



Attachment anxiety moderates the relationship between childhood maltreatment and attention bias for emotion in adults



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ABSTRACT

Research indicates that some individuals who were maltreated in childhood demonstrate biases in social information processing. However, the mechanisms through which these biases develop remain unclear—one possible mechanism is via attachment-related processes. Childhood maltreatment increases risk for insecure attachment. The internal working models of self and others associated with insecure attachment may impact the processing of socially relevant information, particularly emotion conveyed in facial expressions. We investigated associations among child abuse, attachment anxiety and avoidance, and attention biases for emotion in an adult population. Specifically, we examined how self-reported attachment influences the relationship between childhood abuse and attention bias for emotion. A dot probe task consisting of happy, threatening, and neutral female facial stimuli was used to assess possible biases in attention for socially relevant stimuli. Our findings indicate that attachment anxiety moderated the relationship between maltreatment and attention bias for happy emotion; among individuals with a child abuse history, attachment anxiety significantly predicted an attention bias away from happy facial stimuli.

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1. Introduction

Given that biases in attention for emotionally-valenced cues have been linked to anxiety disorders, depression, and PTSD (see Bar-Haim et al., 2007 for a review) and may even play a causal role in the emergence of some internalizing conditions (e.g., Osinsky et al., 2012), a growing body of research has focused on identifying factors that might precipitate their development. One such factor that has generated a great deal of interest in recent years is childhood maltreatment, which has been shown to relate consistently both to the development of mood and anxiety disorders (McCauley et al., 1997; Dube et al., 2001; Gillespie et al., 2009b) and to the emergence of biased socioemotional processing (Dodge et al., 1990; Weiss et al., 1992).

Research focused explicitly on associations between attention biases for emotional cues and childhood maltreatment, however, has yielded conflicting results. In particular, findings regarding the direction and nature of attentional biases in individuals maltreated as children vary across studies. In one study, for example, children

with documented maltreatment histories demonstrated a bias to direct attention away from threatening faces (Pine et al., 2005); another study found that young adults who retrospectively reported maltreatment during childhood demonstrated a bias to orient towards threat (Gibb et al., 2009). In a third study, Fani and colleagues (2011) found that adults with a retrospectively-reported child maltreatment history showed a bias to attend preferentially to happy faces, but no significant bias either toward or away from threatening faces.

One possible explanation for the discrepancies across studies is that research to date on attention bias and maltreatment has not identified and taken into account potential moderators. Both interpersonal and intrapersonal moderating variables, which affect the direction and/or strength of an association between two other variables (Baron and Kenny, 1986), have been shown to modulate associations between attention biases and outcome variables such as depression (Connell et al., 2013; Romens and Pollak, 2012). Less is known, however, about variables that moderate associations between attention biases for emotional cues and predictors, such as childhood maltreatment. A growing literature suggests that attachment style merits attention as one such variable.

Attachment theory (Bowlby, 1980; Main et al., 1985; Bretherton et al., 1990) postulates that individuals develop an attachment

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style—a cognitive-behavioral representation of an internal working model of attachment—based on early life experiences with their primary caregivers. These internal working models of self and others guide later interpersonal beliefs, behavior, and information processing abilities. The attachment system is activated in times of need or threatening situations, with the primary goal of establishing close proximity to the attachment figure. Secure attachment with a caregiver has been shown to increase one's ability to regulate emotions in an appropriate manner (Thompson, 2008) and may buffer against the negative consequences of stress (Ahnert et al., 2004; Gilissen, 2008; Alink et al., 2009). In cases of child maltreatment the development of a secure attachment system is particularly threatened when the primary adult that the child turns to for security is also the source of threat or fear for the child (Schuengel et al., 1999; Cassidy and Mohr, 2001; Bradley et al., 2011). Research has repeatedly demonstrated that children who develop in environments characterized by physical and emotional abuse and neglect are more likely to develop an insecure attachment style than are children who grow up in safer contexts (Lyons-Ruth and Jacobvitz, 1999; Cicchetti et al., 2006; Cyr et al., 2010).

Attachment representations are believed to direct feelings and behavior, as well as cognitive processes, towards information that agrees with established mental frameworks (Main et al., 1985. Van Emmichoven et al., 2003) found that attachment representations influence processing of social information, especially in tasks that demand attention and memory. Although it is not entirely clear how this path of influence develops, internal working models of attachment may act as a filter for new information, directing attention towards schema-congruent material (Dewitte et al., 2007). For example, insecurely attached six-year old children in one study were more likely to attribute hostile intent to ambiguous stimuli than were securely attached children (Cassidy et al., 1996).

