

Insecure Attachment Orientations and Posttraumatic Stress in a Female Treatment-Seeking Sample of Survivors of Childhood Sexual Abuse: A Cross-Lagged Panel Study

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Adult attachment theory is increasingly being conceptualized within a traumatic framework, however, few studies have examined temporal relationships between the insecure attachment orientations (attachment anxiety and attachment avoidance) and symptoms of posttraumatic stress (PTS). PTS refers to symptoms associated with posttraumatic stress disorder (PTSD) in the absence of a clinical diagnosis of PTSD. This prospective study assesses the temporal relations between the 2 attachment dimensions of anxiety and avoidance and PTS among a treatment-seeking sample of female survivors of childhood sexual abuse (CSA). Cross-lagged panel analysis was employed to assess the temporal relations between insecure attachment orientations and PTS using the Revised Adult Attachment Scale (RAAS) and the Harvard Trauma Questionnaire (HTQ). Initial assessment was on average 23 years after the onset of abuse ($N = 405$), and participants were followed-up after 6 months ($N = 245$) and 12 months ($N = 119$). PTS levels and insecure attachment declined over the 12-month period. Cross lagged panel analyses indicated that over the longer-term course of PTS, insecure attachment orientations are significantly related to PTS. While these associations were relatively weak in magnitude, temporal relations nevertheless remain. Specifically attachment avoidance appears to be the more relevant orientation in PTS across the 3 time points in the study. Current results provide insight into the temporal relations between insecure attachment orientations and symptoms of PTS. The findings are discussed in terms of the existing trauma literature.

Keywords: posttraumatic stress, attachment anxiety, attachment avoidance, cross-lagged analysis, temporal ordering

Adult attachment theory is increasingly being conceptualized within a traumatic framework due to the difficulties trauma survivors develop in terms of negative self and other evaluations and interpersonal relationships. The complexity of these difficulties are more prevalent in individuals who experience cumulative interpersonal abuse, especially in childhood by attachment figures (Pearlman & Courtois, 2005). Attachment theory is based on the premise that the quality of early attachment relationships with caregivers determines an individual's internal working models (IWM) of self and others. Bowlby (1973) describes working models as internal mental representations that an individual develops of the self and

world. Based on repeated experiences with caregivers these representations center on the fulfilment of attachment needs, that is, maintaining proximity to a nurturing caregiver and the regulation of sense of security. A central component of IWM's is that they are used to predict the behavior of others and to guide one's own behavior in social interactions (Collins, Guichard, Ford, & Feeney, 2004). IWM's therefore shape how the attachment behavioral system manifests and provide the basis for categorizing the infant's attachment style as either secure or insecure (Ainsworth, Blehar, Waters, & Wall, 1978). Consequently, IWM's of self and others become a core feature of personality and have been found to affect close relationships and emotion-regulation strategies across the life span (Mikulincer & Shaver, 2007).

Attachment styles are generally considered stable from childhood to adulthood; however, evidence suggests that life experiences and contextual factors (e.g., traumatic experiences, divorce, grief) can alter attachment patterns (Mikulincer & Shaver, 2007). Therefore, while attachment orientation formulates initially from the nature of the original parent-child relationship, the IWM may also incorporate other important intervening attachment relationships (e.g., romantic partners) and are subsequently not entirely isomorphic to the original attachment relationship (Alexander et al., 1998).

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Adult attachment stems from two different perspectives: developmental and social/personality research. Despite using similar terminology to understand adult relations, however, they are weakly correlated and assessed using different methodological approaches (Roisman et al., 2007). The developmental perspective focuses on the adult-child relationship and is commonly assessed using the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1984). The AAI is a semistructured interview asking individuals about childhood attachment-related experiences with caregivers and encourages them to evaluate the influence of these experiences on their development and current functioning (Hesse, 2008). From a trauma perspective the AAI is useful for measuring PTSD based on the unresolved trauma/loss category. Stovall-McClough and Cloitre (2006) found that in a sample of female survivors of childhood sexual and/or physical abuse the unresolved trauma category of the AAI was associated with a 7.5-fold increase in the likelihood of PTSD.

