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The Relation Between Insecure Attachment and Posttraumatic Stress: Early Life Versus Adulthood Traumas

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Abstract

The present study examined the relations between insecure attachment and posttraumatic stress disorder (PTSD) symptoms among community-dwelling older adults with exposure to a broad range of traumatic events. Attachment anxiety and attachment avoidance predicted more severe symptoms of PTSD and explained unique variance in symptom severity when compared to other individual difference measures associated with an elevated risk of PTSD, including NEO neuroticism and event centrality. A significant interaction between the developmental timing of the trauma and attachment anxiety revealed that the relation between PTSD symptoms and attachment anxiety was stronger for individuals with current PTSD symptoms associated with early life traumas compared to individuals with PTSD symptoms linked to adulthood traumas. Analyses examining factors that account for the relation between insecure attachment and PTSD symptoms indicated that individuals with greater attachment anxiety reported stronger physical reactions to memories of their trauma and more frequent voluntary and involuntary rehearsal of their trauma memories. These phenomenological properties of trauma memories were in turn associated with greater PTSD symptom severity. Among older adults with early life traumas, only the frequency of involuntary recall partially accounted for the relation between attachment anxiety and PTSD symptoms. Our differential findings concerning early life versus adulthood trauma suggest that factors underlying the relation between attachment anxiety and PTSD symptoms vary according to the developmental timing of the traumatic exposure. Overall our results are consistent with attachment theory and with theoretical models of PTSD according to which PTSD symptoms are promoted by phenomenological properties of trauma memories.

Keywords

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Research aimed at identifying risk and resiliency factors that account for the wide variability in how individuals respond to traumatic events has given rise to studies exploring the role of emotion regulation strategies in the development of trauma-related psychopathology. One line of work in this domain centers on relations between individual differences in adult attachment and posttraumatic stress (Mikulincer, Shaver, & Horesh, 2006). Adult attachment style refers to systematic patterns of expectations, beliefs, and emotions concerning the availability and responsiveness of close others during times of distress. According to attachment theory (Bowlby, 1969/1982, 1979), attachment patterns are formed in the context of early experiences with caregivers and maintained by later interpersonal relationships in adulthood. Over time these beliefs become internalized and shape mental representations (i.e., *internal working models*) of the self and others in close relationships, which in turn influence how individuals perceive and cope with objective and subjective threats throughout the life course.

Research on individual differences in attachment style indicates that individuals who score high on *attachment anxiety,* one dimension of attachment, experience persistent fear of interpersonal rejection or abandonment, excessive concerns about and desire for proximity to close others, and distress when relationship partners are unavailable or unresponsive (e.g., Mikulincer & Shaver, 2007). Attachment anxiety is associated with reliance on hyper-activating coping strategies that amplify negative emotional reactions to stressful events and influence perceptions of threats and related distress (Maunder, Lancee, Nolan, Hunter, & Tannenbaum, 2006). This style of coping is theoretically adaptive in relationships with early caregivers because it increases the likelihood of attaining proximity to and support from attachment figures which alleviates distress. Anxious attachment in adulthood, however, has been linked to a variety of maladaptive outcomes, including heighten attention to negative emotions and threatening information (Mikulincer, Gillath, & Shaver, 2002), the tendency to appraise events as threatening (Pielage, Gerlsma, & Schaap, 2000), and more severe symptoms of depression, anxiety, and hostility (Mikulincer, Florian, & Weller, 1993).

Individuals who score high on the second dimension of adult attachment, referred to as *attachment avoidance*, experience discomfort with close interpersonal relationships which promotes chronic self-reliance and deactivating emotion regulation strategies, such as motivated inattention to threatening information and the suppression of distressing memories (e.g., Fraley & Shaver, 1997). Although these strategies may effectively regulate negative affect and minimize perceived threats in relationships with unresponsive and unavailable partners, attachment avoidance is associated with a wide range of adverse outcomes, including a reduced capacity to acknowledge negative emotions (Shaver & Mikulincer, 2008), reduced attempts to seek social support (Simpson, Rholes, & Nelligan, 1992), and depression (Wei, Russell, Mallinckrodt, & Vogel, 2007). In contrast, individuals with secure attachment, as indexed by low levels of attachment anxiety and avoidance, appraise stressful events as less threatening (Mikulincer & Florian, 1998) and utilize support-seeking coping strategies (Mikulincer et al., 1993) which enables them to cope more effectively with stress (Solomon et al., 1998).

