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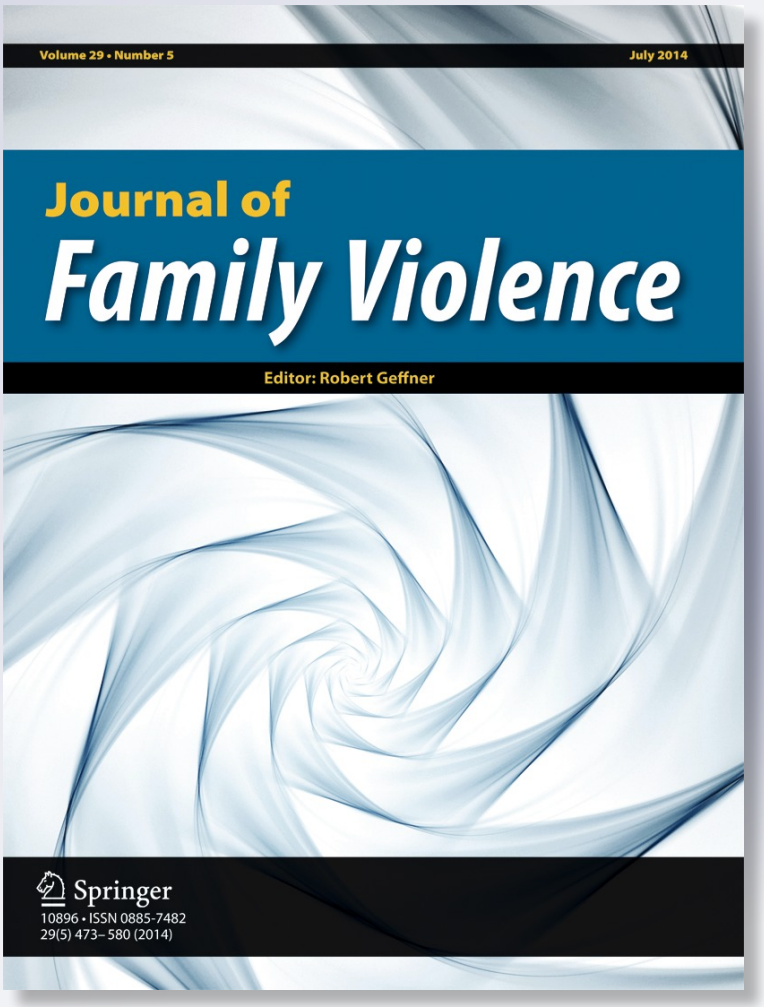

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RESEARCH ON ADOLESCENT SURVIVORS OF ABUSE OR VIOLENCE

Romantic Attachment as a Moderator of the Association Between Childhood Abuse and Posttraumatic Stress Disorder Symptoms

Alex Busuito · Alissa Huth-Bocks · Erin Puro

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Abstract Childhood abuse can have significant negative effects on survivors that often last into adulthood. The purpose of this study was to explore the role of romantic attachment in understanding the relationship between childhood abuse and posttraumatic stress disorder (PTSD) symptoms in adulthood. Data for this study were taken from the first wave of a five-wave longitudinal study. The sample included 120 mothers in their third trimester of pregnancy. Regression analyses were conducted in order to examine adult romantic attachment as a possible protective or vulnerability factor. Main effects of attachment anxiety and attachment avoidance on PTSD symptoms were found, such that higher levels of attachment anxiety and attachment avoidance were related to more PTSD symptoms. Attachment avoidance moderated this relationship, such that child abuse was significantly related to greater PTSD symptoms in those with high attachment avoidance. Implications for attachment-based interventions are discussed.

Keywords Child abuse · Romantic attachment · Traumatic stress · Pregnancy

Childhood abuse, defined as experiences of physical abuse, sexual abuse, emotional abuse, and neglect, has been linked to many poor outcomes in adulthood such as mood disorders, posttraumatic stress, and substance use disorders (e.g., Duncan et al. 1996; Molnar et al. 2001). Child abuse can have particularly devastating long-term effects because it often takes place during crucial developmental years and is often perpetrated by a trusted caregiver. In fact, over 80 % of physically or emotionally abused or neglected children are victimized by a parent or caregiver, and about 75 % of childhood abuse or neglect fatalities are perpetrated by a parent (U.S. Department of Human Services 2010). Therefore, it is of little surprise that mental health symptoms often develop in the aftermath of childhood abuse and persist into adulthood (MacMillan et al. 2001; Springer et al. 2007).

Posttraumatic stress disorder symptoms are particularly prevalent in adult survivors of childhood abuse, including difficulties such as poor affect regulation, hyperarousal, intrusive reexperiencing, and interpersonal problems (van der Kolk and McFarlane 1996). In fact, the literature has shown that between 48 and 85 % of childhood abuse survivors develop PTSD in their lifetime (Kessler and Chiu 2005; Roth et al. 1997). While these rates are quite high, they also indicate that many individuals with child abuse histories do not go on to develop PTSD symptomatology.