The social/personality perspective assesses adult attachment based on self-report measures of attachment-related thoughts and feelings in current romantic/close relationships. This perspective, originally proposed by Hazan and Shaver (1987) stemmed from work on the links between chronic loneliness and insecure attachment. Self-report measures of adult attachment have been characterized and restructured in different ways throughout the literature (see Mikulincer & Shaver, 2007; Ravitz, Maunder, Hunter, Sthan-kiya, & Lancee, 2010, for reviews) and examined using both categorical and dimensional approaches (e.g., Brennan, Clark, & Shaver, 1998; Collins, 1996; Mikulincer & Shaver, 2003; Shevlin, Boyda, Elklit, & Murphy, 2014).

There is general consensus, however, that self-report measures of adult attachment comprise two dimensions: anxiety and avoidance (Brennan et al., 1998). Attachment anxiety refers to the degree an individual worries that a partner will not be available in times of need. Individuals with attachment anxiety use hyperactivating strategies such as persistent attempts to seek care, support, and love from relationship partners in order to regulate distress (Mikulincer & Shaver, 2003). Attachment avoidance refers to the degree an individual mistrusts their partners' goodwill and attempts to maintain behavioral independence and emotional distance from partners. Individuals with avoidant attachment adopt deactivating strategies such as suppression of attachment-related thoughts and emotions (Mikulincer & Shaver, 2003). Individuals with low scores on both dimensions are considered securely attached and can effectively regulate affect when the attachment system is activated. During such times, they seek out significant others for support and can experience negative emotions without becoming overwhelmed by the process (Muller & Rosenkranz, 2009).

Studies have indicated that survivors of childhood sexual abuse (CSA) are at particular risk for PTSD with an estimated lifetime prevalence ranging from 48% to 85% (Kessler et al., 1995; Roth et al., 1997). CSA is a complex form of trauma as it usually occurs during vulnerable developmental periods and is often of a prolonged and chronic nature. The effects of CSA on attachment insecurity therefore are particularly potent when the attachment figure is the perpetrator. In such an environment the individual has to cope (often alone) with the abuse in the context of limited cognitive and psychological resources (Briere, 1988). When applying this context to adult relationships it is likely insecurely

attached individuals may be unable to draw upon internal representations of security, support, and comfort in these relationships thereby making it difficult to regulate distress. This regulatory failure may increase feelings of loneliness and rejection, negative IWM's of self and others and cause reliance on ineffective coping strategies which may exacerbate the likelihood of chronic PTSD (Ein-Dor, Doron, Solomon, Mikulincer, & Shaver, 2010).

Cross-sectional studies have demonstrated that secure attachment has a protective effect on a range of trauma-related symptomatology (Canton-Cortez, Cortes, & Canton, 2015; Lowell, Renk, & Adgate, 2014). Conversely, research has demonstrated insecure attachment styles (high attachment anxiety and attachment avoidance) represent a risk factor psychopathology and PTSD following exposure to traumatic life events (Mikulincer, Ein-Dor, Solomon, & Shaver, 2011).

Studies have further explored adult attachment insecurity as a mediator in the relationship between childhood maltreatment and trauma-related symptomatology (Muller, Sicoli, & Lemieux, 2000; Muller, Thornback, & Bedi, 2012; Twaite & Rodriguez-Srednicki, 2004). Sandberg, Suess, and Heaton (2010) examined the association between a range of traumatic experiences and posttraumatic stress severity in a sample of female college students. Results indicated that attachment anxiety mediated the link between both sexual victimization and intimate partner violence and posttraumatic stress. Attachment avoidance did not mediate these relationships but was found to be associated with posttraumatic stress. Other studies have explored the role of attachment as a moderator in the relationship between childhood maltreatment and PTSD symptomatology (Aspelmeier, Elliott, & Smith, 2007). Busuito, Huth-Bocks, and Puro (2014) found that in a sample of adults exposed to childhood maltreatment that both attachment anxiety and avoidance were associated with increased PTSD levels, however, only attachment avoidance moderated this relationship.

