Distribution Agreement

In presenting this thesis as a partial fulfillment of the requirements for a degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis in whole or in part in all forms of media, now or hereafter now, including display on the World Wide Web. I understand that I may select some access restrictions as part of the online submission of this thesis. I retain all ownership rights to the copyright of the thesis. I also retain the right to use in future works (such as articles or books) all or part of this thesis.

Jodie Jackson April 8, 2019

Early Life Trauma Exposure, Adolescent Attachment Styles, and Young Adult Behavioral Outcomes

by

Jodie Jackson

Dr. Patricia Brennan
Adviser

Department of Psychology

Dr. Patricia Brennan

Adviser

Dr. Barbara Strock

Committee Member

Dr. Scott Kugle

Committee Member

2019

Early Life Trauma Exposure, Adolescent Attachment Styles, and Young Adult Behavioral Outcomes

Department of Psychology

By

Jodie Jackson

Dr. Patricia Brennan

Adviser

An abstract of
a thesis submitted to the Faculty of Emory College of Arts and Sciences
of Emory University in partial fulfillment
of the requirements of the degree of
Bachelor of Arts with Honors

Department of Psychology

2019

Abstract

Early Life Trauma Exposure, Adolescent Attachment Styles, and Young Adult Behavioral Outcomes

By Jodie Jackson

The prevalence of childhood trauma is high, and traumatic experiences have wide ranging negative implications for later mental and physical health. As such, there is clinical utility in investigating the buffers against the development of subsequent symptomatology in trauma exposed individuals. One potential buffer suggested by previous literature is a secure attachment style. The present study examined the relationships between attachment style in adolescence, trauma exposure, gender, and the presence of internalizing and externalizing behaviors in young adulthood in a sample of 707 (365 female) participants. The Traumatic Life Events Inventory was used to quantify amount of trauma. Attachment style was measured during adolescence with a four item likert Bartholomew Attachment Scale. Categories for attachment style included secure and insecure. The insecure classification was further broken into three styles: fearful-avoidant, dismissive avoidant, and preoccupied attachment styles. Internalizing and externalizing behaviors in young adulthood were measured by using responses from the participant, the mother of the participant, and a peer of the participant on the Young Adult Behavioral Checklist. Structural Equation Modeling in AMOS 25 was used to construct the latent variable of either internalizing or externalizing behaviors and to test main effects and moderating influences of attachment. As hypothesized, a secure attachment style served as a buffer against internalizing symptoms after trauma. However, it did not have the same protective effect for externalizing symptoms. No interactions were noted between trauma and subtypes of insecure attachment styles, and contrary to prediction, gender did not serve as a moderator in the relationship between attachment style and trauma to predict adult behavioral outcomes. Implications and future directions are discussed.

Early Life Trauma Exposure, Adolescent Attachment Styles, and Young Adult Behavioral Outcomes

By

Jodie Jackson

Dr. Patricia Brennan

Adviser

A thesis submitted to the Faculty of Emory College of Arts and Sciences
of Emory University in partial fulfillment
of the requirements of the degree of
Bachelor of Arts with Honors

Department of Psychology

2019

Table of Contents

Early Life Trauma Exposure, Adolescent Attachment Styles, and Young Adult Behavioral Outcomes

It is no kept secret that stress in the adult life can lend itself to the path of developing common psychopathologies. Traumatic events and life stress have been associated with a wide variety of negative outcomes ranging from internalizing symptoms to depression to borderline personality disorder, among others (Wingenfeld et al., 2011). Not only are the potential ill effects of stress seen in adulthood, but the joy of childhood can also be marred by stress and trauma with significant consequence. Given that psychological development is still occurring, stress and trauma early in life can have lasting implications on future well-being. Psychological studies have repeatedly demonstrated the relationship between early life stress and internalizing and externalizing psychopathology (McLaughlin, 2018). Review papers have repeatedly found that early life stress and trauma in childhood is correlated with a wide breadth of psychiatric disorders, mental illnesses, and general psychopathologies that occur later in life (that is adolescence and onward) (Carr, Martins, Stingel, Lemgruber, & Juruena, 2013; Chaby, Zhang, & Liberzon, 2017; Clous et al., 2017; Wingenfeld et al., 2011). Outside of the confines of clinical disorders, the aftermath of stress and trauma in childhood can also find existence in daily life in the form of sub-diagnostic externalizing and internalizing behaviors and symptoms that may be present from adolescence to adulthood (Widom, 1998).

Protective Mechanisms. Just because something can go wrong, doesn't mean it has to. Childhood maltreatment does not always negatively impact long term well-being. Notably, there is evidence to suggest protective mechanisms that can help prevent the development of behavioral and emotional symptoms following trauma and stress (Mclaughlin & Lambert, 2017). There are a variety of protective measures that have been shown to buffer the negative effects of

childhood trauma and stress including, but not limited to, caregiver support (Mclaughlin & Lambert, 2017), greater sensitivity to reward (Mclaughlin & Lambert, 2017), social support (Schury et al., 2017), and attachment style (Harder et al., 2015).

Of the many potential protective factors, a look into the role of attachment may prove especially fruitful. A secure parent-child attachment style in early life is usually associated with favorable life outcomes such as resilience, adaptive social skills, and emotional intelligence (Howe, 2011). In terms of resilience, a secure attachment style may be especially protective for children and adolescents at higher risk for developing internalizing disorders (Harder et al., 2015). That is to say, attachment style may be looked at in relationship to its ability to serve as a protective moderator of the relationship between stress and trauma and later psychopathology.

Attachment. First proposed as a semi-radical contradiction to the prevailing Freudian perspective on mother-child relationships, John Bowlby introduced his initial whispers of attachment theory in 1944 with his paper “Forty-Four Juvenile Thieves: Their Characters and Home Lives.” In that first paper and the ones that followed, Bowlby suggested that relational activity, or more specifically mother-child interactions in infancy and early childhood, can set a long-lasting framework for an individual’s behavior and outlook towards interpersonal relationships. Following close behind in the early 1950s with her official empirically-based attachment theory, Mary Ainsworth further isolated the mother-infant relationship as the source for future world understandings. In 1970, Ainsworth created her Strange Situation task and used it to rate the behaviors of infants and their mothers by placing the dyad in an unfamiliar environment and then asking them to follow a task set involving exploration, abandonment, introduction to a stranger, and reunion. Attachment, in the understanding of Ainsworth - similar to Bowlby - is the management system the internal working models. For the infants in the

Strange Situation, it is how they view the world and their mother's role in the infant's environment around her. The Strange Situation task would elucidate three main styles by which infants and their dyadic partner interact: secure, avoidant, and preoccupied.