Empirical studies of adult attachment indicate that attachment processes play a key role in the nature and severity of individuals' reactions to traumatic events. In general, research

indicates that secure attachment may protect against the development of PTSD, whereas insecure attachment increases vulnerability to PTSD symptomology. Associations between PTSD symptoms and attachment anxiety and avoidance have been found in research with adults survivors of interpersonal trauma (Elwood & Williams, 2008; Sandberg, 2010), high-exposure survivors of terrorism (Fraley, Fazzari, Bonanno, & Dekel, 2006), and former prisoners of war (e.g., Dieperink, Leskela, Thuras, & Engdahl, 2001; Mikulincer, Ein-Dor, Solomon, & Shaver, 2011). Insecure attachment has also emerged as a potential risk factor for PTSD symptoms among adults with histories of child maltreatment. Research indicates that adult survivors of child abuse are more likely to endorse insecure than secure attachment styles (Alexander et al., 1998), and that abuse survivors with insecure attachment report more PTSD symptoms than survivors with secure attachment (Muller, Sicoli, & Lemieux, 2000). Insecure adult attachment has also been found to mediate the relation between childhood abuse and trauma-related symptomology in adulthood (Muller, Thornback, & Bedi, 2012; Roche, Runtz, & Hunter, 1999). Collectively these findings suggest that individuals with histories of childhood trauma may be particularly vulnerable to the development of PTSD symptoms to the extent that abuse experiences disrupt the formation of secure attachments and promote reliance on ineffective emotion regulation strategies (Goodman, Quas, & Ogle, 2010). Because research on attachment and PTSD linked to childhood trauma has primarily examined adolescents and young adults, it is unknown whether the impact of insecure attachment on vulnerability to PTSD among individuals with histories of early life trauma persists across later developmental periods.

Attachment and Trauma in Older Adults

Despite Bowlby's (1969/1982) claim that attachment plays a fundamental role in development and behavior "from the cradle to the grave" (p. 208), the majority of empirical research on attachment has focused on attachment processes during childhood through young adulthood. Similarly, few studies have examined the relation between attachment and trauma-related psychopathology among older adults. Insecure attachment may be an especially important risk factor for PTSD in older adulthood given the critical role of interpersonal relationships to well-being among older individuals (Antonucci, 1994; Carstensen, 1992). Furthermore, compared to younger adults, older adults are more likely to experience particular types of attachment-related traumas, such as the unexpected death of loved ones (Ogle, Rubin, Berntsen, & Siegler, 2013), which have been linked to greater PTSD severity (Breslau et al., 1998) and reliance on hyper-activating and deactivating emotion regulation strategies (Shaver & Mikulincer, 2008). Research concerning changes in attachment across the lifespan (Chopik, Edelstein, & Fraley, 2013) and increases in the risk of trauma with age (Creamer & Parslow, 2008; Spitzer et al., 2008) further underscore the need for greater understanding of attachment processes as they relate to posttraumatic stress in older adults.

The present study

The primary purpose of the present study was to examine the relation between insecure attachment and PTSD symptoms among community-dwelling older adults with histories of exposure to a broad range of traumatic events. Based on the previously reviewed literature,

we expected attachment anxiety to be positively associated with PTSD symptom severity, including all DSM-IV-TR symptom clusters (i.e., re-experiencing, avoidance, and hyper-arousal symptoms). In contrast, we hypothesized that the relation between attachment avoidance and PTSD would be limited to PTSD avoidance symptoms. As an additional test of the strength of the relation between insecure attachment and PTSD symptom severity, the predictive utility of insecure attachment was compared to other individual difference measures that have been linked to an elevated risk of PTSD, including the personality domain of neuroticism and event centrality. Neuroticism, a personality trait characterized by high negative affect, is thought to lead to elevated PTSD symptoms by increasing the availability of memory for stressful events (Rubin, Berntsen, & Bohni, 2008) and the tendency to interpret neutral stimuli in a negative manner (Costa & McCrae, 1990). Although neuroticism has emerged as a strong predictor of PTSD symptoms in previous studies (e.g., Rubin, Dennis, & Beckham, 2011), little research exists on the relative utility of neuroticism and attachment in predicting PTSD. Empirical tests of the unique contributions of insecure attachment and neuroticism to PTSD symptoms can also inform ongoing debate concerning the degree of conceptual overlap between adult attachment and the Big Five personality traits (e.g., Noftle & Shaver, 2006). The predictive utility of insecure attachment was also compared to *event centrality*, a measure of the extent to which individuals perceive traumas to be important to their identity and life story. Robust associations have been reported between greater event centrality and more severe PTSD symptoms across a wide range of participant samples (e.g., Rubin & Berntsen, 2009; Rubin et al., 2011). Greater event centrality is thought to increase PTSD symptom severity by enhancing the emotional salience of the trauma as well as the ease and frequency with which trauma memories are recalled (Berntsen & Rubin, 2006).

