

Secure Attachment Moderates the Relation of Sexual Trauma With Trauma Symptoms Among Adolescents From an Inpatient Psychiatric Facility

Journal of Interpersonal Violence

2017, Vol. 32(10) 1565–1585

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DOI: 10.1177/0886260515589928

journals.sagepub.com/home/jiv



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Abstract

Experiencing sexual trauma has been linked to internalizing and externalizing psychopathologies. Insecure attachment has been shown to moderate the relation between sexual trauma and trauma symptoms among adults. However, few studies have explored relations among sexual trauma, attachment insecurity, and trauma symptoms in adolescence, and none have used developmentally appropriate measures. The present study sought to examine attachment security as a potential moderator of the relation between having a history of sexual trauma (HST) and trauma symptoms among adolescents at an inpatient psychiatric facility. Attachment to caregivers was measured by the Child Attachment Interview (CAI) and trauma symptoms by the Trauma Symptoms Checklist for Children (TSCC). HST was assessed with responses to two separate interviews that asked about

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traumatic experiences: the Computerized Diagnostic Interview Schedule for Children (C-DISC) and the CAI. Moderation analyses were conducted using univariate General Linear Modeling (GLM). Of the 229 study participants, 50 (21.8%) had a HST. The relation between HST and trauma symptoms was significantly moderated by insecure attachment with both mother, $F(1, 228) = 4.818, p = .029$, and father, $F(1, 228) = 6.370, p = .012$. Specifically, insecurely attached adolescents with a HST exhibited trauma symptoms at levels significantly greater than securely attached adolescents with a HST and adolescents with no HST. Results are consistent with previous research that suggests secure attachment may protect against the development of trauma symptoms among those who have experienced a sexual trauma.

Keywords

attachment, sexual trauma, adolescents, inpatient

Experiencing sexual trauma has a well-established relation to a variety of internalizing (e.g., depression: S. D. Johnson, Cottler, Ben Abdallah, & O'Leary, 2011; anxiety: Cogle, Timpano, Sachs-Ericsson, Keough, & Riccardi, 2010; posttraumatic stress disorder [PTSD]: Cogle et al., 2010) and externalizing problems (e.g., substance use: N. L. Johnson & Johnson, 2013; risky sexual behavior: Lestrade, Talbot, Ward, & Cort, 2013). The construct of trauma symptoms has been developed to operationalize the constellation of mental health problems often associated with trauma, including sexual trauma (Briere, 2004; Briere, Kaltman, & Green, 2008). Trauma symptoms target specific internalizing (e.g., depression, anxiety, posttraumatic stress) and externalizing (e.g., dissociation, anger, sexual concerns) problems associated with trauma, providing a broad measure of trauma effects (Briere, 1996). For example, adult women with a history of sexual trauma (HST) have reported greater levels of anxiety, depression, dissociation, and sexual problems compared with women who had never experienced a sexual trauma (Elliott & Briere, 1992). Elevated levels of trauma symptoms have, in turn, been shown to relate to emotional and behavioral problems (Milot, Éthier, St-Laurent, & Provost, 2010).

Not all people who experience sexual trauma subsequently experience mental health problems. Developmental psychopathology has suggested that the degree of adaptive functioning following a precipitating event (e.g., a traumatic experience) results from the interactive effect of risk and protective factors (D. Cicchetti, 2006; D. Cicchetti & Toth, 2005). Such adaptive functioning has been denoted as resilience (Luthar & Cicchetti, 2000). Utilizing a

developmental psychopathology framework, the present study examined attachment security to caregivers as a potential protective factor to buffer the development of trauma symptoms.

Attachment has been shown to protect against the impact of sexual trauma on psychopathology in college females (Aspelmeier, Elliott, & Smith, 2007; Limke, Showers, & Zeigler-Hill, 2010; Roche, Runtz, & Hunter, 1999). Studies have shown that attachment insecurity mediated the relation between HST and worse interpersonal and internalizing outcomes (Limke et al., 2010), as well as total trauma symptoms (Roche et al., 1999). In contrast, secure attachment to caregivers was shown to moderate the relation of HST and trauma symptoms; for individuals who had experienced a sexual trauma, more secure attachment to caregivers was associated with fewer dysphoric trauma symptoms (Aspelmeier et al., 2007).

As of yet, only two studies have examined attachment as a protective factor against the development of trauma symptoms among adolescents with HST, with each reporting contrasting effects. Among 14- to 16-year-old females, secure attachment significantly mediated the relation between HST and psychological distress (Shapiro & Levendosky, 1999). However, in a sample of 16- to 20-year-old females who had given birth (33% of whom reported a sexual trauma), unresolved attachment (via the Adult Attachment Interview; AAI) failed to mediate the relation between HST and trauma symptoms (Bailey, Moran, & Pederson, 2007).