Extant literature exists on the association between attachment insecurity and PTSD in cross-sectional studies, however, there is a paucity of studies examining these associations using prospective designs. Solomon, Dekel, and Mikulincer (2008) examined the longitudinal course of changes in attachment orientations and PTSD across two time points (18 and 30 years postwar) in a sample of ex-prisoners of war (POWs) and a matched control group of nonimprisoned veterans. Findings indicated that both attachment anxiety and avoidance remained stable over time for the control group. The POW sample, however, showed increases in both attachment anxiety and avoidance were associated with increases in PTSD symptoms. Importantly, Time 1 PTSD symptoms were a better predictor of Time 2 attachment than Time 1 attachment predicting Time 2 PTSD symptoms.

Besser and Neria (2010) employed cross-lagged panel correlations to examine the effects of attachment orientations and perceived social support on symptoms of PTSD and manic-depressive disorder (MDD). Using a sample of Israeli students exposed to missile fire near the Israel-Gaza border the analyses revealed that high attachment anxiety at baseline (war exposure) predicted higher PTSD and MDD symptomatology and lower social support at follow-up (measured 4 months later). Attachment avoidance was not significantly related to any of the variables and therefore removed from the final analysis. Notably, no reciprocal effects were reported indicating that while attachment anxiety predicted increases in levels of PTSD and MDD and lower perceived social

support these variables did not predict attachment anxiety over time.

The aforementioned longitudinal studies, however, have focused war related trauma and to date there is little known about the reciprocal relationship between attachment insecurities and PTSD over time. Evidence on the association of attachment anxiety and avoidance and levels of PTS remains equivocal. By focusing on the effects of attachment orientations and how they may differentially relate to PTS and the reciprocal nature of these associations has important clinical implications. Delineating the impact CSA may have on adult attachment orientations and how individuals adapt and respond to such experiences is therefore instrumental in therapeutic settings. Additionally, while evidence indicates that adult attachment theory can be usefully conceptualized within a framework for understanding affect regulation, resilience, and coping following childhood maltreatment there is a lack of research highlighting how attachment influences recovery over time (Gumley, Taylor, Schwannauer, & MacBeth, 2014).

The primary aim of this prospective study is to investigate the temporal relations and reciprocal nature between attachment anxiety and avoidance and PTS over time in a sample of survivors of CSA. Given the limited research on the reciprocal relations between these constructs this study is largely exploratory in nature. However, as previous studies have indicated it is hypothesized that individuals with attachment anxiety and avoidance in current relationships may predict PTS. Alternatively it is also hypothesized that PTS may predict attachment anxiety and avoidance consistent with findings reported by Solomon et al. (2008). Finally, it is also possible that there is a bidirectional effect whereby PTS and attachment anxiety and avoidance will reciprocally influence each other.

Method

Participants and Procedure

The participants were consecutive female outpatients ($N = 405$) at four (now three regional) treatment centers in Denmark that exist for individuals who were sexually abused in childhood. Exclusion criteria are (a) an active alcohol or drug abuse, (b) psychotic state, (c) massive self-destructive behavior, (d) current treatment elsewhere, and (e) a personality disorder. Excluded clients are referred either to specialized institutions or to the affiliated volunteer centers. A small group of clients withdrew from the service within the first month but following this period most clients were stable attendees. A number of therapies were halted due to hospitalization or other serious life events.

All centers complete a thorough assessment before treatment begins which is repeated every 6 months. There is no limit to the number of sessions and the treatment is free. All of the survivors receive weekly therapy; most of them on an individual basis. There is no common treatment manual. However, all of the centers use the personality oriented approach, based on Theodore Millon's works in the planning of the therapy (Millon, 1999). The client will typically stay in treatment for about 1.5 years and as the therapy progresses, it may be relevant to make changes to the treatment plan. When clients initially attended the treatment center they are informed that they were asked to fill out a number of questionnaires during their first session, based on which the therapy would

be planned. The therapist shared the findings with the client during the following session. The present study is based on information from the questionnaires.