This three category classification of behaviors helped produce what is known as the Bowlby-Ainsworth Attachment model (Ainsworth & Bowlby, 1991): a theory that provided the outline for how the primal mother-infant relationship helps a child develop the internal working models - that is their representations - of their environment and their role/behavior in it as a complex behavioral system (Bretherton, 1995). The goal of the internal working model is to help an individual gauge the future with constant revision and extension. Unsurprisingly, a weak internal working model can be a marker for concern and even pathology (Bretherton, 1995). The framework presented by Ainsworth and Bowlby (1991) largely focused on the notion of security and insecurity as the markers of the status of the internal working models and saw most favorable outcomes from the children they observed with 'secure' rather than 'insecure' attachments.

The idea of security easily carried over to adult attachment literature and was largely influenced by the work Hazan and Shaver (1987). The two maintained Ainsworth's three-category model but reframed it into the lives of adults by looking at how adults think and behave in romantic relationships. Kim Bartholomew (1990;1991) further expanded on this methodology of investigation by reconstructing the three-category model by breaking down it into four categories by dividing avoidant attachment into two sub groups, dismissing-avoidant and fearful-avoidant. Her theory kept the secure and preoccupied categories. For Bartholomew, the difference between dismissing-avoidant and fearful-avoidant is the rationale behind why relationships were avoided; for one style (dismissing), synthetic disinterest is protective, while

for the other (fearful) a breach in an existing relationship is so volatile that further relationships could spark trauma (Howe, 2010). Bartholomew's Four Category Model served as a mixture of the prevailing literature of the time and amalgamated Bowlby's, Ainsworth's, Hazan and Shaver's theories (Howe, 2010). It also served as a more appropriate framework in which one could analyze the separate representations of how adults hold their self-perception and their perception of their social world in a more mature and practical way than was available from the models produced through the study of childhood.

These models have also been beneficial in the ways that they have been extendable to the adolescent population (Howe, 2010). The continuity of patterns of attachment from infancy onward allows for the continuation of attachment research to be conducted in an adolescent population where the main attachment figure might be changing, but the attachment style is not.

Secure Attachment Style. Perhaps the archetypal attachment style could be considered secure attachment. It is resolutely the most common style, with two thirds of the general population displaying secure attachment (Howe, 2010). Ainsworth's introduction of secure attachment was marked by the use of the primary caregiver (almost always the mother) as a secure base during her Strange Situation task (Ainsworth & Bell, 1970). Infants that used their mothers as a home base to return to while exploring the room and who resisted the comforts of a stranger were considered to have a secure attachment. Where insecure attachments may be associated with later relational difficulties, secure attachment in infancy is often the intended consequence of an attentive and sensitive caregiver.

Beyond childhood, Bartholomew and Horowitz qualified secure attachment in adulthood as having low avoidance and low anxiety towards relationships (1991). Much like is seen in infants and adults, ideally, an adolescent with secure attachment would feel confident reaching

out to others for support, trusting others, maintaining intimacy with others as well as feel a strong sense of self and autonomy. Furthermore, those with secure attachment styles should be able to form close, long lasting relationships that can be anxiety relieving in times of stress (Wilkins, Shemmings, & Shemmings, 2015; Mayseless & Scharf, 2007). Research has thus far displayed lower levels of anxiety and depression for adolescents with secure attachments as opposed to their insecurely attached peers even when other variables are held constant (Brienholst, Esbjørn, & Reinholdt, 2015). In middle childhood, securely attached children are also less likely to be aggressive (Howe, 2010). Decisively, benefits of secure attachments can be seen at all developmental time periods.

Preoccupied Attachment Style. Jargoned in many different ways, a preoccupied attachment is also known as an "anxious-avoidant" attachment style and is marked by a high level of relational anxiety and a low level of avoidance. In other words, an individual with preoccupied attachment style might likely hold a positive view of others - to the point they look to others to fill their internal needs - and a negative view of self, often heavily lacking self-confidence and worth (Guerrero, 1996). This attachment style frequently engages in relationships built on over-reliance and cultivated senses of self that lack esteem and lack the necessary abilities to cope (Bartholomew, 1990). In terms of personality traits, those with preoccupied attachment styles are associated most significantly with harm avoidance, and novelty seeking, and a very low level of self-directedness (Chotai, Jonasson, Hagglof, & Adolfsson, 2004).

The preoccupied attachment style is no stranger to psychopathology. Among other things, preoccupied attachment has been linked to non-suicidal self-injurious behavior in adolescent girls (Martin et al., 2017), to Borderline Personality Disorder (Scott et al., 2013), to poor negative emotion regulation in young women (Creasy, 2002), to heightened emotional

vulnerability in adolescence (de Vito, 2012) with significantly higher than average levels of depressive symptoms (Dagan, Facompré, & Bernard, 2017). Additionally, adolescents with preoccupied attachment style are also more likely to have poor social skills and engage in delinquent activities (Allen et al., 2002). Compared to adults, the behavioral and socioemotional risks encountered when one has a preoccupied attachment style are identical, or in some cases even greater for adolescents. (Bernier, Larose, & Whipple, 2005).

Dismissive-Avoidant Attachment Style. Dismissive-avoidant attachment styles might be best summed up as 'aloof' as those with the attachment pattern are unlikely to seek out relationships because they do not desire nor fear them (Geurrero, 1996). This attachment style is marked by high avoidance yet low anxiety. Those with this attachment style are most likely to prefer to keep to themselves as a way to avoid being hurt and value autonomy over closeness (Howe, 2010). Those with dismissing-avoidant attachment styles have personalities associated with self-directedness and negative levels of reward dependence, and again an emphasis on the man-as-an-island mentality (Chotai et al., 2004).