Several limitations of the above studies conducted in adolescents suggest the need for further research. Both studies utilized small samples with few participants reporting sexual trauma histories ($N = 62$, $n = 21$, Bailey et al., 2007; $N = 80$, $n = 26$, Shapiro & Levendosky, 1999). Both studies recruited exclusively female samples (Bailey et al., 2007; Shapiro & Levendosky, 1999). Furthermore, both studies used measures validated for adults to examine trauma symptoms. Adult measures may not be developmentally appropriate for assessments among adolescents (Briere, 1996; D. V. Cicchetti, 1994). Moreover, only one study utilized an interview measure of attachment, which operationalizes attachment in a manner that is nomothetically distinct from self-report attachment measures (Crowell, Fraley, & Shaver, 2008).

Another important gap across previous research has been the lack of inpatient samples. Both previous studies (Bailey et al., 2007; Shapiro & Levendosky, 1999) recruited adolescents from the community. It has not yet been examined whether attachment security to caregivers may buffer the development of trauma symptoms among adolescents with severe psychopathology. Within a developmental psychopathological framework, understanding the development of severe emotional and behavioral problems in clinical samples may help clarify the mechanisms underlying less severe

maladaptive functioning among community adolescents (Hinshaw, 2013). If attachment security protects against the development of trauma symptoms among inpatient adolescents with HST, such results would provide further support for parental involvement in the treatment of adolescents with HST and severe psychopathology.

To address current gaps in the literature, the aim of the present study was to examine whether attachment security to caregivers protected against trauma symptoms among inpatient adolescents who reported a sexual trauma. Specifically, the study examined whether attachment security to caregivers moderated the relation between HST and trauma symptoms. Previous research among college females has shown that attachment security to caregivers protected against the development of trauma symptoms for those who had experienced sexual trauma (Aspelmeier et al., 2007; Shapiro & Levendosky, 1999). Therefore, the present study hypothesized that, among inpatient adolescents who reported a HST, attachment would moderate the relation of HST with trauma symptoms. That is, it was hypothesized that levels of trauma symptoms would be greater among those who were insecurely attached compared with those who were securely attached; and that among those with no HST, levels of trauma symptoms would not differ by attachment security. It was hypothesized that levels of trauma symptoms would be greater among those with a HST, but that this strength of the relation between trauma symptoms and HST would be mitigated for securely attached adolescents. Given that few studies have examined attachment to father (Grossmann, Grossmann, Kindler, & Zimmermann, 2008), the present study sought to extend existing research by analyzing the moderating roles of attachment security to both mother and father.

Method

Participants

Two hundred sixty-eight adolescents were recruited from a local inpatient psychiatric treatment center. Participants with diagnoses of intellectual disability or psychotic disorders were excluded to ensure participant comprehension of study materials. Based on these criteria, 7 participants were excluded from the study. In addition, participants whose scores exceeded cutoffs for the two validity subscales (i.e., Underresponse and Hyperresponse) on the Trauma Symptoms Checklist for Children (TSCC) were excluded from data analyses ($n = 32$)

The final sample consisted of 229 adolescents ranging in age from 12.25 to 17.92 years ($M = 16.05$ years; $SD = 1.38$ years). There were 141 females

(61.6%) and 88 males (38.4%). The ethnicity primarily represented in the sample was Caucasian (96%). Based on the Computerized Diagnostic Interview Schedule for Children (C-DISC), 114 (49.7%) participants met criteria for any anxiety disorder, 106 (46.3%) for any depressive disorder, 20 (8.7%) for PTSD, and 100 (43.7%) for any externalizing disorder.

Procedures

Participation in this study was offered to all adolescents admitted to an inpatient psychiatric unit located in Texas. First, the adolescents' caregivers provided informed consent, then adolescents provided informed assent. All study procedures followed guidelines from the appropriate institutional review boards at Baylor College of Medicine and the University of Houston. Participants were assessed by doctoral-level clinical psychology students, licensed clinicians, and/or trained clinical research assistants under the supervision of the last author (C.S.). Assessments occurred within the first 2 weeks of admission. Order of assessment was random by nature of the scheduling constraints of the naturalistic setting.

Measures

Attachment. The Child Attachment Interview (CAI; Target, Fonagy, Shmueli-Goetz, Datta, & Schneider, 2007) was used to assess attachment security to mother and father. The CAI was based on the AAI specifically for use in middle childhood (Shmueli-Goetz, Target, Fonagy, & Datta, 2008; Target, Fonagy, & Shmueli-Goetz, 2003) and has been used among adolescents (Scott, Briskman, Woolgar, Humayun, & O'Connor, 2011). Recently, the CAI has been validated for use in adolescents (Venta, Shmueli-Goetz, & Sharp, 2014). Attachment security is coded based on elicited descriptions of specific events with caregivers, termed *relationship episodes*. Most important for coding is how the child chooses to communicate about the event. Nine subscales, rated on a scale from 1 (*low*) to 9 (*high*), parse out specific information used for attachment coding: Emotional Openness, Preoccupied Anger, Idealization, Dismissal, Self-organization, Balance (of positive and negative descriptors of attachment figures), Use of Examples, Resolution of Conflicts, and Overall Coherence. Three subscales (Preoccupied Anger, Idealization, and Dismissal) are coded separately for mother and father. Based on these subscales, each participant is coded as Secure or Insecure. The CAI has been validated in both clinical and community samples (Shmueli-Goetz et al., 2008; Target et al., 2003) and its factor structure was confirmed in a large community sample of children, ages 9 to 13 years, through

confirmatory factor analysis (Zachrisson, Røysamb, Oppedal, & Hauser, 2011), as well as in a clinical sample of adolescents, ages 12 to 17 years (Venta, Shmueli-Goetz, & Sharp, 2014). In this study, attachment security for both mother and father was assessed, and results are reported for both.