The mean age of the sample was 36.4 years ($SD = 10.8$; range 15 to 70 years) and all participants were Caucasian. Fifty-one percent were married or cohabiting. The average length of education was 13.3 years ($SD = 3.3$; range 7 to 24 years). Almost two thirds of the participants (59%) had children. The mean number of years since their sexual abuse ended was 23.71 ($SD = 12.34$). After the participants had received the second treatment session they were assessed for PTSD (T1: $N = 405$). The participants were reassessed again 6 months later (T2: $N = 245$), and finally 12 months later (T3: $N = 119$).

Measures

There were 18 questions related to sexual abuse experiences that can be grouped into three categories: noncontact (e.g., sexual talk), nonpenetrative contact (e.g., touched in a sexual way nongenital/genital), and penetrative contact (e.g., oral, genital, anal intercourse). These questions were answered yes or no. A list of perpetrators was provided and the participants were asked to indicate who had been involved in the abuse. The list included mother, father, step-parent, siblings, other family member, other non-family adult, and more than one perpetrator. The participants were also asked what age they were when the abuse started, how long the abuse lasted (months), and the frequency of abusive acts they experienced (once, 2–5 times, 6–15 times, 16–50 times, 51 times or more).

The Revised Adult Attachment Scale (Collins, 1996). The RAAS is a measure of adult attachment based on the Adult Attachment Scale (Collins & Read, 1990) which assesses interpersonal relationships. The RAAS consists of 18 items which can measure three subscales: closeness, dependency, and anxiety. Two of the three subscales are combined resulting in two subscales measuring the dimensions attachment avoidance and attachment anxiety (Collins, 2008). The response format uses a 5-point Likert scale ranging from (1 = *not at all characteristic* to 5 = *very characteristic of me*). Total possible scores range from 6 to 30 for anxiety and from 12 to 60 for avoidance. The reliabilities in the current sample were adequate for the total scale and subscales ($\alpha = .62-.87$) across the three waves of data collection.

The Harvard Trauma Questionnaire Part 4 (HTQ: Mollica et al., 1992). This self-report measure includes 16 items designed to assess the *DSM-IV* (APA, 1994) PTSD symptoms. The HTQ measures psychological and physiological reactions to traumatic events. The response format is rated on a 4-point Likert-type scale (1 = *not at all*, 2 = *a little*, 3 = *quite a bit*, 4 = *all the time*). To establish a more conservative measure of posttraumatic stress a symptom was rated as present if the item corresponding to the symptoms was scored 3 or 4 recoded to 1 and items responses of 1 or 2 were recoded as 0, summed scores were used for the main analysis and total possible scores range from 0 to 16 with higher scores indicative of higher levels of posttraumatic stress severity. The Danish version of the HTQ has been used in a wide range of trauma populations with reports of good reliability and validity (Bach, 2003). Mollica et al. (1992) reported 88% concordance between those endorsing symptoms consistent with PTSD diagnostic criteria based on the HTQ and a diagnostic interview to

assess PTSD. The reliability of the total scale was satisfactory ($\alpha = .66-.87$) across the three waves of data collection.

Analysis

This study employed cross-lagged panel analysis (e.g., Kessler & Greenberg, 1981) to determine the temporal relations between the two attachment dimensions (anxiety and avoidance) and PTSD symptoms across three time points. Robust maximum likelihood estimation (Yuan & Bentler, 2000) was utilized as this method allows parameters to be estimated using all available information and considered superior to alternative methods of dealing with missing data such as list-wise deletion (Schafer & Graham, 2002). All cross-lagged panel analyses were conducted in Mplus 6.1 (Muthén & Muthén, 2010).

In order to find the most parsimonious model the analysis proceeded in three linked phases. First, a model was tested which included lagged-effects (autoregressive effects) and no cross-lagged paths. Scores on attachment dimensions and PTS were also regressed on age. The inclusion of this variable controls for the wide variation in age in the current study. Within-wave residual correlations are also included. The second phase compared the fit of the model with no cross-lagged effects to a model in which cross-lagged effects are introduced. If the model with no cross-lagged effects fits the data as well or better than the model with cross-lagged effects this provides evidence that there are no temporal cross-lagged effects. If the model with cross-lagged paths is supported, the analysis progresses to the third phase. The third phase is to remove the nonsignificant paths that emerged in the second phase of the analysis and compare model fit (Besser & Neria, 2010).

