma and its psychological impact (e.g., Ford, Chapman, Mack, & Pearson, 2006; Kerig, 2013). Studies consistently show that the majority of JJ-involved youth have experienced childhood trauma (e.g., Abram et al., 2004; see Kerig & Becker, 2012, for a review) and that rates of posttraumatic stress symptoms (PTSS) are significantly higher among detained youth than community samples (e.g., Wood, Foy, Goguen, Pynoos, & James, 2002). Thus, JJ-involved youth are an important population to include in investigations of trauma. Scholars have recently turned to the issue of specificity in order to better understand how particular forms of trauma exposure might be associated differentially with youth outcomes that are linked with delinquency (see Kerig & Becker, 2014).

One specific form of trauma that is particularly prevalent among JJ-involved youth is sexual abuse (SA). This is especially true for JJ-involved girls, who are up to 10 times more likely than their male peers to report unwanted sexual experiences (Ford, Hartman, Hawke, & Chapman, 2008; Kerig & Becker, 2012; Wood et al., 2002). Furthermore, childhood SA has been implicated specifically as a risk factor for adolescent delinquency, especially for girls (e.g., Feiring, Miller-Johnson, & Cleland, 2007; Herrera & McCloskey, 2003; Trickett, Noll, & Putnam, 2011), as well as for a host of negative outcomes above and beyond those associated with other forms of trauma exposure (see Trickett, Negri, Ji, & Peckins, 2011; Walsh, Galea, & Koenen, 2012). Research evidences that SA imparts differential risk for the development of PTSS in general (Perrin et al., 2014) and dissociation in particular (Bernier, Hébert, & Collin-Vézina, 2013; Plattner et al., 2003; Trickett, Noll, & Putnam, 2011).

Despite this research, researchers' ability to draw firm conclusions about the aftermath of SA has been hampered by a number of limitations. First, some of this research has focused primarily on female samples, and other studies have failed to compare the effects of SA to other forms of maltreatment (Kerig & Becker, 2014). Furthermore, there is a lack of consensus in regard to whether SA is unique (Noll, 2008) in its effects and whether these effects are gender specific. For example, as Noll (2008) pointed out,

some scholars argue that SA represents the extreme end of a continuum of childhood stressors but likely has the same negative outcomes as other forms of maltreatment (Maniglio, 2009; Rind, Tromovitch, & Bauserman, 1998). However, others have found that the experience of SA potentiates or exacerbates the effects of other forms of trauma for youth, particularly when outcomes include delinquent behaviors (Grasso et al., 2013; Pynoos, 2013). Therefore, additional research is needed to investigate whether SA has differential effects on adolescent functioning in comparison to other forms of trauma and whether these associations are gender specific. To this end, the present study set out to investigate whether SA is differentially associated with negative outcomes in a sample of JJ-involved boys and girls.

A second important question about the specificity of the effects of SA concerns the outcomes with which SA is associated. In particular, although trauma generally is associated with nonsuicidal self-injury (NSSI), research to date has suggested that SA may be differentially predictive of NSSI (Nock & Kessler, 2006; Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003; Wherry, Baldwin, Junco, & Floyd, 2013), which is found at high rates among traumatized JJ-involved youth (Casiano, Katz, Globerman, & Sareen, 2013; Dixon-Gordon, Harrison, & Roesch, 2012; McReynolds & Wasserman, 2011). In addition, studies have examined associations between SA and other symptoms that are associated with increased risk for NSSI (Fergusson, McLeod, & Horwood, 2013; Klonsky & Moyer, 2008; McReynolds & Wasserman, 2011), such as PTSS. For example, in a sample of adolescents, Weierich and Nock (2008) found that PTSS mediated the association between childhood SA and NSSI.