In adults, anxious attachment style is associated with a tendency to over-emphasize the presence and seriousness of threat and to attend preferentially to cues of negative emotion (Shaver and Mikulincer, 2007). In contrast, individuals with avoidant attachment models attempt to block negative emotions such as fear, anger, shame or guilt. These tendencies could directly relate to the formation of attention bias. It has been previously observed that impairment on tasks of attention and memory among individuals with varied insecure attachment styles are specific to attachment-related themes (Edelstein, 2006; Dewitte et al., 2007; Edelstein and Gillath, 2008). Research suggests that in both children and adults, avoidant and anxious attachment styles are associated with aversion of attention away from attachment-relevant stimuli (Ainsworth, 1978; Main et al., 1985; Dewitte et al., 2007) that may be either positive or negative in emotional valence (Kirsh and Cassidy, 1997). This pattern may reflect a tendency among insecurely attached individuals to experience anxiety in the face of any emotionally-charged interpersonal cues, which activate the attachment system whether they are positive or negative. In contrast, securely attached individuals, for whom interpersonal cues appear less anxiety-provoking, may be more open to attending to and processing both positive and negative social information, because neither type of data activates problematic schemata.

Thus, recent research and theory suggest that social information processing, which includes but is not limited to attention biases, unfolds as a function of both the type of information presented and the quality of a person's attachment style (for a complete review see Dykas and Cassidy, 2011). In the present study, we examined relationships among child maltreatment, level of anxious and avoidant attachment as measured by the Experiences in Close Relationships inventory (ECR), and attention bias in

response to both threatening and happy facial stimuli using an adult, clinical population. We hypothesized that both avoidant and anxious attachment styles as measured by the ECR would interact with self-reported child maltreatment history to predict attention bias away from both happy and threatening facial stimuli.

2. Method

2.1. Procedure

Subjects in this study were enrolled in a NIH-funded study of risk and resilience factors related to PTSD (Binder et al., 2008; Bradley et al., 2008; Gillespie et al., 2009a). Participants were recruited from the General Medical and Obstetric/Gynecological Clinics at a publicly funded, nonprofit healthcare system that serves a low-income population in Atlanta, Georgia. Participants completed a battery of self-report measures assessing trauma history, childhood maltreatment, and associated symptoms (completion time largely depended on the extent of the participant's trauma history and symptoms, with heavily traumatized participants requiring more time to finish the measures). A trained interviewer read all questionnaires to each participant. As described in full detail previously (Gillespie et al., 2009a), study participants who completed this initial interview were invited to participate in a secondary phase of the study, which involved a more comprehensive assessment including clinical diagnostic interviews, the attachment related questionnaire, and assessment of attention bias via a dot probe task using facial stimuli. Therefore childhood trauma, attention bias, and attachment style were measured on three different days of the study. All procedures in this study were approved by the Institutional Review Board of Emory University School of Medicine and the Grady Memorial Hospital Research Oversight Committee. The presented data were collected between 2009 and 2011.

2.2. Participants

The data presented in this manuscript are based on a sample of 142 study participants. However, data from 45 participants were excluded from analysis due to poor performance on the dot probe task or because of withdrawal from the study before completing the attachment measure, resulting in a total of 97 participants whose data were included in analyses. These participants were predominantly female (75.4%), with ages ranging from 18 to 63 years. The sample was 95% African American. The majority of the participants had a low income, with 44.2% reporting a household monthly income less than \$500, 29% reporting a household monthly income between \$500 and \$1000, 20.3% reporting a household monthly income between \$1000 and \$2000; the remaining 6.5% reporting a household monthly income of \$2000 or higher.

2.3. Measures

2.3.1. Childhood Trauma Questionnaire

This is a 28-item self-report measure of child maltreatment (Bernstein and Fink, 1998; Bernstein et al., 2003) with acceptable reliability and validity in both clinical and community populations (Bernstein et al., 2003). Moderate levels of consistency were found between CTQ scores and therapist observation ratings; the measure also yields good internal consistency scores (Bernstein et al., 2003). Additionally, the CTQ has strong reliability in the present sample, where data yielded a Cronbach alpha coefficient of 0.88. We used established cutoff scores to group participants according to level of maltreatment, such that each participant was classified as having experienced no abuse or mild, moderate, or severe levels of physical, sexual, and emotional abuse (Bernstein and Fink, 1998). Using these scores, and remaining consistent with our previous analyses (Bradley et al., 2008; Binder et al., 2008) as well as research conducted by other research groups using the CTQ and other measures of adverse childhood experiences (Dube et al., 2001), we assigned participants to no abuse or mild, moderate, or severe abuse groups for each of the three abuse types. We then collapsed those participants reporting no or mild levels of physical, sexual or emotional abuse into a "low childhood abuse" group and collapsed those participants reporting moderate to severe levels of abuse in any of the three categories into a "high childhood abuse" group.