A history of childhood abuse has also been shown in some studies to have an adverse effect on the quality of adult intimate relationships. For example, female survivors of childhood abuse report having more difficulty forming trusting, intimate relationships with men (Rumstein-Mckean and Hunsley 2001), and survivors who are in romantic relationships report those relationships to be less satisfying than women without a history of childhood abuse (Testa et al. 2005). Survivors also report avoiding romantic relationships due to a fear of being rejected compared to individuals without an abuse history (Alexander 1993). Importantly, a history of childhood abuse is also linked to higher rates of violence against women in romantic relationships (Mezey et al. 2005; Lang et al. 2006). Thus, the present study aimed to examine how current romantic relationship quality may affect associations between child abuse experiences and later adult trauma sequelae; given that only a subset of individuals exposed to

A. Busuito
Department of Psychology, The Pennsylvania State University, University Park, PA, USA

A. Huth-Bocks (✉) · E. Puro
Department of Psychology, Eastern Michigan University, 341 MJ Science Complex, Ypsilanti, MI 48197, USA
e-mail: ahuthboc@emich.edu

childhood abuse develop later trauma symptoms, it is important to examine possible factors that promote resilience (or vulnerability). Further, this study investigates these associations in a diverse sample of women during pregnancy, a time when relational experiences are particularly salient as the mother begins to form a new relationship with her unborn infant (Slade et al. 2009).

Adult Romantic Attachment

Attachment theory provides a useful framework which can help clinicians and researchers understand the impact of childhood abuse on adult relationships and mental health functioning. Pioneered by John Bowlby (1969, 1982), attachment theory initially focused on the relationship that develops between infants and their caregivers to promote the adaptation and survival of the infant. Applying these principles to adult intimate relationships, Hazan and Shaver (1987) extended knowledge about attachment to adulthood by suggesting that early childhood attachment quality might be the paradigm from which adult romantic relationships are formed. Using Bowlby's idea of internal working models and Ainsworth's (Ainsworth et al. 1978) infant attachment classification system as a framework, they developed an attachment classification system for adult romantic relationships which included secure, ambivalent (or preoccupied), and avoidant attachment groups. They proposed that secure adults experience emotional intimacy with minimal anxiety, find others to be trustworthy, and feel an enduring sense of self-worth. Ambivalent adults experience intense anxiety related to relationships, while simultaneously being overly dependent on their partners. Conversely, avoidant adults tend to reject intimacy in relationships.

Bartholomew and Horowitz (1991) later criticized this model of romantic attachment, suggesting that a single avoidant category does not accurately capture adult patterns of avoidance. Instead, they proffered a four-category, two-dimensional model, based on Bowlby's working models of the self and other. The four-category model is derived by combining a dimensional working model of the self (positive v. negative) and a dimensional working model of the other (positive v. negative). Each combination of a level from either dimension comprises one of four adult attachment patterns: secure (positive view of self and others), preoccupied (negative view of self and positive view of others), fearful-avoidant (negative view of self and others), and dismissing-avoidant (positive view of self and negative view of others). Bartholomew and Horowitz's model of adult romantic attachment can also be conceptualized in terms of attachment anxiety (the self model dimension) and attachment avoidance (the other model dimension). More recently, researchers have posited and empirically demonstrated that these underlying dimensions most accurately describe the construct of romantic attachment (Brennan et al. 1998; Fraley et al. 2000).

Childhood Abuse, Romantic Attachment, and Psychological Functioning

Importantly, a number of studies have found that childhood abuse is associated with insecure attachment with caregivers and/or romantic partners (Cicchetti 2004; Twaite and Rodriguez-Srednicki 2004). Rates of insecure attachment are much higher in maltreated children than in the general population, with 70 to 100 % of maltreated children being insecurely attached compared to the base rate of about 30 % in the general population (see Baer and Martinez 2006, for a review). Because attachment is a lifelong process, it is not surprising that Muller et al. (2000) found that 76 % of adult sexual abuse survivors present with insecure adult romantic attachment. It is clear that childhood abuse experiences may adversely impact one's attachment style throughout the lifespan, and in turn, impact functioning in interpersonal relationships. Thus, it is not surprising that those who have suffered childhood abuse, particularly by caregivers, are more likely to feel vulnerable and threatened in future attachment relationships (Riggs 2010).

Attachment also affects individuals' ability to adapt to experiences that often lead to the development of psychopathology. Secure attachment (both in childhood and in adult relationships) is considered a protective factor, in that it can serve as an internal resource that enables an individual to cope with stressful events and to experience lower anxiety related to those events (Mikulincer and Florian 1998, 2003). Because the attachment system serves as a regulator of the stress response system, insecure attachment may place an individual at particular risk for the development of PTSD, given that PTSD symptoms reflect an extreme, and sometimes maladaptive, stress response (American Psychiatric Association 2000). Thus, an insecurely attached individual's vulnerability to the development of PTSD may be attributed to their mental representations of the unresponsiveness of others in times of stress (Fraley et al. 2006). Indeed, in a large sample (N=1,577) of Danish trauma victims, Armour et al. (2011) found that individuals classified as secure had significantly lower rates of PTSD than individuals with insecure attachment styles. Conversely, in a study of military veterans, researchers found that attachment avoidance and anxiety in romantic relationships were associated with an increase in PTSD symptoms over time (Solomon et al. 2008). Thus, early development of insecure attachment may increase one's vulnerability to the development of psychopathology, particularly after experiencing trauma such as childhood abuse, because it can hinder an individual's ability to cope and adjust to negative experiences such as trauma or stressful life events (Fearon et al. 2010).