What trauma-related processes might explain the association between SA and NSSI? Recent research has focused on the specific posttraumatic symptom of dissociation, which is prevalent among traumatized youth in the JJ system (Carrion & Steiner, 2000; Plattner et al., 2003). Studies consistently show that in comparison to other types of trauma, SA is differentially associated with dissociative symptoms among youth and adults (Bernier et al., 2013; Plattner et al., 2003; Trickett, Noll, & Putnam, 2011). Furthermore, rates of dissociation are high among individuals who self-injure, and dissociation has been found to mediate the relation between childhood trauma and NSSI (Shenk, Noll, & Cassarly, 2010; Swannell et al., 2012; Weierich & Nock, 2008). For example, in a study of women who had experienced childhood SA, Low, Jones, MacLeod, Power, and Duggan (2000) found that those who engaged in self-harming had the highest levels of dissociation and that the pathway between dissociation and NSSI was mediated by childhood SA but not by physical abuse or neglect.

In sum, the literature to date has established various associations among SA, PTSS, NSSI, and dissociation. However, leading theoretical models of the mechanisms underlying the association between trauma and negative outcomes suggest a more parsimonious explanation in that deficits in affect

regulation, or emotion dysregulation (ED), may be underlying these various risk factors for NSSI. For example, Ford (2013) proposed that trauma affects development through disruptions in self-regulation across the domains of cognitive, behavioral, and affective functioning. Similarly, Frewen and Lanius (2006) offered an ED explanation for dissociation in which dissociation is viewed as reflecting an extreme overregulation of affective arousal stemming from immobilization in the face of inescapable threat. By the same token, NSSI also has been posited to function as a maladaptive attempt at emotion regulation for those whose self-regulatory capacities have been disrupted by traumatic victimization (Howe-Martin, Murrell, & Guarnaccia, 2012; Klonsky, 2009; Lloyd-Richardson, Nock, & Prinstein, 2009).

Empirical support for this potential integrative role of ED has emerged in a number of studies. ED is a commonly identified outcome of childhood trauma (Burns, Jackson, & Harding, 2010; Shipman, Zeman, Penza, & Champion, 2000), including in traumatized JJ-involved youth (Bennett & Kerig, 2014), and is strongly implicated in theories of delinquency (Dvir, Ford, Hill, & Frazier, 2014). Moreover, ED is particularly associated with SA (Shipman et al., 2000) and is frequently identified as a risk factor for NSSI (Gratz & Chapman, 2007; Heath, Toste, Nedecheva, & Charlebois, 2008). In the only study to date we are aware of that has empirically tested a mediational model, Gratz and Roemer (2008) found that ED mediated the association between childhood maltreatment and NSSI in an all-female sample; however, this study did not differentiate between SA and other types of maltreatment. Thus, taken together, research and theory suggest that ED may underlie the associations among these variables. However, given that prior research has generally only examined these associations piecemeal, or in gender-homogenous samples, we sought to examine ED and dissociation simultaneously as potential mediators of the relation between SA and NSSI among JJ-involved boys and girls.

To summarize, the aims of the present study were to answer two questions in a sample of traumatized youth in the JJ system. First, we investigated whether SA was differentially predictive of NSSI and its correlates, dissociation, and ED, and we tested whether these associations differed by gender. Second, we investigated whether ED explained the association between SA and NSSI over and above other purported mediators, such as dissociation.

## METHOD

### Participants and Procedure

Participants included 525 youth (133 girls, 392 boys) recruited from a detention center in the western United States. Youth ranged in age from 12 to 18 years ( $M = 16.11$ ,  $SD = 1.31$ ); 56.6% of the sample was White/Caucasian,

23.2% Latino/a, 5.5% biracial/multiracial, 4.6% Black/African American, 4.6% Pacific Islander/Native Hawaiian, 3.2% Native American/Alaskan, 1.2% other, and 1.1% Asian American.

All procedures were approved by the institutional review boards at the University of Utah and the Utah Department of Human Services. Youth whose legal guardians provided signed informed consent were invited to assent for participation. To eliminate any perceptions of coercion, the institutional review boards required that no financial incentives be offered for participation. Individual interviews were conducted by a research assistant in a private interview room within the detention center.