This lack of interpersonal closeness, however, does not come without a cost. For those with dismissing-avoidant attachment style, there is a greater likelihood of antisocial behavior as well as lower positive affect and lower self-esteem (Carvallo & Gabriel, 2006). For adolescents with dismissing avoidant attachment style, there is a greater difficulty forming later romantic relationships and an overall lower capacity for intimacy (Mayseless & Scharf, 2007). Also, for at risk adolescents with dismissing avoidant attachment style, there is an increased risk of criminality and social isolation.

Fearful-Avoidant Attachment Style. The fearful-avoidant attachment style is qualified clearly by the high avoidance and high anxiety towards relationships. It can also be understood

as a vulnerable, insecure way of approaching relationships (Gillath, Karantzas, & Fraley, 2016). This attachment style is the style most marked by psychopathology in adulthood as well as by having a difficult overall temperament (ex. irritable, easily distressed, poor coping abilities, etc.) (Howe, 2010). The fearful-avoidant attachment style is also associated with discomfort with closeness, fear of abandonment and rejection, and low concept of others (Alonso et al., 2013). Speaking to the fear aspect, fearful-avoidant attachment style is associated with lower novelty seeking (Chotai et al., 2007).

The traits in adolescence shown by those with fearful-avoidant attachment style are very similar to the ones seen in adults. For adolescents with fearful avoidant attachment style, there may be significant impairment to coping abilities as they are more likely to display negative avoidant coping strategies and avoid positive coping strategies (Howard & Medway, 2004). Additionally, adolescents with drug dependence were most likely to possess a fearful avoidant attachment style (Schindler et al., 2007). The association between negative coping skills and the fearful avoidant attachment style is not to be ignored when one looks at an adolescent population, especially when the population echoes the high risk of maladaptive coping skills seen in the adult population with the same attachment style.

Sex Differences in Attachment. As with many theories pertaining to adolescents, the question of gender must be addressed and analyzed. The influx of hormonal differentiation and gender intensification in middle childhood and early adolescence makes the period ripe for sex-based divergence both biologically and socially. The theories of attachment are no more immune to the suspicion of sex differences than any other psychological concept. And, indeed, research has supported a small, but significant, set of differences in attachment styles in adolescence on

the basis of sex (Del Giudice, 2016; Pauletti et al., 2016; Del Giudice & Belsky, 2010; Gillath, Karantza, & Fraley, 2016).

Del Giudice (2016) suggested that the most prominent differences between sexes exists among adolescents with insecure attachment. That is, teens with secure attachment may show no true variability, but the minority of adolescents with other attachment styles were significantly more susceptible to sex differences. Notably, under the conditions of stress, female adolescents were more likely to exhibit preoccupied attachment styles and in extreme stress, they were more likely to show patterns of avoidance (Del Giudice & Belsky, 2010). Males, on the other hand, were more likely to exhibit attachment styles marked by avoidance in both environments of mild and extreme stress. It is worth mentioning, that the gender differences were most significant under conditions of stress and the greater the stress (mild to extreme) the more significant the differences (Del Giudice & Belsky, 2010).

These augmented sex differences in adolescence are believed to be partial byproduct of the socialized gender intensification that occurs typically in the same age range (Pauletti et al., 2016). It appears that the greater the cisgender identification, the greater the likelihood of falling on gendered lines for attachment styles. The stricter the adherence to traditional masculinity in middle childhood and adolescence, the greater the probability of an insecurely attached male is to display an avoidant attachment style. Likewise, for insecurely attached females, the greater the alignment with traditional femininity, the greater likelihood of exhibiting preoccupied attachment (Pauletti et al., 2016).

Stress and Attachment. It is the interests of psychologists to look at a variety of factors related to how individuals react and cope to different types of stressors. One particular field of interest related to coping is, of course, attachment. As described, the coping strategies of securely

attached adolescents are expected to be not only healthier by many standards, but also more likely to be helpful and adaptive. The strategies of those insecurely attached might not be as well adjusted to face times of extreme turmoil.

It is important to note, however, that no one attachment style is inherently pathological and that for different environments, insecure attachments might be adaptive (Wilkins, Shemmings, & Shemmings, 2015). Similarly, it is important to remember that the correlations between attachment styles and outcomes can never been read as causal. Attachment is simply a measure of how people internally interact with the world and negotiate their perceptions of it; it is not a damning prophecy. Furthermore, the understanding that attachment is generally continuous across the life course is not to say that the behaviors demonstrated by a specific attachment style are unyielding to change. An individual with an insecure attachment style might still be able to foster secure relationships and demonstrate positive attachment behaviors.

In looking at the plethora of research conducted on the role of attachment and its relationship to age, gender, types of coping strategies, and interpersonal relationships, one must ask what the ultimate goal is. What makes attachment research worthwhile and beneficial to the general population? The answer is relatively straightforward. Knowing the type of attachment style a patient has can provide valuable information to clinicians by way of most suitable treatment programs. For example, knowing that fearful avoidant attachment can be tied to drug usage can inform interventions connecting rebuilding attachment security to rebuilding coping strategies (Schindler et al., 2007). To use another example, knowing the tendency of people with dismissive avoidant attachment to suppress emotions can help clinicians focus on helping patients outwardly express things such as grief that might otherwise coalesce into maladaptive coping behaviors.

For adolescents, an attachment centric approach to therapy is doubly as important as they are likely to still be living at home with a family. Given that parents are still a crucial part of the day to day life of an adolescent, family therapies centered around reworking attachment relationships and behaviors can prove to be more beneficial than just patient centered therapy (de Vito, 2012). Furthermore, the approaches needed for each attachment style can be radically different as the maladaptive behaviors can range in accordance. One might expect the greater risk of criminality seen in preoccupied attachment to need a treatment approach that is significantly different than the depressive and anxious symptoms seen in adolescents with dismissing attachment.

However, despite the understanding of this important ability to distinguish attachment styles for the sake of therapeutic interventions, there still exists a great body of unknown connections. Knowing the tendency for a person to develop internalizing compared to externalizing symptoms could help create more holistic and universal approaches to treatment programs for concerns related to life stress. Much like knowing the type of symptoms, knowing the gendered predisposition towards attachment style can help inform the clinician of the likely attachment style and type of symptoms more quickly, thus allowing for the discovery of more efficacious treatment mechanisms for teens who have experienced stress and trauma. With these thoughts in mind, it serves one well to investigate the trends of attachment and types of symptoms late later eventuate for adolescents who have experienced life stress.