Other recent research has been directed toward examining the specific manner in which childhood abuse leads to maladaptive functioning and/or psychopathology in adulthood, with some studies suggesting that adult romantic attachment helps explain the relationship between childhood abuse and psychopathology in adulthood (e.g., Bifulco et al. 2006). That is, romantic attachment style may serve as a mediator between childhood abuse and psychopathology. For example, Dimitrova et al. (2010) found that child sexual abuse predicted both lower levels of closeness in intimate relationships and poorer psychological outcome overall. Closeness in relationships was also associated with overall psychological functioning in this study, and the ability to maintain closeness in adult intimate relationships mediated the link between child sexual abuse and global psychological functioning. In another study with 307 female college students (Roche et al. 1999), child sexual abuse predicted poor psychological adjustment and attachment style, with survivors of child sexual abuse being significantly less secure and more fearful than women without a history of abuse. Attachment style also predicted psychological adjustment, such that securely attached women reported less psychological adjustment difficulties, and attachment style mediated the relationship between child sexual abuse and psychological adjustment in adulthood.

Similarly, in a study of male and female undergraduate students interviewed at two time points, Hankin (2005) found that a history of childhood emotional, physical, and sexual abuse predicted greater depressive and anxiety symptoms. After controlling for levels of depression at the first time point and accounting for the overlap of abuse type, only emotional abuse remained significantly, positively associated with depressive symptoms. Additionally, insecure romantic attachment partially mediated the relationship between child abuse and depressive symptoms. Likewise, in a high-risk community sample of women, insecure romantic attachment partially mediated the relationship between adverse childhood experiences and depression and anxiety symptoms in adulthood (Bifulco et al. 2006). Results indicated that fearful and angry-dismissive styles, in particular, served as mediators, suggesting again that insecure romantic attachment may help explain the association between child abuse and later adult psychopathology.

While most studies have looked at the mediating role of attachment in the relation between childhood abuse and psychopathology in adulthood, few studies have looked at attachment as a possible moderator. However, one exception was a study that found romantic attachment security moderated the relationship between child sexual abuse and self-reported dysphoria in a sample of female undergraduate students (Aspelmeier et al. 2007). More specifically, secure adult relationships were shown to be a protective factor, such that the association between childhood sexual abuse and traumatic symptoms in adulthood was significantly weaker for those with secure attachment compared to those with insecure romantic attachment. One other existing study found that discomfort with closeness and anxiety in intimate relationships, as well as partner physical violence, moderated the relationship between child sexual abuse and depression in adulthood. As expected, child sexual abuse was related to higher levels of depression for those reporting more discomfort with closeness, anxiety, or partner violence. Conversely, less partner violence, less anxiety, and more comfort in romantic relationships were notable protective factors against depression (Whiffen et al. 1999).

In sum, little research has examined associations between childhood abuse, romantic attachment style, and PTSD symptoms, in particular, including possible interaction effects; to our knowledge, none have studied these associations in pregnant women. Because pregnancy is a time when attachment relationships and social bonds are particularly important for overall functioning, the association between these variables may be especially salient for pregnant women, and research should be directed accordingly. A central premise in attachment theory is that an individual's working models can function as a resource that helps them cope with stressful or traumatic experiences (Bowlby 1973). Bowlby and more recent studies examining adult romantic attachment suggest that these working models may be more salient during stressful experiences, as stress activates the attachment system (Feeney 1998; Rholes et al. 1998; Seiffge-Krenke 2006). Thus, pregnancy is an apt time for studying adult romantic attachment and its relation to psychopathology, as pregnancy is a major life transition and often evokes strong feelings about past and current relationships (Slade et al. 2009).

Furthermore, only some individuals who experience trauma develop PTSD symptomatology (Kessler and Berglund 2005; Kessler and Chiu 2005), suggesting that other variables should be considered for moderating effects of abuse. Further, to date, only two known studies have looked at romantic attachment as a moderator between childhood abuse and psychopathology, and these studies included samples of mostly Caucasian, middle class women. Research has shown that rates of psychopathology, including PTSD, are higher in socioeconomically at-risk individuals (Norris et al. 2004; Vogel and Marshall 2001), highlighting the importance of better understanding factors that may buffer the effects of childhood abuse on posttraumatic stress in socioeconomically disadvantaged groups. Additionally, the vast majority of research linking child abuse, romantic attachment, and psychopathology in adulthood has not looked at trauma symptoms as the potential outcome, despite the fact that posttraumatic stress may be one of the most common sequelae of early abuse. Thus, the present study is unique in that it will examine the impact of childhood abuse experiences (physical, sexual, and emotional abuse and neglect) on PTSD symptoms, while taking into consideration adult romantic attachment anxiety

and avoidance as possible moderators in a sample of pregnant women.