A third goal of our study was to examine potential differences in the relation between insecure attachment and PTSD symptom severity as a function of the developmental timing of the trauma. Based on the theoretical proposal that attachment styles are established early in development, we hypothesized that the relations between insecure attachment and PTSD severity would be more pronounced for traumatic events that occurred early in the life course compared to traumas experienced after the transition to adulthood. Early life traumatic events may be more likely to adversely impact internal working models of the self and others and impede the ability to develop effective coping strategies, which may in turn increase vulnerability to PTSD.

The final goal of our study was to identify factors that underlie the relation between insecure attachment and PTSD symptoms. Specifically, we examined the extent to which phenomenological properties of trauma memories, including the intensity of individuals' emotional and physical reactions to their trauma memories as well as the frequency of involuntary recall and voluntary rehearsal, account for the relation between insecure attachment and PTSD symptom severity. According to the autobiographical memory theory of PTSD (Rubin, Boals, et al., 2008; Rubin et al., 2011), these properties of trauma memories are the central mechanisms that promote PTSD severity. Our focus on these characteristics of trauma memories was further supported by theoretical proposals derived from attachment theory which contend that individuals with higher attachment anxiety are

more likely to ruminate on threat-related concerns, have greater accessibility to negative memories, and experience more intense emotional responses to threatening events (Mikulincer et al., 2003; Mikulincer & Shaver, 2007). Accordingly, we hypothesized that individuals with greater attachment anxiety would report more intense emotional and physical reactions to remembering their traumas as well as more frequent voluntary and involuntary rehearsal of their trauma memories, and that these characteristics of trauma memories would in turn be related to greater PTSD symptom severity.

Method

Participants

Data were drawn from the 13th wave of the University of North Carolina Alumni Heart Study (UNCAHS), an ongoing longitudinal study of students who entered the University of North Carolina, Chapel Hill in 1964–1966 and their spouses (Siegler et al., 1992). Information concerning recruitment and participation rates of the UNCAHS are published elsewhere (Hooker, Hoppmann, & Siegler, 2010). The UNCAHS was originally designed to examine personality as a predictor of coronary heart disease (CHD). At wave 12, the study was expanded to include measures of PTSD and lifetime trauma exposure in order to investigate the relations between CHD and PTSD in a non-clinical sample. A measure of adult attachment was added at wave 13 in addition to a second measure of PTSD symptoms. Of the 1,598 individuals who participated in wave 13, our analyses included the 1,061 respondents who reported at least one potentially traumatic life event, completed measures of event centrality, adult attachment, and PTSD symptoms at wave 13, as well as the NEO Personality Inventory previously during the study. The final sample was 61.45% male and 99.25% White, with a mean age of 63.47 (SD = 2.76), and a median annual household income of $70–99,999. Approximately 8% had less than a college degree, 19.98% had bachelor's degrees, 21.58% had bachelor's degrees plus additional training, 27.62% had master's degrees, and 23% had advanced degrees. Analyses comparing UNCAHS respondents included in the analysis sample to those who were excluded due to missing data indicated that the analysis sample was slightly older, more educated, and included a greater proportion of males (η_p^2s   .003). No differences were found for annual household income or marital status.