As attachment is understood to possess a line of continuity across the lifespan, the patterns of behavior and attachment styles shown in adolescence can likely hold significance when trying to predict future outcomes. For example, the stress and the responses to stress shown in adolescence can often be reflected in behavioral outcomes and psychopathology in early

adulthood. One could argue that the types of attachment style displayed during the period of adolescence could translate into the coping strategies that help to buffer against early life stress and specifically, its impacts on psychopathology during the early period of adulthood. In this study, we will examine this hypothesis by examining the attachment styles during the teen years and whether they predict the types of responses shown to stress in early adulthood. It is our aim to identify specific patterns of attachment and behavior to distinguish what can be protective from what might be maladaptive. With these themes in mind, we propose the following hypotheses.

Hypotheses.

1. It is hypothesized that secure attachment in adolescence will protect against internalizing and externalizing symptoms in early adulthood after the experience of trauma.
    (a) It is hypothesized that adolescents with preoccupied attachment styles will exhibit greater internalizing symptoms in early adulthood after high levels of trauma than peers with other attachment styles.
    (b) It is hypothesized that adolescents with avoidant (fearful and dismissing) attachment styles with exhibit greater externalizing symptoms in early adulthood after experiencing high levels of trauma compared to peers with other attachment styles.
2. It is hypothesized that attachment styles in relation to internalizing and externalizing symptoms will vary based on the dichotomy of sex.
    (c) Furthermore, it is hypothesized that insecurely attached female adolescents who exhibit preoccupied attachment styles will be more likely to exhibit

internalizing symptoms in early adulthood after experiencing high levels of early life trauma.

(d) Additionally, it is hypothesized that insecurely attached male adolescents who exhibit avoidant (dismissive or fearful) attachment styles, will be more likely to exhibit externalizing symptoms in early adulthood after experiencing high levels of early life trauma.

Method

Participants

A sample of 8,556 expectant mothers was recruited from the antenatal clinic at Mater Hospital in Brisbane, Australia to participate in the longitudinal study: The Mater and University Study of Pregnancy and Outcomes (MUSP). The study followed the mothers and children through multiple time intervals including birth, 6 months, 4 years, 15 years, and 20 years. By the 15-year time point, there were 5,000 dyads still in the study and of those, 815 (selected intentionally for being at low and high risk of maternal depression) were interviewed (Brand, Schechter, Hammen, La Broque, & Brennan, 2011). Of the 815, there were 707 participants at age 20 that were followed up to source the internalizing and externalizing data required for this study and these participants were used to analyze the relationships between gender, trauma, attachment, and internalizing/externalizing symptoms.

Out of our final sample of 707, 365 were girls (51.6%). The sample was comprised of 91.1% White (n=644) and the remaining 8.9% were non-White (n=63). The median level of maternal education was grade 10 (equivalent to a high school degree in the US). See Table 1.

Inclusion criteria mandated the presence of at least one completed, recorded response to the Youth Behavioral Checklist by the participant, mother, and/or peer. Participants also must

have completed the Bartholomew Attachment Scale at the age 15 follow up for their data to be included for analysis. For the determination of subtypes of insecure attachment, participants must have scored higher on one attachment style than the other possible styles. Participants were excluded if they had a cognitive deficit that would impede their ability to respond to written questionnaires.

Measures

Attachment. The Bartholomew Attachment Scale (Bartholomew & Horowitz, 1991) is a 4-item self-report inventory used to measure attachment style. This measure employs a Likert-scale of 1 (not at all like me) to 7 (very much like me). Each one of the questions separately suggests one of four different main attachment styles: Secure, Preoccupied, Dismissive-Avoidant, and Fearful-Avoidant. An example of a question to indicate secure attachment is "It is easy for me to be close to others. I am comfortable counting on others and having others count on me. I feel accepted by others. When I am alone it does not bother me." In accordance with the preceding literature, participants were labeled according to the attachment style they scored the highest on and could only have one dominant attachment style (Griffin & Bartholomew, 1994). If a participant scored equally high on secure attachment as any of the insecure attachment types, they were categorized as insecure. For the determination of subtypes of insecure attachment, if a participant had an equal score for two or more attachment styles, their scores were considered unclassified and were only used for secure versus insecure comparison.

Trauma and Stress. The Traumatic Life Events Inventory is a 10-item self-report questionnaire used to quantify the number of traumatic events experienced up to age 15. Each item is a dichotomous 'yes' or 'no.' Examples of traumatic events include "Has you father died?" and "Have you ever been a victim of violence (physical or sexual assault)? Trauma is

measured by the sum total of items the participant had experienced. On average, participants experienced 1.43 traumatic events, with a standard deviation of 1.50. See Table 2.

Internalizing and Externalizing Symptoms. The presence of symptoms at age 20 were measured with three separate inventories that were either completed by the participant or third-party participants. Symptoms reported by the participant were measured on the Adult Self Report. The mother and a peer (friend or romantic partner) of the participant were also interviewed and asked questions about the behaviors of the participant on the Young Adult Behavioral Checklist. This checklist consists of 115 items, all answered on a likert scale of 0 (Not True) to 2 (Very True of Often True). Internalizing and externalizing symptom dimension scores were calculated for each inventory (self, mother, and peer).

Procedure

At age 15, participants were asked to fill out a self-report behavioral questionnaire in the privacy of their own home. Participants were followed up with at the 20-year mark and asked, along with their mother and a close peer, to fill out questionnaires about the participant. Participants were also interviewed by a licensed clinician and asked questions about stressful life events. Participants were compensated $50, their mothers were compensated $20, and their close peers were compensated $15 for their time. Participants gave informed consent for each procedure. All protocols were approved by the institutional review boards of the University of Queensland, Queensland Institute for Medical Research, UCLA, and Emory University.

Data Analysis Plan.

Structural equation modeling was used to test whether the interactions of attachment style at age 15, gender, and trauma exposure in childhood predicted the outcome variables of internalizing and externalizing symptoms at age 20.