Model fit was determined using standard procedures: a nonsignificant chi-square (χ^2) test; Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) values greater than .90 reflect acceptable model fit, and values greater than .95 reflect excellent model fit; Root-Mean-Square Error of Approximation with 90% confidence intervals (RMSEA 90% CI) and Standardized Root-Mean-Square Residual (SRMR) values of .05 or less reflect excellent model fit, while values less than .10 reflect acceptable model fit.

Furthermore, the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the sample-size adjusted Bayesian Information Criterion (ssaBIC) are used to evaluate alternative models, with the smaller value in each case indicating the best fitting model. Evidence from simulation studies have indicated that the BIC and ssaBIC are the best information indices for identifying the correct number of classes (see Nylund, Asparouhov, & Muthén, 2007 for a review).

Results

Attrition Analysis

Due to the high rates of attrition across the three waves of data collection we conducted a series of independent samples *t* tests to examine differences between those who completed each assessment period and those who left the service. No significant differences were found between Time 1 and Time 2 participants in terms of age, $t(402) = -1.85, p > .05$; Time 1 attachment anxiety, $t(397) = 0.71, p > .05$; Time 1 attachment avoidance, $t(398) = 0.52, p > .05$; and Time 1 PTS, $t(403) = 0.33, p > .05$. Further, no significant differences were found between Time 2 and Time 3 in terms of age, $t(402) = -1.87, p > .05$; Time 2 attachment anxiety, $t(236) = -1.06, p > .05$; Time 2 attachment avoidance, $t(236) = 0.52, p > .05$; and Time 2 PTS, $t(243) = -1.11, p > .05$. Additionally, preliminary analyses were conducted and revealed no significant differences between treatment centers in terms the demographic and the outcome variables used in the current study.

Descriptive Statistics

The correlations, means, and standard deviations for the attachment dimensions and PTS levels are presented in Table 1. Across the three time points there were small declines in levels of attachment anxiety and attachment avoidance. Levels of posttraumatic stress severity reduced moderately over the three time points.

Table 1
Descriptive Statistics and Correlations for Attachment Dimensions and PTS Symptoms

	Anx_T1	Avoid_T1	PTS_T1	Anx_T2	Avoid_T2	PTS_T2	Anx_T3	Avoid_T3	PTS_T3
Anx_T1	—								
Avoid_T1	.38**	—							
PTS_T1	.19**	.37**	—						
Anx_T2	.52**		.21**	—					
Avoid_T2	.20**	.56**	.36**	.49**	—				
PTS_T2	.04	.29**	.49**	.44**	.56**	—			
Anx_T3	.67**	.19*	.23**	.68**	.29**	.13	—		
Avoid_T3	.25**	.60**	.36**	.37**	.73**	.35**	.44**	—	
PTS_T3	.05	.41**	.61**	.30**	.52**	.64**	.31**	.57**	—
Means	20.19	38.52	11.52	18.55	36.01	8.21	18.50	35.34	6.89
SD	6.39	8.70	6.21	6.25	9.05	8.49	6.48	9.61	5.57
N	400	400	405	238	238	245	119	119	119

Note. Anx_T1 = Attachment Anxiety Time 1; Avoid_T1 = Attachment Avoidance Time 1; PTS_T1 = PTS Time 1; Anx_T2 = Attachment Anxiety Time 2; Avoid_T2 = Attachment Avoidance Time 2; PTS_T2 = PTS Time 2; Anx_T3 = Attachment Anxiety Time 3; Avoid_T3 = Attachment Avoidance Time 3; PTS_T3 = PTS Time 3.