Measures

PTSD symptom severity—The PTSD Check List-Stressor Specific Version (PCL-S; Weathers, Litz, Huska, & Keane, 1994) is a 17-item measure of PTSD symptom severity. Using 5-point scales (1 = not at all, 5 = extremely), respondents indicate the extent to which a specific event produced each of the B, C, and D DSM-IV-TR PTSD symptoms during the previous month. The PCL has strong psychometric properties (Cronbach's α = .94; Blanchard, Jones-Alexander, Buckley, & Forneris, 1996) including high agreement with clinician-diagnosed PTSD (r = .93). Cronbach's αs for the total severity score and B through D subscales in the current sample were .93, .88, .84, and .85, respectively.

Neuroticism—The NEO Personality Inventory (NEO-PI; Costa & McCrae, 1992) assesses the Five-Factor Model of personality. The NEO was administered twice in the UNCAHS

(waves 2 and 7, see Costa, Herbst, McCrae, & Siegler, 2000). Raw scores were converted to t-scores based on adult combined-sex norms. Cronbach's αs for the domain scores range from .76 to .93. Average *t*-scores for the neuroticism domain were analyzed.

Event centrality—The Centrality of Event Scale-Short Form (CES, Berntsen & Rubin, 2006) assesses the extent to which a trauma forms a central component of personal identity, a turning point in the life story, and a reference point for everyday inferences. Items were rated on 5-point scales (1 = totally disagree, 5 = totally agree). Cronbach's α for the current sample was .90. Mean scores were analyzed.

Attachment—Attachment anxiety and avoidance were assessed using the 12-item short form of the Experiences in Close Relationships Inventory (ECR-S; Wei et al., 2007). Participants rated the extent to which each item describes their feelings in close relationships on a 7-point scale (1 = disagree strongly, 7 = agree strongly). High scores on the anxiety and avoidance subscales indicate higher levels of attachment anxiety and avoidance, respectively. The ECR-S has strong psychometric properties, including high test-retest reliability (*r*s .82) and high construct validity (Wei et al., 2007). Cronbach's α for the anxiety and avoidance subscales in the present study were .74 and .76, respectively.

Phenomenological properties of trauma memories—The Autobiographical Memory Questionnaire (AMQ; Rubin, Schrauf, & Greenberg, 2003) was used to assess phenomenological properties of trauma memories. Questions concerning processes involved in remembering an event are rated on 7-point scales (1 = not at all, 7 = completely). Our analyses included four items that are central to theoretical and empirical research on attachment theory and correlate consistently with PTSD symptom severity (Rubin et al., 2011), including *emotional intensity* ("While remembering the event, the emotions that I feel are extremely intense"), *physical reaction* ["While remembering the event, I had a physical reaction (laughed, felt tense, felt sweaty, felt cramps or butterflies in my stomach, my heart pounded or raced, etc.)"], *involuntary recall* ("Has the memory of the event suddenly popped in your thoughts by itself – that is, without having attempted to remember it?"), and *voluntary rehearsal* ("Since it happened, I have willfully thought back to the event in my mind and thought about it or talked about it").

Procedure

All waves of the UNCAHS were approved by the Duke University Medical Center's institutional review board. Wave 13 was completed via mail. Relevant to the present report, participants were asked to describe three traumatic events that currently bothered them most, to report their age at each event, and to select a trauma category that best described each event from the list of events in the Traumatic Life Events Questionnaire (Kubany et al., 2000). Participants also completed the AMQ, CES, and the PCL for each event, as well as the ECR-S. Analyses included AMQ, CES, and PCL scores for the first event reported by each participant.

Data Analysis

Hierarchical regressions were conducted to examine the percentage of variance in PCL severity scores explained by insecure attachment above and beyond other predictors of PTSD, including neuroticism and event centrality. Age, gender (0 = male, 1 = female), and income were entered as covariates on step 1, followed by neuroticism and event centrality scores on step 2, and by attachment anxiety and avoidance scores on step 3. Separate models were tested for participants who reported symptoms linked to early life traumas (ages 1–18, $n = 169$) and adulthood traumas (age 19 and older, $n = 892$). The level of multicollinearity in the regressions was low (VIFs 1.35). A Chow test (Chow, 1960) was then conducted to determine whether the overall regression parameters were equal across the two subsamples. The homogeneity of the regression coefficients for each key predictor variable (i.e., attachment anxiety, attachment avoidance, centrality, neuroticism) across the two subsamples was tested by adding a dichotomous trauma timing variable (early life trauma = 0, adulthood trauma = 1) and the interaction between trauma timing and each key predictor variable to the regression model.