Structural equation modeling offers a way of testing hypotheses at a construct level. Through using structural equation modeling, one is able to reduce the error associated with any singular measurement by extracting the shared variance among the measured variables and thus deriving the latent variables (the "constructs"). This study used multiple reporting sources of internalizing and externalizing outcomes (e.g. behavioral assessments from the participant as well as from peers and mothers) which can constitute latent variables and thus reduce the error of single reporter bias.

The AMOS 25 program was used to test the structural equation models, testing predictors of internalizing and externalizing behaviors in separate models. Full information maximum likelihood estimation was used. Two estimations of fit were recorded for each model: the comparative-based fit index (CFI) and the root-mean-square error approximation (RMSEA). The CFI compares the sample model with the independence model and yields values on a scale of 0 to 1. A value of 0.90 or higher indicates an acceptable model fit (Hu & Bentler, 1999). RMSEA tests the lack of fit between the sample model and the estimated population model covariance matrix (Kline, 2005). RMSEA is measured on a range of values between 0 and 1 and values less than 0.06 indicate an acceptable model fit (Hu & Bentler, 1999).

Results

To examine the impact of attachment styles and trauma on behavioral outcomes at age 20 years, we constructed a latent variable from mother, youth, and peer reports of internalizing/externalizing behaviors, tested for potential covariates, and then examined the main effects and interaction terms of primary attachment style and childhood trauma on our latent variables of interest (see Figure 1).

Internalizing Symptoms. As expected, trauma and gender significantly predicted internalizing behaviors at age 20 ($p<0.001$; model fit CFI =1.0, RMSEA =.000). Females and individuals with trauma histories had higher levels of internalizing symptoms. Secure attachment ($p<.001$, β =-.259; model fit CFI= .987, RMSEA= .027) had a significant negative relationship with internalizing symptoms, whereas dismissing ($p=.034$, β = .113; model fit CFI=1.0, RSMEA= .000), and fearful ($p=.007$, β =.114; model fit CFI= 1.0, RMSEA=.002) styles were positively related to internalizing symptoms. Preoccupied ($p=.054$, β=.101; model fit CFI=.988, RMSEA=.037) attachment style was not associated with internalizing outcomes. The interaction of trauma and secure attachment was also negatively significant in predicting internalizing outcomes ($p=.046$, β=-.094; model fit CFI=.987, RMSEA=.027). However, the two-way interactions between trauma and the other three attachment styles were not significant at the $p<.05$ level.

We further probed the significant interaction of secure attachment and trauma to internalizing symptoms by creating a split file based on secure versus not-secure and running the association of trauma to internalizing symptoms. While trauma remained significantly predictive of internalizing symptoms, the strength of the association was weaker for those with a secure attachment (β=.215; model fit CFI=1.0, RMSEA=.000) than those without a secure attachment (β=.415; model fit CFI=1.0, RMSEA=.000), suggesting a buffering effect from secure attachment.

Analysis did not reveal any significant three-way interactions between gender, attachment style, and trauma exposure in relationship to predicting internalizing symptoms. See Table 3.

Externalizing Symptoms. As expected, trauma and gender significantly predicted externalizing behaviors at age 20 (p<0.001; model fit CFI =1.0, RMSEA =.000). Males, as well as individuals with higher trauma levels, had higher externalizing symptoms. Secure attachment (p<.001, β= -.223; model fit CFI= .989, RMSEA= .028) significantly and negatively predicted externalizing symptoms, while dismissing (p=.196, β = .065; model fit CFI=.991, RSMEA= .042), fearful (p=.057, β =.092; model fit CFI= 1.0, RMSEA=.000), and preoccupied (p=.086, β= .085; model fit CFI=.985, RMSEA=.055) attachment styles did not. No interaction of attachment style with trauma was significantly associated with externalizing outcomes at the p<.05 level.

For the tests of three-way interactions of gender by attachment style by trauma in predicting externalizing symptoms, ethnicity was controlled for as a covariate to improve model fit. No significant three-way interaction predicted externalizing outcomes at the p<.05 level. See Table 4.

Discussion

The present study was conducted to examine the relationship between different attachment styles and their moderating impact on the development of internalizing and externalizing behaviors after trauma exposure. Specifically, the primary focus of this study was to assess the potential of a secure attachment style in adolescence to serve as a buffer against maladaptive behaviors after trauma as well as assess the relationships of three insecure attachment styles to internalizing and externalizing behaviors. Gender was also examined as a moderator. Our findings suggested that the moderating effect of attachment is more relevant in the prediction of internalizing, rather than externalizing, behavioral outcomes in young adulthood.

In the current study, early life exposure to trauma significantly predicted both internalizing and externalizing behaviors, as is consistent with the literature. Much more surprising were our findings regarding specific subtypes of insecure attachment. The avoidant styles were the only ones to significantly predict internalizing symptoms, whereas preoccupied attachment did not. Additionally, none of the three subtypes of insecure styles predicted externalizing symptoms. The finding that preoccupied attachment did not predict any negative behavioral outcomes in young adulthood is particularly surprising given that the attachment style has been related not only to emotional dysregulation and borderline personality disorder (Scott et al., 2013), but also to depression and mood disorders (Howe, 2011) in previous studies.

It was hypothesized that preoccupied attachment style would interact with trauma to predict internalizing behaviors and that the avoidant styles (fearful and dismissive) would interact with trauma to predict externalizing behaviors. These hypotheses were not supported, again, somewhat surprisingly given previous research linking these subtypes of insecure attachment to negative psychological outcomes. Given that there were fewer individuals in each of these subcategories than there were in the overall "insecure" category, statistical power to detect these effects may have been a concern.

In support of our hypothesis, secure attachment buffered the effects of trauma on the path to developing internalizing symptoms. Trauma had a more significant impact on the development of internalizing symptoms for youths without a secure attachment. This pattern is significant and pairs well with previous literature. It has been repeatedly shown that secure attachment is associated with fewer internalizing symptoms (Dagan, Facompré, & Bernard, 2018) for not only adults, but also adolescents (Howard & Medway, 2004). However, our study

goes beyond the previous findings by incorporating a prospective analysis and can speak more to the protective aspect beyond just the correlational associations seen in other studies.