Hypotheses

In the present study, it was hypothesized that, after controlling for intimate partner violence (IPV) during the current pregnancy, greater total child abuse severity would be associated with higher levels of attachment anxiety and avoidance and PTSD symptoms. Attachment anxiety and avoidance were also expected to be positively associated with PTSD symptoms. It was also hypothesized that insecure attachment (both avoidance and anxiety) would moderate the relationship between childhood abuse and PTSD symptoms, such that the association between child abuse severity and PTSD symptoms would be stronger in women with greater attachment anxiety and greater attachment avoidance than in those with less attachment anxiety and less attachment avoidance.

Method

Participants

Participants in this study included 120 primarily low-income women who participated in a five-wave longitudinal study, which followed women from pregnancy through 3 years postpartum. Only data from the first wave (i.e., third trimester of pregnancy), collected from 2008 to 2009, of the larger study were used in the present study. Before the study began, approval was obtained by the University's Institutional Review Board (IRB).

Participants were between the ages of 18 and 42 (M=26, SD=5.7) during pregnancy. Forty-seven percent identified as African American, 36 % as Caucasian, 13 % as Biracial, and 4 % as belonging to another ethnic group. Sixty-four percent were single (never married), 28 % married, 4 % separated, and 4 % divorced, and 30 % were first-time mothers at study entry. Seventy-eight percent of women reported being in a romantic relationship at the time of the interview, but all women reported having had at least one romantic relationship during the current pregnancy. Ninety percent were receiving Medicaid, Mi-Child, or Medicare, 88 % received services from WIC, 62 % received food stamps, and 20 % received other public supplemental income. Additionally, 20 % percent of participants reported having a high school diploma/GED or less education, 44 % reported having some college or trade school, and 36 % reported having a college degree. The median monthly income was $1,500 (range=$0–$10,416). Seventy-eight percent reported mild levels (on average) of IPV during pregnancy, including psychological violence.

Participants were recruited from local urban communities via fliers advertising a study about parenting. Fliers were placed at areas serving primarily high-risk or low-income pregnant populations. This intentional distribution of fliers allowed for the over-recruitment of economically-disadvantaged, pregnant women, which was a particular focus of the study's goals. Twenty-three percent of participants were recruited from several community-based health clinics serving low-income and/or uninsured individuals, 18 % from WIC social service programs, 16 % from student areas in a university and community college, 11 % from a "community baby shower" sponsored by local social service organizations, 11 % learned of the study from word of mouth, 7 % from Head Start and other local daycares, 7 % from subsidized and/or temporary housing facilities, 5 % from second-hand donation centers for women and young children, and 2 % from a parenting class.

Procedures

Fliers requested that pregnant women interested in the study contact the research office. Those who contacted the office were read a scripted description of the study by research assistants. The description included information on the purpose of the study, the logistics of the first interview (i.e., length, location, types of questionnaires, confidentiality, and compensation), the interest to stay in contact with them after birth, and their rights as research participants. Participants who were interested in participating were subsequently asked for verbal consent to continue collecting basic information from them to determine if they were eligible for the study. The two inclusion criteria included being pregnant and fluent in English. Research assistants then collected contact and demographic information from eligible women, and scheduled them for the first interview.

The pregnancy interview lasted approximately 2 ½hours and most (78 %) were conducted in the women's homes. After the informed consent was read and signed, a brief demographic questionnaire was completed, and then a semi-structured, 1 h, audio-recorded interview regarding the mother's perceptions of her unborn baby was conducted. Finally, the remaining questionnaires were administered in the same predetermined order for every participant. This specific order was chosen to allow for rapport building with the participant before reaching sensitive questionnaires to increase participants' comfort and likelihood of giving honest and accurate answers. Upon completion of the interview, participants were given a $25.00 gift card as compensation.

Measures

Childhood Abuse History The Childhood Trauma Questionnaire (CTQ; Bernstein and Fink 1998) is a 28-item self-report

inventory designed to assess experiences of five types of childhood maltreatment: emotional, physical, and sexual abuse, and emotional and physical neglect. There are five items on each of the five scales, and each item response category is scored on a five-point Likert scale ranging from 1 (*never true*) to 5 (*very often true*), reflecting the frequency of abuse events. Thus, scores can range from 5 to 25 for each scale; a total abuse score can also be calculated by summing the five subscales. Based on seven female samples (N=1,591), means (*SD*s) for the five scales, respectively, were as follows: 10.1 (5.4), 7.4 (4.0), 7.4 (4.9), 11.0 (5.3), and 7.0 (3.1). Descriptives for the five scales, respectively, for four male samples (N=546) were: 9.9 (4.9), 8.7 (4.1), 6.6 (3.7), 11.1 (5.1), and 7.6 (3.1). Descriptives were not presented for the total abuse score for these norm samples (Bernstein and Fink 1998).