The impact of the phenomenological properties of trauma memories on the relation between insecure attachment and PTSD symptoms was tested in a multiple mediator model using a bias-corrected bootstrapping procedure (Preacher & Hayes, 2008). This procedure is recommended over other methods of testing indirect effects (e.g., Sobel test) when more than one mediator is predicted to influence the dependent variable because it increases the precision and parsimony of the model without assuming multivariate normality of the distribution of indirect effects (Hayes & Scharkow, 2013). Point estimates and 95% bias-corrected confidence intervals (BC CI) were generated using 5,000 bootstrap samples. Point estimates of indirect effects are significant when the BC CI does not include zero. Participants with missing AMQ data were excluded from mediation analyses (full sample, $n=28$; early trauma subsample, $n= 8$).

Results

Participants reported a wide range of potentially traumatic events. Prevalence rates were highest for *unexpected death of a loved one* (28.93%), followed by *life-threatening personal illness* (14.42%), *other life-threatening or highly disturbing event* (13.85%)*, life threatening or disabling accident or illness of a loved one* (10.56%), *natural disaster that badly injured self or killed someone* (7.07%), *motor vehicle accident that badly injured self or killed someone* (5.66%), *accident that badly injured self or killed someone* (5.47%), *warfare or combat* (2.92%), *childhood sexual abuse* (1.98%), *childhood physical abuse* (1.79%), *death threat* (1.32%), *witnessing childhood family violence* (1.13%), *non-live birth pregnancy* (1.13%), and *physical assault by a stranger* (1.04%). Less than 1% of the sample reported each of the following events: *experiencing or witnessing an armed robbery*, *witnessing assault or murder*, *adulthood sexual assault*, and *being stalked*. Six participants elected to not disclose the nature of their trauma.

Relations Between Insecure Attachment and PTSD Symptoms

Consistent with our first hypothesis, attachment anxiety scores were positively associated with PTSD re-experiencing, avoidance, and hyper-arousal symptoms as well as the PCL total severity scores (rs = .24, .32, .33, and .33 respectively, ps < .001). In partial support of our hypothesis concerning attachment avoidance, attachment avoidance scores were positively related to PCL total severity scores as well as avoidance and hyper-arousal symptoms (rs = .16, .22, and 15, respectively, ps < .001) but not re-experiencing symptoms (r = .05).

Table 1 contains descriptive statistics and correlations for the remaining study variables. Because significant associations emerged between PCL severity scores and the socio-demographic variables, age, gender, and income were entered as covariates in the regression models. Results from the regression examining the predictive utility of insecure attachment in relation to other individual differences associated with elevated PTSD symptoms are shown in Table 2. Attachment anxiety and avoidance predicted greater PTSD symptom severity and explained unique variance in PTSD symptoms above and beyond neuroticism and event centrality. Separate regressions in which event centrality and neuroticism were each entered last indicated that event centrality and neuroticism each explained unique variance in PCL severity scores above and beyond insecure attachment (R^2s = .19 and .02, respectively, ps < .001).

To examine whether the relation between insecure attachment and PTSD symptom severity varied as a function of the developmental timing of the trauma, separate regressions were conducted for participants who reported early life traumas and those who reported adulthood traumas (Table 2). A test of the equality of the overall model parameters across the two subsamples indicated that the models were significantly different, $F(8, 1045) = 2.72$, $p < .05$. To determine which predictor variable was driving the increase in the explanatory power of the model for individuals with early life traumas, differences in the regression coefficients for each key predictor across the two subsamples were examined by testing a dichotomous trauma timing variable (early life versus adulthood trauma) and its interaction with each key predictor variable in the regression model. Only the interaction between attachment anxiety and trauma timing was significant ($\beta = -.34$, $p < .05$; final model, $F(12, 1060) = 46.93$, $p < .001$), indicating that the relation between attachment anxiety and PTSD symptoms was stronger in the early life trauma subsample than in the adulthood trauma subsample. The βs for the non-significant interactions between trauma timing and attachment avoidance, event centrality, and neuroticism were −.02, .01, .05, respectively.