In the current study, women were significantly more likely to exhibit internalizing symptoms and men were significantly more likely to exhibit externalizing symptoms. This is highly consistent with current findings of gender differences in these types of outcomes at the developmental phase of early adulthood (Attar-Schwartz, Khoury-Kassabri, & Mishna, 2017; Pauletti, et al., 2016; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). However, gender did not serve as a moderator between the relationship of trauma and internalizing and externalizing behaviors, nor did it have any strong relationship with attachment styles in their relationship to trauma and symptomatology. This was unexpected as the previous literature shows a greater gender imbalance in attachment style likelihood among insecure attachment styles (Gillath, Karantzas, & Fraley, 2016; Del Giudice, & Belsky, 2010). However, there has also been pushback against some of the original findings of gender differences in attachment. One massive study with a sample size of almost 18,000 people found no significant gender differences across insecure attachment styles (Schmitt, 2003). Another sizable study with 10,000 attachment interviews failed to find a significant difference across attachment styles by gender (van Ijzendoorn, Bakermans-Kranenburg, Shaver, & Mikulincer, 2010). It is possible our lack of gender-based moderating effects is reflective of a more mixed body of evidence concerning the role of gender in attachment theory.

Clinical Implications. A vast array of current literature speaks to the importance of attachment styles throughout the life course. Our research further supports the idea that having a secure attachment style can be protective against internalizing and externalizing symptoms. This relationship continues to hold even after the experience of trauma. Thus, the initiative to foster a

secure attachment style might always be beneficial, but it may also serve a particular importance for youths at higher risk of experiencing trauma in the first place. As our study looked at attachment styles in adolescence, perhaps efforts to build and maintain a secure attachment behaviors and strategies should be pursued more purposefully in that age group. Also, since the sources of attachment broaden with age, it could be beneficial for adolescents who may have lacked a secure base in childhood to build secure relationships with mentors and other individuals that serve in a supportive role. The benefits of building secure relationships can also be approached at the peer level as adolescence is a time largely marked by the importance of the peer interactions and influence. While it has been hotly debated if an attachment style can change across a life course, efforts can be made to improve security in individual relationships and environments.

Strengths and Weaknesses. In light of the surprising results concerning the insecure attachment styles, there are a few possible methodological weaknesses that should be considered. First, the ratio of our sample closely matched the often-recorded ratios seen in general populations with secure attachment account for two-thirds of a population (Ainsworth & Bell, 1970). The ratio, however, was not controlled for and the number of participants in the secure pool far outweighed the insecure pools, as noted above. A future study might be well served to select equal numbers of participants for each attachment style, to ensure that unequal sample sizes are not influencing study findings. Since our results did indicate a difference between the avoidant attachment styles and the preoccupied attachment style in terms of their associations with behavior, it appears that these distinctions are worthy of further study.

Another weakness to consider is the choice of attachment style measurement. Our attachment assessment consisted of one, four-item inventory subsection in a greater survey. The

brevity of the attachment assessment may have allowed for unintentional misidentification of certain attachment styles for different individuals. The standard Adult Attachment Interview (AAI) is an approximate sixty-minute interview and could offer a more in depth look at attachment style and internal working models (Wilkins, Shemmings, & Shemmings, 2015). Bartholomew and Moretti (2002) make the case for the use of interviews over self-report inventories, but also propose the idea of using both methodologies in assessing attachment styles to gain a more composite profile of an individual.

However, despite the room for improvements, this study offered a number of strengths. First, it had a fairly large sample size (n=707) and followed individuals longitudinally, allowing for prospective tests of associations. Also, our study used three different reporters to assess young adult internalizing and externalizing behaviors, which reduced the likelihood of self-report bias. The use of reports from the participant, the mother, and a peer of the participant helps perhaps capture behaviors seen in different areas of the participants life that might not be evident if we had used data from only one source. This method helps create a more accurate and holistic assessment of youth outcomes.

Future Directions. There are many bright avenues this line of research could follow. With the current prevalence of attachment theory based therapeutic interventions, further efforts to parse out the predictive relationships between trauma and later possible symptoms are noble and necessary. Our study reflected a protective relationship of secure attachment style to the presence of internalizing behaviors after trauma exposure. This finding could be more deeply investigated in an intentional population of traumatized individuals with more similar trauma histories to help further assess the specific impact of secure attachment. It has been shown secure attachment is protective in cases of sexual abuse (Jardin et al., 2017), but it has not been as

rigorously studied as other trauma histories such as traumatic loss or second-degree trauma. Additionally, if one were able to repeat this study, it might be wise to assess attachment at multiple time points to have more assurance in categorizing participants as one style over another. Also, this study contained a high-risk sample for maternal depression, and our study demonstrated that maternal depression related to higher rates of trauma and a disproportionate rate of fearful attachment styles. Thus, a similar investigation conducted in a lower risk sample might yield new or different findings crucial to the generalizability of our results.

Overall, our paper contributes to the field of attachment research with significant results of trauma and security as well as the potentially telling nonsignificant associations between gender and attachment. This paper can be used as a stepping stone into future investigations based on enhancing our understanding about how attachment styles influences future behaviors and emotional states, and the implications of these findings for future prevention and intervention strategies, particularly with vulnerable trauma-exposed adolescents.

References

Achenbach, T., & Ruffle, T. (2000). The Child Behavior Checklist and related forms for assessing behavioral/emotional problems and competencies. *Pediatrics in review*, *21*(8), 265-271.

Ainsworth, M., & Bell, S. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development*, *41*(1), 49-67.

Ainsworth, M., & Marvin, R. (1995). On the shaping of attachment theory and research: An interview with Mary D S Ainsworth (Fall 1994). *Monographs of the Society for Research in Child Development*, *60*(2–3), 3–21.

Allen, J., Marsh, P., McFarland, C., McElhaney, K., Land, D., Jodl, K., & Peck, S. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during mid-adolescence. *Journal of Consulting and Clinical Psychology*, *70*(1), 56–66.

Attar-Schwartz, S., Khoury-Kassabri, M., & Mishna, F. (2017). The role of classmates' social support, peer victimization and gender in externalizing and internalizing behaviors among Canadian youth. *Journal of Child and Family Studies*, 1-12.

Bartholomew, K., & Horowitz, L. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*(2), 226–244.