Bernstein et al. (2003) reported good internal consistency reliability for each of the CTQ scales across four heterogeneous clinical samples from the USA: Physical Abuse=0.83 to 0.86, Emotional Abuse=0.84 to 0.89, Sexual Abuse=0.92 to 0.95, Physical Neglect=0.61 to 0.78, and Emotional Neglect=0.85 to 0.91. In the current study, alpha was 0.96 for the total score. The CTQ scales are significantly correlated (r= *0*.42 to 0.75) with three trauma interview measures (the Childhood Trauma Interview, the Childhood Maltreatment Interview, and the Evaluation of Lifetime Stressors) (Bernstein and Fink 1998) demonstrating good convergent validity.

Posttraumatic Stress Disorder Symptoms The Posttraumatic Stress Disorder Checklist-Civilian Version (PCL; Weathers et al. 1993) was used to assess maternal posttraumatic stress symptomatology. This scale is a 17-item self-report questionnaire that assesses *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association 2000) PTSD criteria. Items are rated on a five-point Likert scale ranging from 1 (*not at all*) to 5 (*extremely*) for symptoms experienced over the past month. A total PTSD score was calculated by summing the individual items; total scores range from 17 to 85. Higher total scores indicate more severe PTSD symptoms. Scores of 44 and 50 have been suggested as possible cut-offs to distinguish those with PTSD and those without a PTSD diagnosis; however, the present study only examined symptoms dimensionally to evaluate symptom severity level. In a college student sample (Ruggiero et al. 2003) and a female veteran sample (Lang et al. 2008), means (*SD*s) were reported as 29.4 (12.9) and 39.1 (18.2), respectively. The PCL is a highly valid and reliable instrument. The measure was shown to have a high 1-week test-retest reliability (r=0.88; Ruggiero et al. 2003). The coefficient alpha for the total score in this sample was 0.91.

Adult Romantic Attachment The Experiences in Close Relationships Questionnaire-Revised (ECR-R; Fraley et al. 2000) was used to assess adult romantic attachment styles. The ECR-R is a 36-item self-report designed to measure the attachment dimensions of anxiety (fear of abandonment but desire for intimacy) and avoidance (discomfort with dependence, intimacy, and self-disclosure) in adult romantic relationships. Since items refer to feelings about romantic relationships in general, respondents are not required to be in a current romantic relationship at the time they completed the measure. All items are rated on a scale from 0 (*strongly disagree*) to 6 (*strongly agree*); items are averaged to yield a total for anxiety and a total for avoidance. Higher scores indicate higher levels of each respective construct. Based on a norm group of 22,000 adults, means (*SD*s) for anxiety and avoidance, respectively, have been reported as 3.6 (1.3) and 2.9 (1.2) (Fraley et al. 2000). Test-retest reliability has ranged from 0.94 to 0.95, and both internal consistency and convergent validity has been established. In the present study, alphas were 0.93 for anxiety and 0.93 for avoidance.

Intimate Partner Violence The Conflict Tactics Scale-2 (CTS-2; Straus et al. 2003) was used to assess experiences of IPV. The CTS-2 is a 78-item questionnaire designed to assess four types of interpersonal violence including psychological, physical, and sexual violence, as well as physical injuries resulting from partner violence. Thirty-three items assess perpetration and 33 items assess victimization; additionally, 12 items (six for self and six for partner) assess conflict negotiation. Due to the interests of the larger study, only the 33 items that assess experiences of victimization were used. Researchers often use only the subscales of the CTS-2 most relevant to their studies, and this is a practice supported by the authors of the measure (Straus et al. 1996). Violence was assessed for multiple time periods; however, only IPV during the current pregnancy was used in the current study. Higher scores indicate greater IPV severity. In the present study, alpha was. 84 for the total IPV score.

Results

Due to the high prevalence of IPV in our sample, and the known associations between IPV, attachment, and PTSD symptoms (Elwood and Williams 2007; Stovall-McClough et al. 2008), IPV during the current pregnancy was controlled for in the analyses. Table 1 lists descriptive statistics for the study variables. Table 2 presents the Pearson's correlations among participants' history of child abuse severity, attachment scores, PTSD symptoms, and current IPV severity. These correlations indicate that greater total child abuse severity was correlated positively with attachment avoidance, attachment anxiety, PTSD symptoms, and current IPV severity, as expected. Current IPV was positively correlated with

Table 1 Descriptives of study variables

Measures	Mean	Standard deviation	Min	Max	Possible range
Child abuse total	43.12	20.60	25.00	121.00	25.00–125.00
Attachment avoidance	2.80	1.19	1.00	5.33	1.00–7.00
Attachment anxiety	2.79	1.33	1.00	6.61	1.00–7.00
PTSD symptoms	29.76	10.20	17.00	67.00	17.00–85.00
Intimate partner violence total	14.01	29.52	0.00	253.00	0–825.00

PTSD Posttraumatic Stress Disorder

attachment anxiety and PTSD symptoms; current IPV was not related to attachment avoidance. Attachment avoidance and attachment anxiety were also positively correlated with PTSD symptoms, as expected.