The CAI contains 17 items, each with specified qualifying questions used to follow-up on the adolescent's response. Additional prompts (e.g., "Who else was there?" "How did you feel?") differ from the AAI because of the developmental limitations of children and adolescents in their ability to provide a full narrative without such prompts. Known as "scaffolding," these prompts assist adolescents in providing important details without using leading questions. Each of the 17 questions was designed to elicit self-representations and representations of primary attachment relationships. Experiences involving conflict, hurt, illness, distress, separation, and loss are specifically targeted because, in such situations, adolescents are most likely to seek out primary attachment figures as a secure base. Coding, specifically, focuses on how the adolescent depicts the relationship between them and their caregiver(s), in terms of valence, emotional content, organization, and level of detail as assessed via the nine subscales, as they recount a specific event. Interviews are videotaped and transcribed to assist coding. A graduate student who had completed additional training to administer and code the CAI (on the nine subscales) and had established reliability with the authors of the CAI coded each interview. Based on 38 randomly selected interviews (approximately 17% of participants), inter-rater reliability was substantial based on guidelines that agreement be 80% or greater (Target et al., 2007). Inter-rater agreement regarding attachment security to mother was observed in 84.2% of cases, while attachment security to father showed 81.6% agreement (Venta, Shmueli-Goetz, & Sharp, 2014).

HST. Following the methodology of Bailey et al. (2007), two separate interviews were used to determine the presence or absence of HST. Similar to how Bailey et al. (2007) used the AAI, the present study used the CAI to assess for sexual trauma. The specific item from the CAI reads as follows: "Have you ever been touched sexually by someone when you did not want them to do it?" Participants answered this item with either "yes" or "no." When endorsed, the scaffolding questions typical of the CAI are asked (Target et al., 2007). However, if the adolescent does not wish to discuss the experience, the interviewer moves to the next question. Therefore, not all participants provided qualitative information. As such, the item was used only to code presence or absence of sexual trauma. Although using this item from the CAI meant that the predictor and the moderator variables were derived from the same measure, the content of the sexual trauma question is not used in coding attachment security based

on the CAI. The presence or absence of any particular type of event, including sexual trauma, does not influence the coding process for attachment style (Target et al., 2007). Rather, coding for CAI attachment styles is based on how the participant communicates about any particular experience (see above). Therefore, HST, as measured by the CAI, was not confounded with attachment security.

The youth version of the C-DISC (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) was also used to assess sexual trauma. In this study, all interviews were completed by doctoral students in clinical psychology or clinical research assistants trained in the administration of the C-DISC who had conducted several sessions under the supervision of the last author (C.S.). The adult version, the Computerized Diagnostic Interview Schedule for the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994; C-DIS IV) has been used in previous research as a selection instrument for sexual trauma (S. D. Johnson et al., 2011). Coding for sexual trauma was based on the sexual trauma item from the PTSD module, which read as follows: "Have you ever been very upset by someone forcing you to do something sexual that you really didn't want to do?" The youth version of the C-DISC was chosen instead of the parent version because of the possibility that participants who had a HST may not have disclosed this experience to their parents/caregivers. Therefore, querying the adolescents themselves was expected to have stronger validity.

Rather than specifying a narrow definition of sexual trauma, such as HST during childhood (i.e., specifying age and frequency at which trauma occurred), the present study measured sexual trauma following the broader operationalization of sexual victimization modeled by Finkelhor (1998). Sexual trauma was operationalized as any unwanted sexual interaction initiated by another person. A combined total of 50 participants reported sexual trauma. Forty were coded for sexual trauma based on the CAI, while 30 were coded for sexual trauma based on the C-DISC ($\kappa = .56; p < .001$).