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

Cross-Lagged Panel Analysis

In the first step of the analysis a model with no cross-lagged paths (autoregressive effects) was tested: $\chi^2(27) = 77.26, p < .0001$; CFI = .92; TLI = .86; RMSEA = .06; 90% CI [.05, .08]; SRMR = .11; AIC = 17013.29; BIC = 17165.62; ssaBIC = 17045.04. This model was then compared with a fully cross-lagged model which prospectively shows the ability of the attachment dimensions to predict PTS and for PTS to predict each attachment dimension (reciprocal effects). This resulted in a moderately improved model fit: $\chi^2(15) = 51.87, p < .0001$; CFI = .94; TLI = .82; RMSEA = .07; 90% CI [.05, .10], SRMR = .06; AIC = 17006.60; BIC = 17207.04; ssaBIC = 17048.39.

Following the guidelines presented by [Besser and Neria \(2010\)](#), nonsignificant cross-lagged paths were then removed from the final analysis. The nonsignificant paths that were removed from Phase 2 were as follows: attachment avoidance Time 1 to attachment anxiety at Time 2 ($\beta = -.05, SE = .08, p = .50$); PTS Time 2 ($\beta = -.10, SE = .08, p = .24$) and attachment avoidance Time 2 ($\beta = .10, SE = .10, p = .31$) to attachment anxiety at Time 3; attachment anxiety Time 1 to PTS Time 2 ($\beta = -.04, SE = .05, p = .52$) and attachment anxiety Time 2 to PTS Time 3 ($\beta = .03, SE = .08, p = .67$); attachment anxiety Time 1 to attachment avoidance Time 2 ($\beta = .06, SE = .06, p = .27$); attachment anxiety Time 2 ($\beta = .09, SE = .07, p = .24$) and PTS Time 2 ($\beta = -.06, SE = .10, p = .57$) to attachment avoidance Time 3.

Based on the indices of model fit described above the final model was considered superior to the model in which the cross-lagged effects were freely estimated and the baseline model: $\chi^2(23) = 54.37, p < .0001$; CFI = .95; TLI = .90; RMSEA = .05; 90% CI [.04, .24], SRMR = .07; AIC = 16997.66; BIC = 17166.03; ssaBIC = 17032.75. The incremental fit indices (CFI and TLI) values were highest and comparative fit indices were lowest for this model. Regression weights from this model were therefore assessed.

[Figure 1](#) presents auto-regression weights which are represented by as single-headed arrows. The results indicate within the attachment anxiety and attachment avoidance dimensions the auto-regressive effects were all moderate-to-strong ranging from .48 to .69 and .48 to .76, respectively ($p < .001$). Slightly lower auto-regression weights were found for PTS across the three time points

.45 to .57 ($p < .001$). However, the cross-lagged effects are represented by diagonal single-headed arrows, as illustrated by [Figure 1](#), were weak ranging from .14 to .24 ($p < .05$). These results suggest that there are temporal relations between insecure attachments and PTS although of a weak magnitude. The primary factor, therefore explaining the attachment dimensions and PTS levels at the 6 and 12 month assessment periods, respectively, are scores on the same variable from the previous time point (e.g., anxiety levels at 6 months is the best predictor of anxiety levels at 12 months; avoidance levels at 6 months is the best predictor of avoidance levels at 12 months; PTS at 6 months is the best predictor of PTS levels at 12 months). The results also revealed that when age was included as a covariate it was only a significant predictor of PTS rather than attachment orientation.

Discussion

The goal of the present study was to examine the temporal relations between insecure attachment orientations and symptoms of PTS in a female treatment-seeking sample exposed to CSA. Previous prospective studies in this area have focused on populations exposed to war conflict and found that increases in attachment insecurity predicted increases in PTSD symptoms ([Besser & Neria, 2010](#); [Mikulincer et al., 2011](#)). The results of the current study overall indicated there were decreases in both attachment insecurities and PTS severity across the three time points. This finding is consistent with those reported by [Solomon et al. \(2008\)](#) in their sample of war veterans. The results also indicated that the autoregressive effects were stronger between Time 2 and Time 3. One possible explanation of these findings is that baseline PTS levels predicted both attachment dimensions at 6 months, but not at the 12 months follow-up. This may be attributable to the approximate 25% reduction in PTS from baseline to 6 months and nearly 50% reduction between baseline and 12 months follow-up. Also, as the current sample are undergoing therapy for the CSA reductions in PTS severity and attachment insecurity would be expected which is consistent with findings reported by [Muller and Rosenkranz \(2009\)](#).