In accordance with the recommendations of Baron and Kenny (1986), regression analyses were used to test for moderation. The predictor (total child abuse) and moderator variables (attachment avoidance and attachment anxiety) were first centered (Frazier et al. 2004), and two interaction terms were created by multiplying the centered childhood abuse variable with each attachment scale. For each regression analysis, IPV (the covariate) was entered first, followed by the centered child abuse variable, the centered attachment variable, and the interaction term. Moderator effects are indicated by a significant effect of the interaction term, while controlling for the effects of the independent and moderator variables (Baron and Kenny 1986). Significant interaction effects were explored by plotting the simple effects at low and high levels of the independent variable (Aiken and West 1991). The low level of each variable was computed by subtracting one standard deviation from the sample mean; the high level was computed by adding one standard deviation to the sample mean.

It was hypothesized that attachment anxiety would moderate the association between severity of childhood abuse and PTSD symptoms in adulthood. Specifically, the association between childhood abuse and PTSD symptoms was expected to be larger under conditions of high attachment anxiety than under conditions of low attachment anxiety. A significant main effect between childhood abuse and PTSD symptoms in adulthood (β=0.25, p<0.001), and between attachment anxiety and PTSD symptoms (β=0.38, p<0.001) was found, such that greater severity of abuse and higher levels of anxiety were related to more PTSD symptoms; the strength of associations was moderate. However, the interaction term was not significant; therefore, attachment anxiety did not moderate the relation between abuse and PTSD symptoms (see Table 3).

Next, it was hypothesized that attachment avoidance would moderate the relationship between childhood abuse and PTSD symptoms in adulthood. Specifically, the association between childhood abuse and PTSD symptoms would be larger under conditions of high attachment avoidance than under conditions of low attachment avoidance. Regression results indicated significant main effects for IPV (covariate) on PTSD symptoms (β=0.26, p<0.001), between childhood abuse and PTSD symptoms (β=0.32, p<0.001), as well as for attachment avoidance and PTSD symptoms (β=0.18, p<0.05), such that greater severity of IPV and child abuse, and higher levels of avoidance, were related to more PTSD symptoms; the strength of associations was small to moderate. Also, as expected, a significant interaction effect was found between childhood abuse and attachment avoidance in predicting PTSD symptoms (see Table 3). Using the simple slopes test (Aiken and West 1991) to probe the interaction effect, results indicated that childhood abuse was more strongly related to PTSD symptoms in adulthood under conditions of high attachment avoidance compared to conditions of low

Table 2 Pearson's correlations of study variables

	Child abuse total	Attachment avoidance	Attachment anxiety	PTSD symptoms	Intimate partner violence total
Child abuse total					
Attachment avoidance	0.21*				
Attachment anxiety	0.36***	0.52**			
PTSD symptoms	0.42***	0.29**	0.54**		
Intimate partner violence total	0.21*	0.12	0.44**	0.35**	

PTSD Posttraumatic Stress Disorder

*p< 0.05; **p<0.01; ***p<0.001

Table 3 Two multiple regressions examining attachment as a moderator between childhood abuse and PTSD symptoms (N=120)

	Adjusted R^2	Standardized Beta
Anxiety		
Intimate partner violence	0.12	0.11
Child abuse	0.24	0.25**
Attachment anxiety	0.35	0.38***
Child abuse × Attachment anxiety	0.35	0.07
Avoidance		
Intimate partner violence	0.12	0.26***
Child abuse	0.24	0.32***
Attachment avoidance	0.26	0.18*
Child abuse × Attachment avoidance	0.28	0.17*

PTSD Posttraumatic Stress Disorder

*p<0.05; **p<0.01; ***p<0.001

attachment avoidance, as expected. In fact, while child abuse severity was significantly, positively associated with PTSD symptoms in women with high attachment avoidance, child abuse severity was not significantly associated with PTSD symptoms in women with low avoidance (or conversely, more security in romantic relationships) (see Fig. 1).

Discussion

The goal of the present study was to examine the role of adult romantic attachment in the association between child abuse severity and PTSD symptoms in adulthood among a sample of pregnant women. While most prior studies have examined adult romantic attachment as a mediator of the association between child abuse and adulthood psychological functioning (e.g., Bifulco et al. 2006; Hankin 2005), only two have looked at attachment as a moderator of this relationship (Aspelmeier et al. 2007; Whiffen et al. 1999). To our knowledge, no studies have examined adult romantic attachment as a moderator between child abuse and PTSD symptoms in adulthood. In the last few decades, epidemiological research has consistently found that not everyone who experiences trauma develops PTSD symptoms (e.g., Kessler and Berglund 2005). As such, other variables must be acting as vulnerability or protective factors, and it is critical to discover possible moderators for intervention purposes.

Consistent with previous research (Kulkarni et al. 2011; Mezey et al. 2005), greater child abuse severity was associated with more PTSD symptomatology. Greater child abuse severity was also related to higher levels of both attachment anxiety and attachment avoidance. These results have some support in prior literature. For instance, when comparing survivors of sexual abuse to non-survivors, Dimitrova et al. (2010) found significant differences on measures of romantic attachment (anxiety and closeness), such that abuse survivors had higher levels of anxiety, and lower levels of comfort with closeness. Given its interpersonal nature, child abuse may influence the development of internal working models in several ways that help explain later interpersonal attachment insecurity including: (a) a survivor may view herself as worthy of love and affection, but others as untrustworthy and unreliable (i.e., avoidant) or (b) a survivor may view herself as unworthy, but have a positive view of others (i.e., anxious). Muller et al. (2008), for example, found that a history of child abuse was related to more negative views of self and other.