Trauma symptoms. Trauma symptoms were assessed using the TSCC, a 54-item measure of distress symptomology resulting from experiences of negative life events (Briere, 1996). The TSCC does not assess whether a negative life event has been experienced; it was designed to measure symptoms often associated with having experienced trauma, such as childhood physical or sexual abuse or assault, family violence, and natural disasters, as well as less severe stressors such as divorce or family illness (Briere, 1996). The measure consists of two validity scales (Underresponse and Hyperresponse) and six clinical subscales: Anxiety, Depression, Posttraumatic Stress, Anger, Dissociation, and Sexual Concerns. Each item is rated on a frequency scale

ranging from 0 (*never*) to 3 (*almost all of the time*), with sample items such as “bad dreams and nightmares,” “remembering things that happened that I didn’t like,” and “thinking about sex when I don’t want to” (Briere, 1996). A *T* score of 65 serves as the clinical cutoff for each of the subscales, with the exception of the Sexual Concerns subscale ($T = 70$) and Underresponse ($T = 70$) and Hyperresponse ($T = 90$) subscales. Following previous research, the present study utilized raw score data for the TSCC total score to provide continuous variables of trauma symptomology (Nilsson, Gustafsson, & Svedin, 2012; Sadowski & Friedrich, 2000).

Research on the TSCC has shown it is a reliable and valid measure of trauma symptoms among children and adolescents (Briere, 1996). Across several studies, its six clinical subscales have shown strong internal consistency with Cronbach’s alpha values ranging from .71 to .97 (Briere, 1996; Sadowski & Friedrich, 2000). It has also demonstrated convergent and divergent validity with appropriate measures of child and adolescent internalizing and externalizing psychopathologies (Briere, 1996). Moreover, TSCC scores have been shown to differentiate children who have been abused from those who have not (Briere, 1996, 2004). Internal reliability for the TSCC total score within the present sample was good ($\alpha = .95$), as were the subscale reliabilities (range of $\alpha = .81-.88$). The present inpatient sample reported higher subscale scores than the normative community sample (Briere, 1996); however, these differences were reasonable given the increased level of psychopathology typical of an inpatient sample.

Data Analytic Strategy

Moderation analyses were conducted using univariate General Linear Modeling (GLM). Fixed factors specified in the model were HST and attachment security with trauma symptoms (TSCC total score) serving as the dependent variable. Because both independent variables were categorical, GLM was used to create an interaction term from the two categorical fixed factors. Both gender and age were entered as covariates in subsequent GLM analyses. To verify that TSCC total scores were more strongly associated with HST among insecurely attached adolescents, an ANOVA with post hoc comparisons was conducted using the Tukey critical value adjustment.

Results

Preliminary Descriptive Analyses

Descriptive statistics for all key study variables are presented in Table 1. Within the final sample of 229 adolescents, 50 (21.8%) reported a HST. Of

Table 1. Descriptive Statistics Summary of Associations Between Main Study Variables.

HST	TSCC Total Score				
	<i>M</i>	<i>SD</i>	<i>t</i> (227)	<i>p</i> Value	Cohen's <i>d</i>
No sex trauma	28.614	15.798	-3.790	<.001	0.606
Sex trauma	38.500	18.023			
Attachment to Mother	<i>M</i>	<i>SD</i>	<i>t</i> (227)	<i>p</i> Value	Cohen's <i>d</i>
Secure	25.633	12.831	-3.252 ^a	.001	0.421
Insecure	32.598	17.644			
Attachment to Father	<i>M</i>	<i>SD</i>	<i>t</i> (224)	<i>p</i> Value	Cohen's <i>d</i>
Secure	27.559	14.061	-2.000 ^a	.048	0.272
Insecure	32.133	17.649			

Note. HST = history of sexual trauma; TSCC = Trauma Symptoms Checklist for Children.

^a*t*-test results not assuming homogeneity of variance due to violation of Levene's homogeneity of variance test.

those with a HST, 44 were female and six were male, $\chi^2(1) = 18.882$, $p < .001$). HST was significantly associated with TSCC total score ($t = -3.790$, $p < .001$), and this association had a medium effect size (Cohen's $d = .606$; J. Cohen, 1977).

Results from the CAI showed that, for attachment security to mother, 169 participants (73.8%) were coded as insecure and 60 (26.2%) were coded as secure. With regard to paternal attachment, 166 participants (73.8%) were coded as insecure and 59 (26.2%) were coded as secure. Four participants had no relationship with their father, so attachment to father was not examined by the CAI. No gender differences were observed for attachment security with mother, $\chi^2(1) = 0.000$, $p = .986$, nor with father, $\chi^2(1) = 0.001$; $p = .981$. Fifteen participants (30.0%) who reported HST were coded as securely attached to mother, whereas 35 others (70.0%) were coded as insecurely attached to mother. With regard to paternal attachment, 15 (31.9%) and 32 (68.1%) were coded as securely and insecurely attached, respectively. Neither attachment security to mother nor attachment security to father was significantly associated with having a HST: mother: $\chi^2(1) = 0.477$, $p = .490$; father: $\chi^2(1) = 0.995$, $p = .318$.

The association between trauma symptoms, operationalized as TSCC total score, and attachment security with mother and father was examined via independent-samples *t* tests. As shown in Table 1, results showed that insecurely

attached adolescents (to both mother and father) exhibited significantly increased TSCC total scores (mother: $t = -3.252, p = .001, d = .421$; father: $t = -2.000, p = .048, d = .272$) with small effect sizes (J. Cohen, 1977).