The current results further indicated that the auto-regressive effects among all the variables in the study were greater than the cross-lagged effects, which were of much lower magnitude.

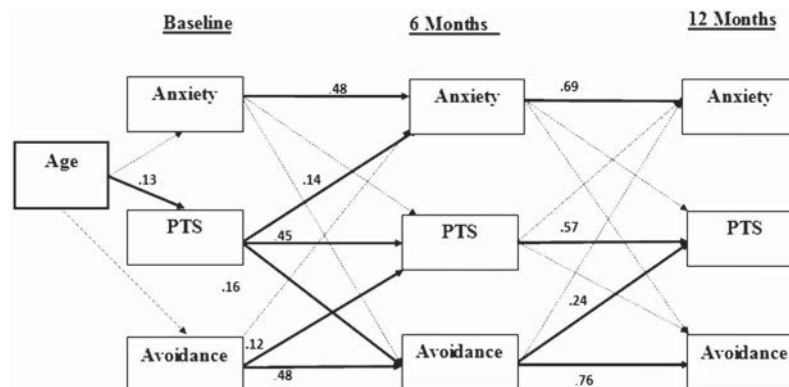


Figure 1. Final cross-lagged panel model (standardized path coefficients). All paths are statistically significant ($p < .001$). Dashed lines indicate nonsignificant paths.

Within the auto-regressive effects the strongest influence was indicated by attachment avoidance with slightly stronger temporal effect than attachment anxiety and PTS levels displayed the weakest effects. The cross-lagged effects indicated that PTS at Time 1 predicted both attachment anxiety and attachment avoidance at Time 2. While literature has demonstrated that attachment insecurities are associated with posttraumatic stress and PTSD severity (Fraley et al., 2006; Muller & Lemieux, 2000) less research has examined whether PTS predicts adult attachment insecurity. The results of the current study can be compared with a study investigating the longitudinal course of PTSD symptoms and attachment orientations over a period of 12 years (Solomon, Dekel, & Mikulincer, 2008). This study found that PTSD predicted insecure attachment to a larger extent than insecure attachment predicted PTSD in a sample of ex-prisoners of war 30 years after trauma exposure. A possible explanation for these results could be that posttraumatic responses can induce changes in an individual's coping skills and resiliency following trauma which then impacts on their sense of adult attachment security.

The results further showed that attachment avoidance at Time 1 and Time 2 predicted PTS levels at Time 2 and Time 3. This suggests that individuals scoring higher on the avoidance dimension are more vulnerable to persistent PTS than individuals with an anxiety attachment orientation. This finding contradicts our initial hypothesis and a recent study by Besser and Neria (2010) using a sample of Israeli students exposed to war conflict between Israel and Palestine in the Gaza Strip. They found that attachment avoidance orientations were not related to PTSD rather it was attachment anxiety that had significant positive effects on PTSD in a 4-month follow-up study. A possible explanation for this finding could be related to the different samples used, as previous research has found that survivors of incest are more likely to exhibit avoidant attachment orientations (Alexander et al., 1998).

The finding that attachment avoidance was significantly associated with PTS across all the time points in the current study are however consistent with those reported by Busuito et al. (2014) who found high levels of attachment avoidance acted as a vulnerability factor that increased the association between later PTS symptoms in a sample of women exposed to child abuse. Further, in studies that have examined temporal relations between PTSD symptom clusters, the time since trauma has been implicated as a factor predicting the course of PTSD symptoms. Using cross-lagged panel analysis studies have reported that arousal is the predominant factor in the acute phase following traumatic exposure (Marshall, Schell, Glynn, & Shetty, 2006; Schell, Marshall, & Jaycox, 2004), whereas other studies have found that while symptoms of avoidance were low in the acute phase they become more manifest at 3 months and increase in severity when measured at a 12-month follow-up period (O'Donnell, Elliott, Lau, & Creamer, 2007). Therefore, it may be plausible to assume that in the longer term course of PTS avoidance attachment style may exert more influence on the maintenance of symptoms.