Bartholomew, K., & Moretti, M. (2002). The dynamics of measuring attachment: A commentary on "Attachment-Related Psychodynamics." *Attachment and Human Development, 4*, 162-165.

Brand, S., Schechter, J., Hammen, C., Brocque, R. and Brennan, P. (2011), Do adolescent offspring of women with PTSD experience higher levels of chronic and episodic stress? *Journal of Trauma and Stress*, *24*(1), 399-404.

Breinholst, S., Esbjørn, B., & Reinholdt-Dunne, M. (2015). Effects of attachment and rearing behavior on anxiety in normal developing youth: A mediational study. *Personality and Individual Differences*, *81*(1), 155–161.

Brenning, K., Soenens, B., & Braet, C. (2017). Testing the incremental value of a separate measure for secure attachment relative to a measure for attachment anxiety and avoidance: A study in middle childhood and early adolescence. *European Journal of Psychological Assessment*, *33*(1), 5–13.

Bretherton, I. (1995). The origins of attachment theory: John Bowlby and Mary Ainsworth. In S. Goldberg, R. Muir, & J. Kerr (Eds.), *Attachment theory: Social, developmental, and clinical perspectives.* (pp. 45–84). Hillsdale, NJ: Analytic Press, Inc.

Carvallo, M., & Gabriel, S. (2006). No man is an island: The need to belong and ismissing avoidant attachment style. *Personality and Social Psychology Bulletin*, *32*(5), 697–709.

Chaby, L., Zhang, L., & Liberzon, I. (2017). The effects of stress in early life and adolescence on posttraumatic stress disorder, depression, and anxiety symptomatology in adulthood. *Current Opinion in Behavioral Sciences, 14*(1), 86–93.

Clous, E., Beerthuizen, K., Ponsen, K., Luitse, J., Olff, M. & Goslings, C. (2017). Trauma and psychiatric disorders. *Journal of Trauma and Acute Care Surgery*, *82*(4), 794–801.

Creasey, G. (2002). Psychological distress in college-aged women: Links with unresolved/preoccupied attachment status and the mediating role of negative mood regulation expectancies. *Attachment & Human Development*, *4*(3), 261–277.

Dagan, O., Facompré, C., & Bernard, K. (2018). Adult attachment representations and depressive symptoms: A meta-analysis. *Journal of Affective Disorders*, *236*, 274–290.

Del Giudice, M., & Belsky, J. (2010). Sex differences in attachment emerge in middle childhood: An evolutionary hypothesis. *Child Development Perspectives*, *4*(2), 97–105.

Gillath, O. (2016). *Adult attachment: A concise introduction to theory and research*. London: Academic Press.

Griffin, D., & Bartholomew, K. (1994b). The metaphysics of measurement: The case of adult attachment. In K. Bartholomew & D. Perlman (Eds.), *Advances in Personal Relationships Vol. 5: Attachment Processes in Adulthood* (pp. 17-52), London: Jessica Kingsley Publishers.

Grossmann, K., Waters, K., Grossmann, Karin, & Waters, Everett. (2005). *Attachment from infancy to adulthood: The major longitudinal studies*. New York, NY: Guilford Press.

Guerrero, L. K. (1996). Attachment-style differences in intimacy and involvement: A test of the Four-Category Model. *Communication Monographs*, *63*(4), 269–292.

Howard, M., & Medway, F. (2004). Adolescents' attachment and coping with stress. *Psychology in the Schools*, *41*(3), 391-402.

Howe, D. (2011). *Attachment across the lifecourse: A brief introduction*. New York: Palgrave Macmillan.

Hu, L., & Bentler, P. (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

Jardin, C., Venta, A., Newlin, E., Ibarra, S., & Sharp, C. (2017). Secure attachment moderates the relation of sexual trauma with trauma symptoms among adolescents from an inpatient psychiatric facility. *Journal of Interpersonal Violence, 32*(10), 1565-1585.

Kline, R. (2005). *Methodology in the social sciences. Principles and practice of structural equation modeling (2nd ed.).* New York, NY, US: Guilford Press.

Leadbeater, B., Kuperminc, G., Blatt, S., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology, 35*(5), 1268-82.

Mayseless, O., & Scharf, M. (2007). Adolescents' attachment representations and their capacity for intimacy in close relationships. *Journal of Research on Adolescences (Wiley-Blackwell), 17*(1), 23-50.

Martin, J., Bureau, J., Lafontaine, M., Cloutier, P., Hsiao, C., Pallanca, D., & Meinz, P. (2017). Preoccupied but not dismissing attachment states of mind are associated with nonsuicidal self-injury. *Development and Psychopathology, 29*(2), 379–388.

McLaughlin, K. (2018) Early life stress and psychopathology. In (Ed.), *The Oxford Handbook of Stress and Mental Health*.: Oxford University Press.

Mclaughlin, K., & Lambert, H. (2017). Child trauma exposure and psychopathology: Mechanisms of risk and resilience. *Current Opinion in Psychology, 14*(1), 29-34.

Pauletti, R. E., Cooper, P. J., Aults, C. D., Hodges, E. V. E., & Perry, D. G. (2016). Sex differences in preadolescents' attachment strategies: Products of harsh environments or of gender identity? *Social Development, 25*(2), 390–404.

Schindler, A., Thomasius, R., Sack, P., Gemeinhardt, B., KÜStner, U., & Eckert, J. (2005). Attachment and substance use disorders: A review of the literature and a study in drug dependent adolescents. *Attachment & Human Development, 7*(3), 207-228.

Schmitt, D. (2003). Are men universally more dismissing than women? Gender differences in romantic attachment across 62 cultural regions. *Personal Relationships, 10*(3), 307-331.

Schury, K., Zimmermann, J., Umlauft, M., Hulbert, A., Guendel, H., Ziegenhain, U., & Kolassa, I. (2017). Childhood maltreatment, postnatal distress and the protective role of social support. *Child Abuse & Neglect, 67*, 228.

Scott, L., Kim, Y., Nolf, K., Hallquist, M., Wright, A., Stepp, S., … Pilkonis, P. (2013). Preoccupied attachment and emotional dysregulation: Specific aspects of borderline personality disorder or general dimensions of personality pathology? *Journal of Personality Disorders*, *27*(4), 473–495.