Higher levels of attachment anxiety and attachment avoidance also both independently predicted PTSD symptoms; these results are generally supported by existing literature (for a review, see Mikulincer and Shaver 2007). For instance,

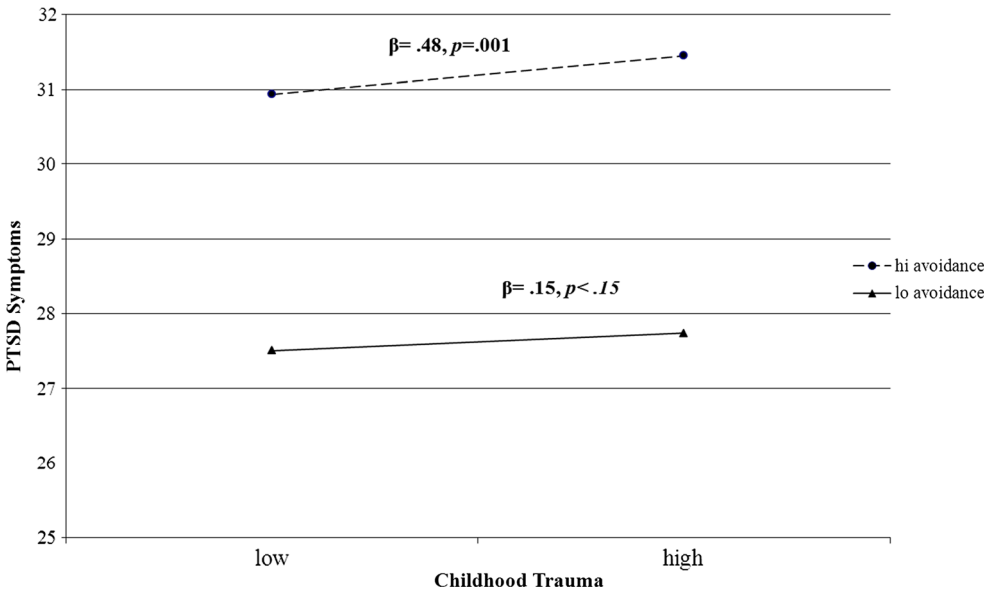

Fig. 1 PTSD symptoms predicted by the interaction of child abuse and adult attachment avoidance

attachment anxiety and attachment avoidance were associated with PTSD symptoms in a sample of war-exposed individuals in southern Israel (Besser et al. 2009) and in a sample of adult survivors of adolescent or adult sexual victimization (Sanburg et al. 2010). In a sample of female college students with histories of interpersonal violence, individuals with greater attachment anxiety reported higher levels of PTSD symptoms than women with lower levels of attachment anxiety (Elwood and Williams 2007). This link could be due, in part, to the effects different attachment styles have on coping strategies.

According to Shaver and Mikulincer (2002), there are three major components involved in activating attachment-related coping strategies. The first involves monitoring and appraisal of stressful events; this is responsible for triggering one's primary attachment strategy. The second component involves monitoring and appraisal of the availability of actual or symbolic attachment figures, and is responsible for the development of secure-base strategies in securely attached individuals (Waters et al. 1998). The third component involves assessing the feasibility of proximity seeking as an effective coping mechanism. It is here that one of the most distinct differences between high anxiety and high avoidant individuals becomes apparent; individuals high on attachment anxiety tend to be hypersensitive to stress and negative emotions and seek out others as a way of coping with such emotions, while individuals high on attachment avoidance tend to use deactivating strategies to distance themselves from negative emotions and other people. Increased sensitivity to negative emotions may cause individuals with high attachment anxiety to feel perpetually stressed, leaving them less able to cope with traumatic events. Deactivating strategies used by avoidant individuals may appear to be adaptive at first, but ultimately lead these individuals to fail to build effective techniques for managing stress. Both represent maladaptive coping mechanisms that could ultimately increase vulnerability to the development of long-term psychological problems.

Results from the present study also showed the importance of avoidant romantic attachment, in particular, as a vulnerability factor in the context of childhood abuse and later trauma symptoms; the association between child abuse severity and PTSD symptoms was positive and significant, but only for those with high attachment avoidance. Previous research has found similar results such that discomfort with closeness (i.e., avoidance) could be a vulnerability factor for the development of psychopathology (Whiffen et al. 1999). For example, attachment avoidance may be adaptive in the immediate aftermath of trauma, such that avoidant individuals are likely to cope with stressful events by dismissing negative emotions (e.g., using deactivating strategies), and therefore, seem less sensitive to stress. In the long run, however, these strategies may prove to be more harmful than helpful, in that they prevent any type of processing of the stressful event, which leads to more traumatic symptomatology. While Whiffen et al. (1999) found this to be the case for depressive symptoms, the present study is the first known study to demonstrate this interactive effect for PTSD symptoms among child abuse survivors.