Attachment and Phenomenological Properties of Trauma Memories

Next we examined the extent to which phenomenological properties of trauma memories account for the relation between insecure attachment and PTSD. As expected, correlations first showed that attachment anxiety was positively associated with the *emotional intensity* of trauma memories, the intensity of *physical reactions* to remembering traumas, and the frequency of *voluntary rehearsal* and *involuntary recall* (Table 1). The memory properties were also positively associated with PTSD symptom severity. Because no significant associations emerged between attachment avoidance and the memory properties, the

remaining analyses focused on mediators of the relation between attachment anxiety and PTSD symptoms.

Results from the multiple mediation model are presented in Table 3. Consistent with our hypothesis, results for the total indirect effect indicated that the trauma memory properties as a set partially accounted for the relation between attachment anxiety and PTSD symptom severity. The unstandardized coefficient for attachment anxiety decreased from .66 to .52 with mediators included in the model indicating that attachment anxiety maintained a direct effect on PTSD symptom severity. Results for the specific indirect effects indicated that *physical reactions*, *voluntary rehearsal*, and *involuntary recall* emerged as unique mediators of the relation between attachment anxiety and PTSD symptom severity, whereas the *emotional intensity* of the trauma memories did not contribute to the indirect effect above and beyond the other memory properties. The direction of the point estimates are consistent with our hypothesis that greater attachment anxiety was associated with more intense physical reactions to trauma memories as well as more frequent voluntary and involuntary recall of trauma memories, and that these characteristics of trauma memories were in turn related to greater PTSD symptom severity.

Based on our findings that the relation between attachment anxiety and PTSD varied as a function of the developmental timing of the trauma, a second multiple mediator model was conducted for the subgroup of participants who reported symptoms related to early life traumas. Zero-order correlations first showed that attachment anxiety was positively associated with PCL severity scores, *emotional intensity, physical reactions*, and *involuntary recall* (rs = .48, .24, .22, and .23, respectively, ps   .01), but not *voluntary rehearsal* (r = .10). (Correlations between attachment avoidance and the memory properties ranged from −.08 to .05, ps > .05). Results for the specific indirect effects (Table 3) revealed that only *involuntary recall* uniquely mediated the relation between attachment anxiety and PTSD symptom severity in the early life trauma subsample. *Emotional intensity*, *physical reactions*, and the frequency of *voluntary rehearsal* did not contribute independently to the total indirect effect. The unstandardized coefficient for attachment anxiety decreased from 1.02 to .77 with the mediators included in the model, indicating that attachment anxiety maintained a direct effect on PTSD symptom severity.

Discussion

The present study examined the relations between insecure attachment and PTSD symptom severity in a community-dwelling sample of older adults. Results showed that higher attachment anxiety and avoidance predicted greater PTSD symptom severity after controlling for other individual difference measures associated with elevated PTSD symptoms including neuroticism and event centrality. Given that previous research on attachment and PTSD has been primarily limited to young adults exposed to interpersonal traumas and to military samples with combat-related PTSD, our findings build on existing research by demonstrating that insecure attachment is a robust predictor of PTSD symptoms in older adults exposed to a broad range of traumas. In addition, our results showed that the percentage of variance in PTSD symptoms explained by insecure attachment doubled among older adults with current PTSD symptoms related to early life traumas compared to those

who reported symptoms linked to traumas encountered in adulthood. This finding was driven by an increase in the predictive utility of attachment anxiety among individuals with early life traumas. Compared to adulthood traumas, early life traumatic events may be more likely to disrupt the formation of secure attachment, which may impede the development of effective strategies for regulating negative affect and coping with stress, thereby heightening individuals' vulnerability to PTSD.

Our findings concerning the relations between attachment and characteristics of trauma memories add to a growing body of research showing that attachment impacts not only interpersonal behavior and emotion regulation, but also memory for emotional experiences. Previous studies in this domain have primarily focused on memory impairments and processing biases associated with attachment avoidance (e.g., Edelstein, 2006). Our results contribute to this literature by showing that older adults with higher levels of attachment anxiety reported stronger physical reactions to memories of their traumas as well as more frequent voluntary and involuntary memories of the event. These properties of trauma memories were in turn associated with greater PTSD symptom severity. Overall, these findings are consistent with theoretical proposals and empirical research on both attachment theory and the autobiographical memory theory of PTSD (Rubin et al., 2011), the latter of which proposes that phenomenological properties of trauma memories promote the development and maintenance of PTSD symptoms.