Attachment Security as a Moderator of the Relation Between HST and Trauma Symptoms

It was hypothesized that secure attachment would moderate the relation between having a HST and TSCC total score. Adolescents who reported HST were expected to report higher levels of trauma symptoms compared with those who did not report HST, but this difference would be mitigated for securely attached sexual trauma survivors.

To test the interaction effect between attachment security and HST, GLM analysis were conducted using HST and attachment security as fixed factors and TSCC total score as the dependent variable. Separate models were run for attachment security with mother and father. Two covariates were controlled for in each model. Gender showed significant associations with HST, $\chi^2(1) = 11.243, p = .001$ and TSCC total score ($t = 4.53, p < .001$), and was therefore controlled for in all moderation analyses. Similarly, age (in months) showed a marginal association with the TSCC total score ($r = -.117, p = .077$) and a significant association with attachment security with father ($t = 2.00, p = .047$) and was also controlled for in moderation analyses.

As shown in Table 2, the relation between HST and TSCC total score was moderated by attachment security to both mother, $F(1, 228) = 4.818, p = .029, \eta_p^2 = .021$, and father, $F(1, 224) = 6.370, p = .012, \eta_p^2 = .028$. Moreover, for both attachment to mother and to father, only the Insecure with HST group TSCC total score mean was significantly different from the other three groups (see Table 3 for group means and planned comparisons). Therefore, the study's hypothesis was supported. HST was associated with increased levels of trauma symptoms among insecurely, but not securely, attached adolescents (see Figures 1 and 2).

Discussion

Results from the present study supported the study hypothesis that attachment security to caregivers moderated the impact of sexual trauma on trauma symptoms. Because the current study was cross-sectional, conclusions cannot be drawn about the development of trauma symptoms over time. However, the moderating role of attachment observed in the present study suggests the possibility that attachment may buffer the development of trauma symptoms among adolescents who have experienced sexual trauma. In this inpatient sample, HST

Table 2. Results of Moderation Analyses With TSCC Serving as Dependent Variable.

Model 1	TSCC Total Score		
	<i>F</i> (1, 228)	<i>p</i> Value	η_p^2
Gender	13.937	<.001	.059
Age	3.877	.050	.017
History of sex trauma	3.752	.054	.017
Attachment with mother	13.814	<.001	.058
Interaction	4.818	.029	.021
Adjusted <i>R</i> ²	.161		
Model 2	<i>F</i> (1, 224)	<i>p</i> Value	η_p^2
Gender	15.068	<.001	.064
Age	3.227	.074	.015
History of sex trauma	4.292	.039	.019
Attachment with father	8.799	.003	.039
Interaction	6.370	.012	.028
Adjusted <i>R</i> ²	.159		

Note. TSCC = Trauma Symptoms Checklist for Children.

was associated with increased levels of trauma symptoms among insecurely attached adolescents but not among those who were securely attached. These findings support previous research showing that attachment security protects against the development of trauma symptoms among college students (Aspelmeier et al., 2007; Limke et al., 2010) and adolescents (Shapiro & Levendosky, 1999) who have experienced sexual trauma. Moreover, these findings align with previous research showing that family support, positive parenting, and fewer caregiver changes are all predictive of resilience among survivors of childhood sexual trauma (for a review, see Marriott, Hamilton-Giachritsis, & Harrop, 2014).

From the perspective of developmental psychopathology, this study's findings can be described as demonstrating that different outcomes observed from sexual trauma (i.e., multifinality) among adolescents are partially explained by whether an adolescent is securely or insecurely attached to caregivers. The buffering effect observed among inpatient adolescents in the present study may help clarify the contrasting findings of previous studies of attachment among community adolescents (Bailey et al., 2007; Shapiro & Levendosky, 1999). It may be that the protective effects of attachment to

Table 3. Descriptive Statistics and Post Hoc Comparisons for the Interaction of Attachment Security and HST.

	TSCC Total Score			Post Hoc Results
	<i>M</i>	<i>SD</i>	<i>n</i>	
Attachment to mother				
^A Secure with HST	28.067	14.786	15	A = B, A = D, A < C**
^B Secure with no HST	24.822	12.187	45	B = A, B = D, B < C**
^C Insecure with HST	42.971	17.593	35	C > A**, C > B**, C > D*
^D Insecure with no HST	29.888	16.685	134	D = A, D = B, D < C*
Attachment to father				
^A Secure with HST	29.733	13.864	15	A = B, A = D, A < C**
^B Secure with no HST	26.818	14.208	44	B = A, B = D, B < C**
^C Insecure with HST	44.063	18.249	32	C > A**, C > B**, C > D*
^D Insecure with no HST	29.284	16.322	134	D = A, D = B, D < C*

Note. HST = history of sexual trauma; TSCC = Trauma Symptoms Checklist for Children.
* $p < .05$. ** $p < .001$.

caregivers increases as the severity of psychopathology increases. Community adolescents who have experienced sexual trauma may retain a greater degree of individual level protective factors (e.g., self-esteem, better emotion regulation, and interpersonal skills; D. Cicchetti & Rogosch, 1997) than inpatient adolescents. With more severe psychopathology than community adolescents, inpatient adolescents may rely more on interpersonal protective factors (such as attachment security to caregivers) to promote resilience (Marriott et al., 2014). Future research should utilize a sample of community and inpatient adolescents who have experienced sexual trauma to test whether the protective effect of attachment against trauma symptoms differs as psychopathology severity increases.