## Measures

*Trauma exposure and PTSS.* The University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index–Adolescent Version (Steinberg, Brymer, Decker, & Pynoos, 2004) is a well-validated measure used to assess lifetime exposure to traumatic events. The number of types of traumas endorsed is summed to generate a total trauma exposure score ranging from 0 to 18. A dichotomous variable for SA was calculated based on three questions regarding SA (e.g., “An adult or someone much older touched my private sexual body parts when I did not want them to”). Youth who said “yes” to one or more of the questions were categorized as having experienced SA. A measure of non-SA forms of trauma exposure (e.g., physical abuse, emotional abuse, witnessing of domestic violence, victim/witnessing of community violence, separation from parents, death of a loved one, medical trauma, natural disasters/accidents) was calculated by summing youth’s endorsement of those traumatic events. Youth also rated symptoms over the past 30 days on 32 items using a Likert scale ranging from 0 (*none of the time*) to 4 (*most of the time*), and these ratings were used to derive a total PTSS score.

*Dissociation.* The Adolescent Dissociative Experiences Scale (Armstrong, Putnam, Carlson, Libero, & Smith, 1997) is a well-validated 30-item self-report measure designed to assess four dimensions of dissociation: amnesia, absorption and imaginative involvement, depersonalization and derealization, and passive influence. Youth rate each item on an 11-point scale ranging from *never* (0) to *always* (10). The total score was used in present analyses ( $\alpha = .94$ ).

*ED.* The Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) is a well-validated 36-item self-report questionnaire designed to assess multiple dimensions of ED. Each item is rated on a 5-point Likert-type scale ranging from 1 (*almost never*) to 5 (*almost always*), with higher scores indicating greater dysregulation. A total summed score was used for analyses ( $\alpha = .92$ ).

*NSSI.* NSSI was assessed using a survey modified from the Lifetime-Suicide Attempt Self-Injury Count (Linehan & Comtois, 1996). NSSI was measured using youth's self-reported number of self-injurious events without suicidal intent over their lifetime. This survey was added late into the study procedure and was administered only to the last 136 consecutively enrolled participants. Examination of the characteristics of the sample indicated that there were no significant differences between the groups that did and did not complete the NSSI measure except that the youth with self-injury data were slightly younger than the rest of the sample ( $M = 15.93$ ,  $SD = 1.39$ , vs.  $M = 16.19$ ,  $SD = 1.26$ ;  $t = 2.10$ ,  $p = .04$ ).

## RESULTS

Table 1 presents descriptive statistics and intercorrelations among the study variables. A significantly greater proportion of girls (49.2%) endorsed experiencing past SA in comparison to boys (9.6%),  $\chi^2(1) = 94.44$ ,  $n = 514$ ,  $p < .00$ , and girls also reported higher rates than boys of overall trauma exposure, PTSS, NSSI, and ED. Girls and boys did not differ on self-reported dissociation. PTSS were correlated with NSSI for girls only, whereas dissociation and ED were correlated for all youth. For all youth, higher levels of dissociation were associated with more reported episodes of NSSI. ED was correlated with NSSI for boys only, although the relation was also in the positive direction for girls.

**TABLE 1** Means, Standard Deviations, and Intercorrelations Separately for Girls and Boys

Variable	1	2	3	4	5	6
1. SA	—	.47**	.38**	.48**	.19**	.18*
2. Non-SA	.15**	—	.63**	.54**	.42**	.39**
3. PTSS	.20**	.42**	—	.52**	.64**	.55**
4. NSSI	.13	.31**	.18	—	.43*	.20
5. DES	.19**	.30**	.64**	.28**	—	.74**
6. ED	.14**	.25**	.56**	.25*	.54**	—
<i>M</i> boys	0.10 <sup>†</sup>	6.93 <sup>†</sup>	23.21 <sup>†</sup>	0.64 <sup>†</sup>	1.96	80.79 <sup>†</sup>
<i>SD</i> boys	0.30	3.88	13.12	1.35	1.71	19.66
<i>M</i> girls	0.49 <sup>†</sup>	8.20 <sup>†</sup>	29.06 <sup>†</sup>	2.42 <sup>†</sup>	2.01	87.36 <sup>†</sup>
<i>SD</i> girls	0.50	4.15	15.15	2.74	1.66	21.56