Furthermore, results showed no relation between child abuse and PTSD symptom severity among women with low attachment avoidance, thus, low avoidance in romantic relationships may act as a protective factor. For example, these women may be more willing to seek out and rely on their romantic partners, particularly in times of stress, while survivors with high avoidance may refuse to seek out or receive support from their partners. Thus, the findings of the current study support the proposition that insecure attachment, specifically attachment avoidance, is a vulnerability factor for the development of psychopathology in the context of a history of child abuse.

Contrary to what was expected, attachment anxiety did not moderate the relation between childhood abuse and PTSD symptoms. This was surprising and is not consistent with previous research, which suggests that attachment anxiety is strongly related to psychological distress and the occurrence of PTSD (Declercq and Willemsen 2006). However, while the hypersensitivity associated with attachment anxiety may be maladaptive, other aspects of anxious attachment-related strategies could prove to be adaptive. An important aspect of the attachment behavioral system is proximity seeking, which occurs when the attachment system is activated (e.g., in times of stress; Shaver and Mikulincer 2002). Individuals with high levels of attachment anxiety consistently engage in high levels of proximity seeking, which may sometimes result in a sense of security, or at least, anxious closeness. Furthermore, the expression of vulnerability and distress often seen in anxiously attached individuals may elicit the attention and closeness that the individual looks for in a relationship, again producing a transient sense of security (Mikulincer et al. 2003).

It is important to note, however, that this explanation may only make sense for those who show higher levels of anxiety with lower levels of avoidance; while these two aspects of insecure attachment involve qualitatively different strategies for managing distress in relation to others, and theoretically are quite distinct, research has shown that anxiety and avoidance are often positively correlated. In fact, this is the case in the current sample where anxiety and avoidance were correlated at 0.52, suggesting that at least a sub-set of individuals report both anxiety *and* avoidance. It will be important for future research to better understand the differences between individuals who report both types of insecurity versus those that identify with only one predominant insecure style.

Limitations and Strengths

Several limitations of the present study may have affected the findings and are worth noting. First, although research suggests that romantic attachment is most accurately measured as

a dimensional construct (Brennan et al. 1998; Fraley et al. 2000), there is still significant heterogeneity in the measures used to quantify romantic attachment across studies. Thus, it is difficult to make comparisons within this body of research. Results should also be interpreted with caution, as the current study utilized only self-report measures at a single time point. Therefore, it is impossible to ascertain whether posttraumatic stress symptoms predated romantic attachment anxiety and avoidance or vice versa. Ideally, future research would measure the relationships between a history of child abuse, romantic attachment, and psychopathology in adulthood across time, particularly during the first year postpartum. Finally, results of this study may not be generalizable to other populations of women, as this is a low-income, pregnant sample.

On the other hand, this is the first known study to examine the associations between child abuse, romantic attachment, and PTSD symptoms in a sample of pregnant women. Furthermore, the present study utilized a sample of demographically high-risk women. Much of the research in this area has been done using primarily Caucasian, middle class women (e.g., Aspelmeier et al. 2007; Roche et al. 1999). Extending this research to racially diverse and low-income women is important due to the lack of resources and increase in stress that these women face. Including these under-represented groups in this body of research is critical to help inform effective interventions for the populations who are most in need.

Conclusions and Clinical Implications

In conclusion, high levels of attachment avoidance appear to be a vulnerability factor that increases the association between child abuse and later PTSD symptoms during pregnancy. Pregnancy is a unique time, as a woman's internal working models of the self and others are reactivated, and often reorganized in anticipation of incorporating a new infant into her relational world (see Slade et al. 2009, for a review). Having an avoidant attachment style during this period (and at other times) likely interferes with the process of reorganizing relationships, making psychological room for the infant and feeling close to the infant during pregnancy, and the processing of past traumatic events in an adaptive way. In fact, several studies have empirically shown this to be the case. For instance, Rholes et al. (1995) found that mothers who reported more avoidant romantic attachment felt more distant from their young children and provided less support while interacting with their children (as rated by observers). In a later study (Rholes et al. 2006), these researchers also found that pregnant women with more romantic attachment avoidance reported anticipating parenting to be more stressful and less personally satisfying than those with lower levels of avoidance. Thus, avoidant attachment strategies may be particularly deleterious during pregnancy for those with childhood abuse histories.

While clinical and empirical literature suggests that cognitive behavioral therapy is effective for treating PTSD symptoms among survivors of early trauma (Cahill et al. 2009), results of the present study highlight the need to also assess, and treat in a focused way, interpersonal factors in traumatized populations; this may be especially important among pregnant survivors, as well as survivors of childhood abuse in particular, as child abuse has been shown to have negative and pervasive effects on the attachment system. Thus, trauma interventions that are also attachment-informed may be most effective for helping survivors of childhood abuse while they are pregnant and adjusting to a new relationship with a child. Additionally, future research should focus on better understanding the role of romantic attachment (including different types of attachment styles) in the development of various forms of psychopathology in survivors of child abuse, so that attachment-based strategies may be better incorporated into interventions for this population.

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