Several reasons may be suggested for why attachment security to caregivers demonstrated buffering effects in the present study. Secure attachment implies relating to a caregiver as a secure base from whom to seek comfort in times of distress (Weinfield, Sroufe, Egeland, & Carlson, 2008). Compared with insecurely attached adolescents, those who are securely attached may be more likely to seek support from and be comforted by caregivers following a sexual trauma. Attachment to caregivers has also been implicated in the development of emotion regulation abilities (Kim, Sharp, & Carbone, 2014; Mikulincer & Shaver, 2008). Better emotion regulation may have protected secure, compared with insecure, adolescents against the development of trauma symptoms. Finally, attachment security has been shown to moderate

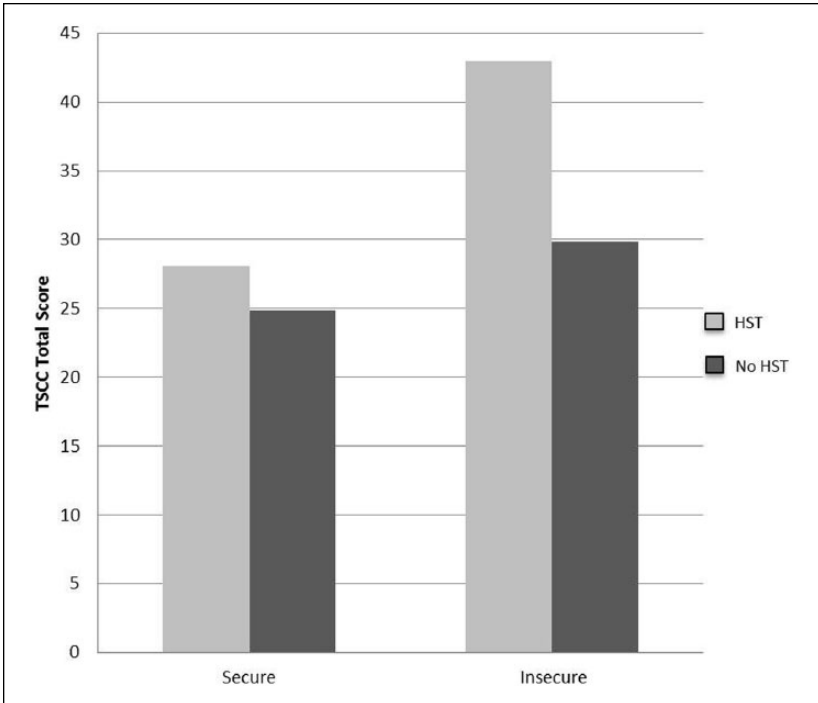


Figure 1. Interaction effect of attachment security to mother and HST on TSCC total score.

Note. Covariates in the model were included at the following values: Gender = .38; age in years = 16.05. HST = history of sexual trauma; TSCC = Trauma Symptoms Checklist for Children.

treatment outcomes in adults (Forbes, Parslow, Fletcher, McHugh, & Creamer, 2010; Tasca et al., 2006) and adolescents (Venta, Sharp, & Newlin, 2014), and has been shown to moderate therapeutic alliance among adults (L. N. Johnson, Ketring, Rohacs, & Brewer, 2006). Thus, attachment security may facilitate treatment seeking and receptivity to treatment, whereas attachment insecurity may decrease the likelihood of seeking and benefiting from treatment.

Identifying factors that protect against the impact of sexual trauma on trauma symptoms is important, as trauma symptoms have been shown to mediate the development of emotional and behavioral problems (Milot et al., 2010) and sexual revictimization (Fortier et al., 2009). In an effort to define mental disorders dimensionally, the National Institute of Mental Health