*Notes:* Correlations for girls are displayed above the diagonal, and correlations for boys are displayed below the diagonal. SA = sexual abuse; non-SA = non-sexual abuse trauma; PTSS = posttraumatic stress symptoms; NSSI = nonsuicidal self-injury; DES = Dissociative Experiences Scale; ED = emotion dysregulation; EN = emotional numbing; SI = nonsuicidal self-injury.

\* $p < .05$

\*\* $p < .01$

<sup>†</sup>*T* tests ( $df = 512$  for SA, 518 for non-SA, 503 for DES, 505 for posttraumatic stress disorder, 522 for EN scales, 497 for ED, 134 for SD) indicate that means for boys and girls are significantly different from one another ( $p < .01$ ).



## SA as an Independent Predictor of Youth Symptoms

In order to investigate whether SA was an independent predictor of youth symptoms above and beyond other types of trauma exposure, we conducted a hierarchical regression analysis with SA and nonsexual trauma as the predictors of each outcome. By using this approach, we were able to test whether SA accounted for unique variance above and beyond other forms of trauma exposure. Ethnicity and age were entered in the first step, followed by gender, then nonsexual trauma exposure, followed by SA, and then the interaction of SA and gender. Examining the interaction allowed us to examine whether the effects of SA held for both boys and girls. Separate models were run for the outcome variables of PTSS, dissociation, ED, and NSSI. See Table 2.

Results indicated that SA predicted total PTSS above and beyond other forms of trauma ( $B = 5.72$ ,  $t = 3.66$ ,  $p < .001$ ). There also was a main effect of SA beyond other forms of trauma on dissociation ( $B = 0.46$ ,  $t = 2.19$ ,  $p = .03$ ). In contrast, there was no main effect of SA on ED ( $p > .05$ ). Lastly, SA was a significant predictor of NSSI above and beyond other forms of trauma ( $B = 1.09$ ,  $t = 2.70$ ,  $p = .008$ ). A significant interaction between gender and SA on NSSI ( $B = -2.075$ ,  $t = 2.67$ ,  $p = .01$ ) indicated that girls who endorsed SA had the highest rates of NSSI. There were no significant interactions between SA and gender for any of the other study variables.

## ED and Dissociation as Mediators of the Relation Between SA and NSSI

In order to investigate dissociation and ED as statistical mediators of the link between SA and NSSI, we performed a separate regression in which

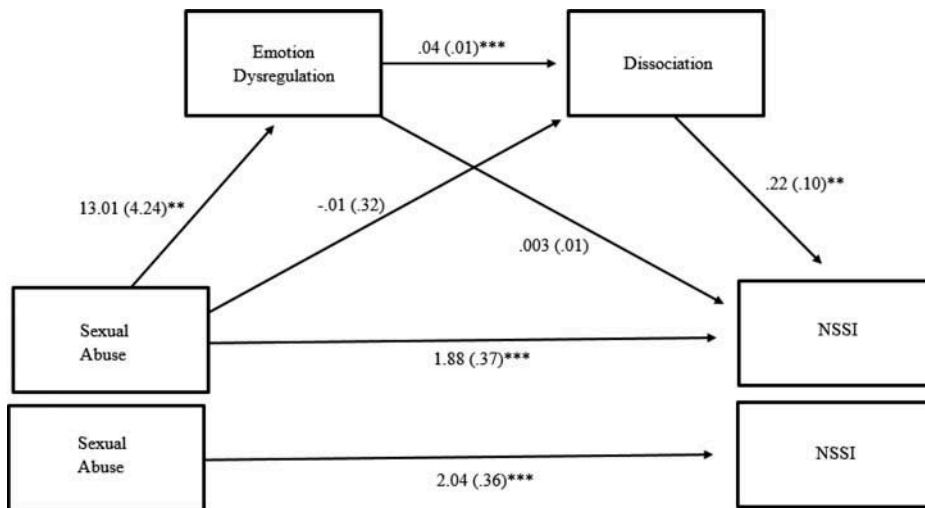
**TABLE 2** Results of Hierarchical Regression Testing the Impact of SA on PTSS, Dissociation, and ED Above and Beyond Other Forms of Trauma