Results for older adults who reported PTSD symptoms related to early life traumatic events followed a somewhat divergent pattern. Only the frequency of involuntary recall was found to partially account for the relation between attachment anxiety and PTSD symptoms linked to early life traumas. No evidence of mediation was found for *emotional intensity*, *physical reactions,* or *voluntary rehearsal*. The latter finding may be expected given that early life traumas were experienced 40 or more years prior to the study for older adults in this sample, and in general people may be less likely to voluntarily talk or think about events from the distant past compared to relatively recent events (Rubin & Berntsen, 2009). Collectively, our findings suggest that the factors underlying the relation between attachment anxiety and PTSD may vary as a function of the developmental timing of the trauma. Additional research is needed to identify factors that account for the relation between attachment avoidance and PTSD symptoms.

Our findings also add to the literature concerning the degree of conceptual overlap between attachment and personality traits. Although attachment anxiety was moderately positively correlated with NEO neuroticism in the present study, insecure attachment (anxiety and avoidance combined) and neuroticism each explained unique variance in PTSD symptoms. Furthermore, among older adults who reported PTSD symptoms associated with early life traumas, the relations between PTSD symptom severity and both attachment avoidance and neuroticism attenuated to non-significant levels, whereas the predictive utility of attachment anxiety strengthened. These findings suggest that attachment anxiety and neuroticism reflect distinct constructs that have unique explanatory power in relation to PTSD.

Older adults' appraisals of the centrality of their traumatic life events to their identity also explained unique variance in PTSD symptom severity in the present study. Although

previous studies have shown that insecure attachment biases individuals' evaluations of negative experiences (Mikulincer et al., 1993; Pielage et al., 2000), our study is the first to compare the relative importance of event centrality and insecure attachment in predicting PTSD symptoms. Additional research is needed to determine how relations between traumatic event appraisals and attachment style are impacted by the aging process. Appraisals of traumatic events may be particularly likely to change as older adults engage in the process of evaluating and accepting the events of their life, which is a primary developmental task of older adulthood (Erikson, 1982).

Several limitations of our study should be noted and addressed in future research. First, our findings are subject to memory biases due to our reliance on retrospective and self-report data. In particular, PTSD symptoms may have influenced reports of previous traumas and memory of attachment experiences. Second, because attachment was assessed at a single time point after exposure to traumatic events, we are unable to examine potential longitudinal changes in attachment orientations in relation to trauma exposure and PTSD symptoms in the present study. Although meta-analytic research indicates that attachment patterns are moderately stable from infancy to adulthood (Fraley, 2002; Fraley, Vicary, Brumbaugh, & Roisman, 2011), recent longitudinal research suggests that insecure attachment may increase over time among individuals with severe trauma histories (Mikulincer et al., 2011). Mikulincer and colleagues found that former prisoners of war exhibited increases in both attachment anxiety and avoidance over a 17-year period after captivity, whereas attachment anxiety and avoidance among control veterans decreased at rates similar to the gradual decline in insecure attachment observed from young to late adulthood in research with a non-clinical civilian sample (Chopik et al., 2013). Future longitudinal and prospective studies are needed to investigate the contributions of PTSD symptoms to longitudinal changes in attachment among individuals with other types of trauma histories. In particular, prospective studies of individuals exposed to childhood trauma are necessary to understand how the longitudinal trajectories of insecure attachment and PTSD symptoms are impacted by life events and interpersonal experiences in adulthood. Prospective studies of this sort would also clarify the extent to which adulthood trauma exposure mediates the relation between childhood trauma and PTSD symptoms in adulthood. Given the sequence of data collection in the UNCAHS, it was not possible to examine the extent to which adulthood traumas accounted for the relation between early life trauma and current PTSD symptoms in the present study. However, our previous work concerning posttraumatic outcomes in older adulthood revealed that older adults who experienced their worst trauma in childhood or adolescence reported a greater number of traumatic events throughout the life course compared to older adults who encountered their worst trauma in adulthood (Ogle, Rubin, & Siegler, 2013). Finally, because the UNCAHS is comprised of undergraduates who attended college in the 1960s, our sample is typical of longitudinal studies in that it is relatively advantaged with respect to socio-economic status. The lack of socio-ethnic diversity in the sample, however, limits the generalizability of our findings. Despite these limitations, our results indicate that insecure attachment is a robust predictor of PTSD symptoms among community-dwelling older adults with a broad range of trauma histories, and suggest that attachment theory is a useful framework for examining the variability in older adults' reactions to traumatic events.