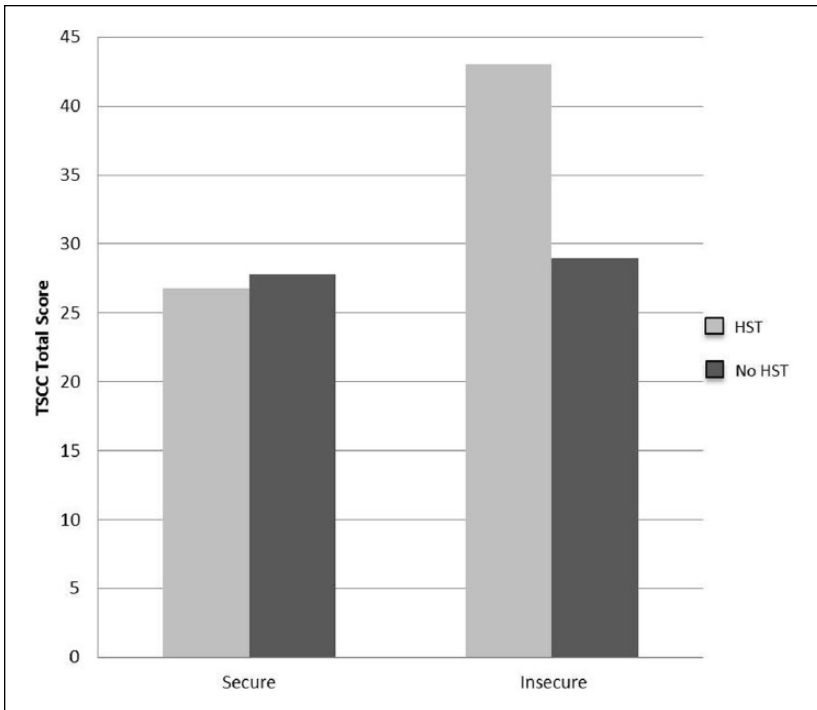


Figure 2. Interaction effect of attachment security to father and HST on TSCC total score.

Note. Covariates in the model were included at the following as mean values: Gender = .39; age in years = 16.04. HST = history of sexual trauma; TSCC = Trauma Symptoms Checklist for Children.

(NIMH) has targeted the identification of transdiagnostic factors that influence the development of heterotypic mortality via its publication of the Research Domains Criteria (NIMH, 2011). The present study suggested that attachment to caregivers may be an important factor that influences how symptoms of psychopathology (i.e., trauma symptoms) develop among adolescents who have experienced a sexual trauma. Interventions designed to strengthen the adolescent-caregiver relationship may mitigate the impact of sexual trauma on trauma symptoms and the development of subsequent psychosocial and behavioral problems. Based on these findings, evidence-based interventions that incorporate parents, such as parent-child interaction therapy (Eyberg & Robinson, 1982) and trauma-focused cognitive-behavioral therapy (J. A. Cohen, Mannarino, & Deblinger, 2006), would be expected to

be more effective than individual therapy (for meta-analysis, see Corcoran & Pillai, 2008).

As this was a cross-sectional study, findings require replication in a prospective design to determine causation. Future research may also examine the additive impact of emotion regulation and social-cognitive factors, such as theory of mind and empathy, on the relation between sexual trauma and trauma symptoms. Longitudinal research among both typically developing adolescents and those with severe psychopathology is needed to understand the direction of relations among HST, attachment, and trauma symptoms. Moreover, given the small number of males in the present study, research is needed among a larger sample of males with HST.

The present study had several limitations. Conclusions regarding causation were prevented by the study's cross-sectional design. Prospective research may provide stronger evidence for the moderating effect of attachment security on sexual trauma and trauma symptoms. In the present sample, the number of males relative to females who had experienced HST was small; study findings may not generalize to male adolescents. Future studies may require larger sample sizes to examine HST among males. The measures of sexual trauma used in this study showed only moderate agreement, perhaps because the CAI and C-DISC each included only one item pertaining to HST. Moreover, the CAI asks specifically about sexual touch whereas the C-DISC asks about "someone forcing you to do something sexually," a discrepancy in language that may have contributed to the moderate differences in response agreement. Future research utilizing interview and self-report measures specifically assessing for sexual trauma, such as the Childhood Trauma Interview (Fink, Bernstein, Handelsman, & Foote, 1995) or the Childhood Trauma Questionnaire (Bernstein, Fink, Handelsman, & Foote, 1994), would afford consistency in operationalization of sexual trauma and assessment of the relations of a variety of trauma-related factors (e.g., frequency of trauma and identity of victimizer) with attachment security and trauma symptoms (Carretta & Burgess, 2013; Kaltman, Krupnick, Stockton, Hooper, & Green, 2005).

Several strengths of the present study suggest its unique contribution to current research. First, the present study was the first to examine the relations among HST, trauma symptoms, and attachment insecurity in a sample of inpatient adolescents. Second, the use of a broad measure of sexual trauma allowed for an assessment of how a variety of experiences of sexual trauma affects levels of trauma symptoms. Third, the use of developmentally appropriate measurement tools for the assessment of both attachment and trauma symptoms among adolescents contrasts with the measures designed for adults used by previous studies. Similarly, the use of the CAI, an interview measure

of attachment, distinguishes the present study from previous research among adolescents that has utilized self-report questionnaires. Interview-based measures, compared with self-report questionnaires, are particularly useful in eliciting attachment representations without introducing distortions via suggestion (Crowell et al., 2008; Target et al., 2007). Taken together, the strengths of the present study affirm the role of attachment security as a moderator of the relation between HST and trauma symptoms.