Step	PTSS		Dissociation		ED		NSSI	
	$\Delta R^2$	$B$	$\Delta R^2$	$B$	$\Delta R^2$	$B$	$\Delta R^2$	$B$
Step 1	.004		.001		.00		.00	
Age		0.46		0.05		-1.07		0.07
Ethnicity		0.46		-0.00		-0.20		-0.07
Step 2	.035**		.00		.02**		.14**	
Gender		-5.95**		-0.03		-6.72**		-1.64**
Step 3	.219**		.11**		.09**		.14**	
Non-SA		1.54**		0.14**		1.54**		0.19**
Step 4	.020**		.01*		.01		.04*	
SA		5.71**		0.46*		4.51		1.08*
Step 5	.000		.01		.00		.04**	
Gender $\times$ SA		0.69		0.70		3.52		-2.08*

Notes: SA = sexual abuse; PTSS = posttraumatic stress symptoms; ED = emotion dysregulation; NSSI = nonsuicidal self-injury; non-SA = non-sexual abuse trauma.

\* $p < .05$

\*\* $p < .01$



**FIGURE 1** Mediation of the association between sexual abuse and nonsuicidal self-injury (NSSI) by emotion dysregulation and dissociation ( $n = 133$ ). Sexual abuse was coded dichotomously (0 = no sexual abuse, 1 = sexual abuse). Analyses controlled for age and ethnicity. Unstandardized  $B$  coefficients are displayed with standard errors in parentheses.  $^{**}p < .01$ ,  $^{***}p < .001$ .

both variables were included as mediators, controlling for one another, with age and ethnicity included as covariates. We performed these analyses using Hayes's (2013) PROCESS macro, which allows for the testing of mediation and moderation through direct and indirect effects while also providing bootstrapped estimates of the confidence interval (CI) around the indirect effect.

Bootstrapped indirect effects results were consistent with partial mediation by the inclusion of both ED and dissociation ( $B = 0.12$ , 95% CI [0.03, 0.31]; see Figure 1). What is interesting is that neither ED ( $B = 0.04$ , 95% CI [-0.13, 0.58]) nor dissociation ( $B = -0.002$ , 95% CI [-0.15, 0.13]) emerged as independent mediators when we controlled for the other. The combination of age, ethnicity, and SA accounted for 10.89% of the variance in ED and 26.98% of the variance in dissociation, and the total model explained 23.84% of the variance in NSSI. In addition, we tested each path in the model for moderation by gender. None of the paths differed significantly between boys and girls ( $p > .05$ ) apart from the pathway between SA and NSSI ( $B = -1.95$ , 95% CI [-3.63, -0.27]), as was demonstrated in the regression analyses.