Acknowledgments

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Table 1

Descriptive Statistics and Pearson Correlations Among Predictor Variables and PTSD Symptom Severity (N = 1,061)

	1	2	3	4	5	6	7	8	9	10	11	M (SD)
1. Age												63.47 (2.76)
2. Gender	−.21***											61.45% male
3. Income (median)	−.10***	−.11***										$70–99,999
4. Attachment anxiety	.03	.05	−.13***									14.49 (5.53)
5. Attachment avoidance	.05	−.18***	−.10***	.18***								14.94 (5.59)
6. Event centrality	−.06	.16***	−.08**	.17***	.01							3.11 (1.08)
7. Neuroticism	−.07*	.26***	−.17***	.35***	.07**	.17***						48.83 (9.97)
8. PCL severity	.06*	.06*	−.10***	.33***	.16***	.50***	.28***					26.65 (11.03)
9. Emotional intensity[a]	−.03	.14***	−.01	.07*	−.04	.35***	.18***	.37***				5.13 (1.69)
10. Physical reactions[a]	−.01	.12***	−.02	.13***	−.04	.26***	.14***	.43***	.59***			3.48 (2.05)
11. Voluntary rehearsal[a]	−.05	.11***	−.01	.06*	−.04	.48***	.15***	.39***	.47***	.36***		4.80 (1.55)
12. Involuntary recall[a]	−.02	.13***	−.02	.12***	.02	.48***	.22***	.51***	.49***	.41***	.65***	4.14 (1.77)

Note. Gender: 0 = male, 1 = female. PCL severity = PTSD Checklist symptom severity scores.

[a] n = 1,033

* p .05,

** p .01,

*** p .001

Table 2

Standardized Regression Coefficients and Percentage of Variance Explained from Hierarchical Regressions Predicting PTSD Symptom Severity

Predictors	Full sample (n = 1,061)		Early life traumas (n = 169)		Adulthood traumas (n = 892)	
	β	R^2	β	R^2	β	R^2
Step 1		.02***		.02		.02***
Age	.07**		.08		.07**	
Gender	−.02		−.03		−.02	
Income	−.01		.08		−.02	
Step 2		.28***		.31***		.28***
Event centrality	.45***		.40***		.46***	
Neuroticism	.15***		.12		.15***	
Step 3		.05***		.10***		.04***
Attachment anxiety	.19***		.32***		.16***	
Attachment avoidance	.11***		.10		.11***	
Total R^2		.35[a]		.43[b]		.33[c]

Note. Gender: 0 = male, 1 = female.

** p .01,

*** p .001.

[a] $F_{(7, 1060)}$ = 80.47, p < .001.

[b] $F_{(7, 168)}$ = 17.44, p < .001.

[c] $F_{(7, 891)}$ = 61.89, p < .001.

Table 3

Results from Multiple Meditator Models Testing the Indirect Effects of Attachment Anxiety on PTSD Symptom Severity Through Phenomenological Properties of Trauma Memories

Mediators	Full sample (*n* = 1,033)			Early life traumas (*n* = 161)		
	Point estimate	SE	95% BC CI	Point estimate	SE	95% BC CI
Emotional intensity	.0026	.0053	[−.0050, .0174]	.0707	.0455	[−.0005, .1876]
Physical reactions	.0592	.0178	[.0292, .0994]	.0693	.0500	[−.0026, .1986]
Voluntary rehearsal	.0083	.0063	[.0001, .0271]	.0009	.0222	[−.0409, .0554]
Involuntary recall	.0749	.0226	[.0332, .1216]	.1105	.0568	[.0240, .2521]
Total	.1450	.0363	[.0771, .2209]	.2515	.0773	[.1171, .4243]

Note. BC CI = bias-corrected confidence intervals. Full sample: final model, *F*(5, 1027) = 124.09, *p* < .001, R^2 = .38. Early life traumas subsample: final model, *F*(5, 154) = 17.63, *p* < .001, R^2 = .36.