Van Ijzendoorn, M., Bakermans-Kranenburg, M., Shaver, P., & Mikulincer, M. (2010). Invariance of adult attachment across gender, age, culture, and socioeconomic status? *Journal of Social and Personal Relationships, 27*(2), 200-208.

Waters, E., Crowell, J., Elliott, M., Corcoran, D., & Treboux, D. (2002). Bowlby's secure base theory and the social/personality psychology of attachment styles: Work (s) in progress. *Attachment & Human Development*, *4*(2), 230-242.

Widom, C. (2000). Childhood victimization: Early adversity, later psychopathology. *National Institute of Justice Journal*, *242*, 3-9.

Wilkins, D., Shemmings, D., & Shemmings, Yvonne. (2015). *A-Z of attachment*. London; New York, NY: Palgrave.

Wingenfeld, K., Schaffrath, C., Rullkoetter, N., Mensebach, C., Schlosser, N., Beblo, T., . . . Meyer, B. (2011). Associations of childhood trauma, trauma in adulthood and previous-year stress with psychopathology in patients with major depression and borderline personality disorder. *Child Abuse & Neglect, 35*(8), 647-654.

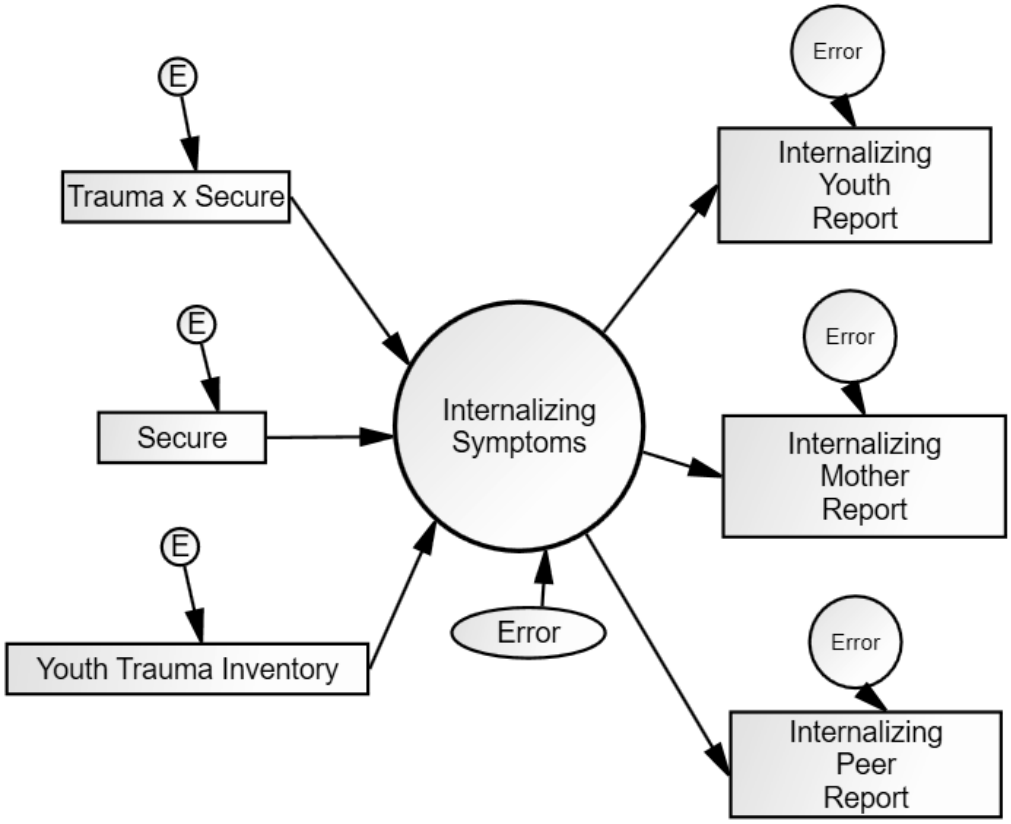

Figure 1. Structural Equation Model of Secure Attachment and Trauma Interaction. This model shows internalizing symptoms as a latent variable.

Table 1

Descriptive Statistics of Sample

Variables	N	%
Attachment Style		
Secure	403	57
Insecure	304	43
Fearful	31	4.4
Dismissive	61	8.6
Preoccupied	43	6
Unclassified Insecure	169	23.9
Ethnicity		
White	644	91.1
Non-White	63	8.9
Gender		
Female	365	51.6
Male	342	48.4

Table 2

Traumatic Life Events Inventory

Questions
Has your father died?
Has your brother or sister died?
Did either of your parents suffer from alcohol or drug abuse?
Is there a history of physical abuse in your family?
Did either of your parents suffer from mental illness?
Did your parents have a lot of conflict in their marriage?
Has anyone in your family suffered from a serious illness or accident?
Have you personally suffered from a serious illness or accident?
Did your parents get divorced or separated?
Have you ever been a victim of violence (physical or sexual assault)?

Table 3

Internalizing Symptoms Predicted by Trauma Interactions.

	p	CFI	RMSEA	β
Trauma x Secure	.046*	.987	.027	-.094
Trauma x Fearful	.655	.967	.051	-.024
Trauma x Dismissing	.590	.997	.011	.027
Trauma x Preoccupied	.401	.995	.015	.081
Trauma x Secure x Gender	.234	.911	.043	-.055
Trauma x Fearful x Gender	.306	.958	.036	.055
Trauma x Dismissing x Gender	.218	.970	.022	-.060
Trauma x Preoccupied x Gender	.195	.980	.022	.072

Note. *p<.05

Table 4

Externalizing Symptoms Predicted by Trauma Interactions.

	p	CFI	RMSEA	β
Trauma x Secure	.501	.989	.028	-.030
Trauma x Fearful	.594	.973	.051	-.028
Trauma x Dismissing	.815	.997	.013	.011
Trauma x Preoccupied	.899	.974	.041	-.006
Trauma x Secure x Gender	.427	.958	.030	-.036
Trauma x Fearful x Gender	.175	.981	.025	.043
Trauma x Dismissing x Gender	.057	1.00	.000	-.093
Trauma x Preoccupied x Gender	.109	1.00	.001	.069

Note. *p<.05