Authors' Note

Additional research materials related to the present study (e.g., data) may be obtained via the corresponding author.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project was funded by the Child and Family Program of the Menninger Clinic.

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Author Biographies

Charles Jardin recently completed his first year of the clinical psychology doctoral program at the University of Houston (UH), in Houston, Texas, and was a graduate research assistant with both the Developmental Psychopathology Laboratory and the Anxiety and Health Laboratory and Substance Use Treatment Clinic, under the supervision of Dr. Carla Sharp and Dr. Michael Zvolensky, respectively. His research interests focus on risk behavior across the transition from adolescence to adulthood, including substance use and sexual risk behavior. Informed by a developmental psychopathology framework, his present research efforts are exploring risk and protective factors that influence decision making across development, with an emphasis on attachment and trauma; investigating transdiagnostic mediators and moderators of risk behavior, such as positive/negative reinforcement and emotion processes; and examining risk behavior dimensionally and categorically to better understand the transition from normative to pathological risk-taking. As an incoming student, he received the University Presidential Graduate Fellowship. Currently, he is a clinical research assistant at the Harris County Psychiatric Center and the Thomas Street Health Center. Prior to beginning the UH doctoral program, he completed the Master of Divinity at Duke Divinity School, Duke University, in Durham, North Carolina, and served as a congregational pastor in Durham and a clinical hospital chaplain in Houston.

Amanda Venta, MA, is a student in the Clinical Psychology doctoral program at the UH. Her primary research interests are the protective effects of parenting and attachment security on adolescents. She has related interests in developmental psychopathology, emotion regulation, and social cognition.

Elizabeth Newlin is board certified in adult psychiatry as well as child and adolescent psychiatry. She has a particular interest in the assessment and treatment of emerging personality disorders and anxiety disorders in children and adolescents. She is the co-investigator for Adolescent Treatment Program (ATP) related research projects with Carla Sharp, PhD, director, ATP Research. Outcomes research, designed to determine the effectiveness of treatment, is a key component of research at Menninger. She

serves on the board of Girls Inc. Houston and is a member of the American Psychiatric Association and the American Academy of Child and Adolescent Psychiatry. Prior to coming to Menninger, she had a successful outpatient practice serving coastal South Carolina, where she also served as a psychiatry consultant to The Coastal Samaritan Center, a nonprofit mental health center, and as a board member of MyTerms.org, a nonprofit organization dedicated to the mental health of adolescent girls. She received her bachelor's degree from the College of Charleston, and her medical degree from the Medical University of South Carolina (MUSC), both located in Charleston. She completed her post-graduate training as a psychiatry resident and as a child and adolescent psychiatry fellow at MUSC.

Segundo Ibarra, MD, was born and raised in Paraguay, South America, where he received his medical degree (MD). He immigrated to the United States in 1994 to the Baylor College of Medicine, Department of Psychiatry and Behavioral Science where he completed his residency in general and child and adolescent psychiatry and was later board certified in both. He has finished his academic psychoanalytic studies at the Houston Galveston Psychoanalytic Institute. He had a private practice of psychodynamic psychotherapy & psychiatry. Currently, he is a staff psychiatrist of the ATP unit for Treat at the Menninger Clinic in Houston, and a member of the full-time faculty of the Menninger Department of Psychiatry and Behavioral Science, Baylor School of Medicine. He is in charge of second-year child and adolescent psychiatry fellows who rotate through his service. He supervises psychotherapy treatment performed by general psychiatry residents as well as child and adolescent psychiatry fellows. He supervises and teaches post-doctoral (psychology and social work) fellows at the Menninger Clinic. He has a wide range of interest in psychiatry: developmental psychopathology, individuals with severe problems with mentalising capacities, personality disorders, autistic spectrum disorders, multidisciplinary treatment work in outpatient psychiatric clinics and inpatient psychiatry hospitals, operationalized psychodynamic formulations, trauma, and so on. He has received important teaching awards during his career.

Carla Sharp trained as a clinical psychologist (University of Stellenbosch, South Africa) from 1994 to 1997, after which she completed a PhD in developmental psychopathology at Cambridge University, United Kingdom, 1997-2000. In 2001, she obtained full licensure as a clinical psychologist in the United Kingdom. From 2001 to 2004 she was appointed as a research post-doctoral fellow in developmental psychopathology, Cambridge University. In 2004, she moved to the United States to take up an appointment as assistant professor in the Menninger Department of Psychiatry at Baylor College of Medicine. She obtained provisional licensure as clinical psychologist in Texas in 2008. In 2009, she was appointed as associate professor in the Department of Psychology at the UH. Her published work reflects her interests in social-cognitive, affective, and reward processing as it relates to childhood disorder (most notably antisocial behavior and emerging personality disorder), as well as her interest in psychometrics. She has published more than 100 peer-reviewed articles, chapters, and books, and her research has been funded by National Institute of Mental Health (NIMH), National Alliance for Research in Schizophrenia and Affective Disorders (NARSAD), and foundation funding.