Another explanation is that individuals with attachment anxiety and attachment avoidance differ in their response to stress. As mentioned previously, individuals with attachment anxiety use hyperactivating strategies and rely on significant others to regulate their distress, whereas, individuals with attachment avoidance tend to use deactivating strategies that involves distancing themselves from negative emotions and other people. Research suggests that

deactivating strategies used by avoidant individuals may appear to be adaptive at first, however, in the long-term these strategies are more detrimental as the individual does not develop effective coping strategies to regulate their emotions and manage stress (Busuito, Huth-Bocks, & Puro, 2014).

Further, individuals with attachment avoidance tend to distance themselves from others thereby reducing the opportunity to receive social support which has been found to be a significant protective factor in the development and maintenance of PTSD (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). Therefore, the finding that attachment avoidance significantly predicts PTS has important clinical implications in terms of treatment interventions of survivors of CSA. Findings from a recent meta-analysis of attachment related difficulties in individuals with psychosis indicated that avoidant attachment styles in particular was related to increased reluctance in help-seeking behaviors and poorer levels of therapeutic alliance (Gumley et al., 2014).

The current study should be interpreted in light of some limitations. First, findings are based on a treatment seeking sample of female survivors of CSA and therefore limits generalizability to other traumatized populations. Another limitation of the current findings relates to the selection criteria for the treatment center. Individuals with a range of mental health and substance misuse problems are excluded from the study which may have important implications for the generalizability of the findings within the wider context of survivors of sexual abuse. Replication using a less restricted sample is clearly warranted. Additionally, as the sample represents females engaging in an ongoing treatment center it is not possible to ascertain whether the reductions in insecure attachment orientations and levels of PTS are the result of clinical intervention. However, the current sample is considered a strength of the study as previous studies examining the temporal relations between attachment insecurities and PTSD symptoms have focused on war veterans or individuals exposed to war conflict and thus are an underrepresented population. Furthermore, the average time since trauma exposure was 23 years which means the participants were not assessed during the acute phases of the traumatic response. It would therefore be interesting to replicate this study using a similar traumatized population with a shorter follow-up period as a control group. Finally, the study did not control for revictimization experiences in adulthood thereby making it difficult to ascertain whether the current results may be attributed to other variables not included in the analysis. Future research could explore such variables as mediators and/or moderators of the cross-lagged effects.

Despite these limitations the current study contributes valuable information to a currently under-researched area of trauma research. The current findings shed light on the possible temporal relations between insecure attachment orientations and in particular attachment avoidance and the long-term course of symptoms of PTS among treatment-seeking female survivors of sexual abuse. Our findings suggest that over the longer-term course of PTS, insecure attachment orientations are significantly related to PTSD symptomatology. While these associations are relatively weak in magnitude, temporal relations nevertheless remain. Specifically attachment avoidance appears to be the more relevant orientation in PTS across the three time points in the study. These findings are interesting for a number of reasons. First, a strength of this study is that it is the first, to our knowledge, examination of the temporal

relations of attachment orientations and PTS in a trauma sample not exposed to war conflict. Second, they provide further evidence for attachment avoidance as a vulnerability factor for PTS symptoms several years following trauma exposure. The finding that attachment anxiety was not significantly related to PTS across the waves in the current study was unexpected and contradicts previous research in the area (Besser & Neria, 2010; Mikulincer et al., 2011). Therefore, future research is warranted to further delineate these associations in different traumatized populations. Additionally, future research is required to explore whether attachment orientations differ as a function of time since traumatic exposure and the impact of these variations on different PTSD clusters over time. Finally, the results of the current study demonstrate the importance of understanding attachment as part of an assessment in treatment programs and highlight the contribution of adult attachment theory to understanding the processes of PTS and recovery.

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