## DISCUSSION

The first purpose of this study was to investigate the hypothesis that the experience of SA represents a risk factor for specific forms of posttraumatic

sequelae, including NSSI. We sought to address limitations of previous research by including in our sample both males and females and youth with a range of traumatic experiences. Our results indicated that SA was implicated in specific posttraumatic reactions in this sample of JJ-involved youth, including self-injury, ED, and dissociation, all of which have been a focus of emerging research linking trauma to delinquency (Ford et al., 2006; Kerig, 2013). Furthermore, these results suggest that SA is associated with PTSS above and beyond other forms of trauma, including physical and emotional abuse, which is consistent with prior research proposing that the experience of childhood SA has unique and pernicious effects on youth development (Fergusson, Boden, & Horwood, 2008; Noll, 2008; Noll et al., 2003).

Another aim of this study was to consider the ways in which these effects might be moderated by youth gender. Consistent with previous research indicating that girls in the JJ system are more likely than boys to experience SA (Ford et al., 2008; Kerig & Becker, 2012; Wood et al., 2002), in the present sample, nearly half of girls reported a SA history in comparison to less than 10% of boys. However, the present findings also evidenced that the associations between SA and PTSS were not moderated by gender and were consistent for both boys and girls. Thus, although the disproportionate prevalence of SA among JJ-involved girls has informed the call for gender-responsive interventions, these results suggest that boys may also benefit from sensitivity to their psychological reactions in the aftermath of sexual violation. In addition, the results reported here suggest that a history of SA is differentially associated with NSSI, particularly for girls, which coincides with prior work (Noll et al., 2003; Wherry et al., 2013). Girls in this sample with histories of SA also reported higher rates of NSSI compared to both sexually abused boys and youth who did not endorse a history of SA.

Finally, another goal was to test theory regarding the interrelations of ED and dissociation in predicting NSSI (Klonsky, 2009). Results of tests for statistical mediation indicated that ED and dissociation in combination were implicated in NSSI in this sample of JJ-involved youth. Although these results coincide with prior work that has suggested the mediating roles of dissociation (Shenk et al., 2010; Swannell et al., 2012) and PTSS more generally (Weierich & Nock, 2008) in the relation between maltreatment and NSSI, the present study was the first to test this model with ED and dissociation included as dual statistical mediators. This model is consistent with Ford's (2013) theory that deficits in self-regulation across multiple domains play an important role in the development of dissociation after the experience of trauma. Furthermore, these findings give support to prior work suggesting that NSSI plays a self-regulating capacity for traumatized youth. For example, youth often cite regulating their emotions as the chief reason for self-injury in the context of inescapable stressors such as SA (Klonsky, 2009). Thus, helping these youth to develop more adaptive strategies for regulating affect will be an important goal for clinical intervention. These findings also further

highlight the clinical utility of the addition of a dissociative subtype to the diagnosis of posttraumatic stress disorder (Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012). However, given that dissociation did not independently mediate the relation between SA and NSSI, future research should consider placing dissociation in a larger framework of self-regulation in order to further clarify the role it may play in the category of “reckless or self-destructive behavior” that is included in the new *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, diagnostic criteria for posttraumatic stress disorder (American Psychiatric Association, 2013).

There are a number of limitations to the current study that should be considered and addressed in future research. The data presented here were based on a cross-sectional design, and therefore causal inferences cannot be made regarding the temporal ordering among the variables assessed. Further research is needed to examine these associations using prospective methods. In addition, these data were all based on youth’s self-report and were limited by mono-informant and mono-method biases. Further research including additional measures, such as observations by others, medical records, and child welfare histories, could supplement youth self-report. In addition, the small proportion of boys who endorsed SA may have limited our power to detect significant differences, and it will be important to replicate the gendered patterns found here with a larger sample of sexually abused boys. Similarly, our measure of NSSI was only available for a subset of the sample, and it is possible that a larger sample would reveal additional results.

In conclusion, the results of the present study suggest that youth in the JJ system who experience SA may be at risk for higher rates of PTSS and that NSSI may be particularly salient for sexually abused girls. Furthermore, our results shed light on the role that dissociation and ED play in the relation between SA and NSSI, suggesting that a larger framework of self-regulation may have both empirical and clinical utility in helping to understand the underlying processes at play in these associations.

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