2.3.2. The Experiences in Close Relationships Inventory

This self-report measure of attachment anxiety and avoidance that can be used in adult and adolescent populations queries an individual's attachment-related expectations, actions, and emotions in the context of close romantic relationships (ECR; Brennan et al., 1998). The dimensional measure includes an 18-item scale for attachment-related anxiety, and an 18-item scale for attachment-related avoidance. Possible answers to each of the 36 items range from "1, Strongly Disagree" to "7, Strongly Agree" and high scores on each of the 2 scales indicate high levels of insecure attachment (Quirin et al., 2008). The ECR has been found to be a valid (Mikulincer and Shaver, 2005; Hesse, 2008), stable, and test-retest reliable

(Bakermans-Kranenburg and Van IJzendoorn, 1993; Lopez and Gormley, 2002) measure of an individual's attachment-related internal working models. In the present sample, the ECR showed acceptable internal consistency, with a Cronbach alpha coefficient of 0.71. We conducted our analyses using the two continuous ECR subscales labeled attachment anxiety and avoidance. For graphical representations only, we split both scales at the median to dichotomize the variables and to create high or low attachment anxiety and avoidance groups.

2.3.3. Dot probe task

Dot probe tasks are computerized measures that can be used to identify emotion-related attention biases (Mogg and Bradley, 1999). Findings from prior research suggest that the dot probe measure validly discriminates between anxious and non-anxious adults and youth (Bradley et al., 1999; Wilson and MacLeod, 2003; Mogg et al., 2004; Pine et al., 2005). Bias scores are based on participant reaction times to neutral onscreen cues that appear immediately following distracting information that is either emotional or neutral in nature. In the present task version, during each trial, a pair of face photographs from the same model appeared on the screen for 500 ms. The face pair then disappeared and an asterisk appeared on one side of the screen where one of the face photographs was previously located. Participants were instructed to indicate via key press the side of the screen on which the asterisk appeared (left or right). Face pairs consisted of happy-neutral, threat-neutral, neutral-neutral face photographs which appeared on the screen in random order (of 80 trials, 32 included positive-neutral face pairs, 32 included neutral-threat face pairs, and 16 included neutral-neutral face pairs).

Because we were aiming to evoke responses congruent with those elicited by participants' primary attachment figures, all faces used in the task were female. A different model's face appeared in each trial; 40 of the models were African American and 40 of the models were Caucasian. Again, to increase consistency with responses evoked by attachment figures, analyses in the present study focused on responses to faces of the same race as the participant. During half of the emotion pair trials, the probe replaced neutral facial stimuli and during the other half of the trials, it replaced emotionally-valenced stimuli. For neutral pair trials the probe appeared on the right side half of the time. Order of probe location was randomly varied across trials, with an equal number of probes appearing on the right and left sides of the screen. Consistent with prior research using the measure (Mogg and Bradley, 1999), participants with poor task performance were excluded from analysis. We used a standard approach to define poor task performance, with participant data excluded entirely from analysis if the participant skipped or made errors on 20% or more of trials. For participants whose data were included in analyses, trials were excluded if reaction time was below 200 ms or was more than two standard deviations above the individual's mean reaction time.

As previously described by Fani et al. (2011), emotion bias scores for threat and happy information were based on difference scores calculated using response times to threat-neutral and happy-neutral pair trials. For each trial type, we subtracted mean reaction time during happy/neutral or threat/neutral trials when the probe replaced the emotional face from mean reaction time during trials when the probe replaced the neutral face (Mogg and Bradley, 1999). A positive score indicates a bias to direct attention towards either threat or happiness and a negative score indicates a bias to direct attention away from the relevant emotion. Mean reaction times (in ms), as well as standard deviation values for the total sample, low abuse group, and high abuse group are listed in Table 1.

3. Results

3.1. Relationship of childhood abuse with level of anxious and avoidant attachment

Consistent with prior research on this sample, we found high rates of childhood physical, sexual, and emotional abuse. Data from the CTQ show that 27.9% of the sample reported moderate to severe levels of childhood physical abuse, 37.9% of the sample reported moderate to severe levels of childhood sexual abuse, and 25.0% of the sample reported moderate to severe levels childhood

emotional abuse. When we aggregated across the three types of abuse, 51.4% of the sample reported at least one type of moderate to severe childhood abuse.

Participants reporting no or mild abuse exposure for each of the three types of abuse (sexual, emotional, and physical) were assigned to the low abuse group, which consisted of 68 participants (21 males and 47 females). The average CTQ score in the low abuse group was 30.61. Participants reporting moderate to severe abuse exposure for one or more types of abuse were assigned to the high abuse group, which consisted of 72 participants (13 males and 59 females). The average CTQ score in the high abuse group was 56.13. In addition, several general demographic variables were compared between the two abuse groups including age, sex, monthly household income, and highest educational grade completed. None of these variables were found to differ significantly between the two groups based on analysis of a χ^2 test of independence for categorical variables or a one way analysis of variance for continuous variables (p 's > 0.05). There were no sex differences between the low and high abuse groups on measures of attachment anxiety (ECR), maltreatment (CTQ total score), or attention bias (p 's > 0.05). The average happy attention bias score for the sample as a whole was 5.67(S.D.=34.81), and the average threat attention bias score was 4.15 (S.D.=34.72). For the population as a whole, threat bias scores were statistically different from zero using a one-sample t -test ($P=0.04$), whereas happy bias scores only showed group differences. The mean reaction times (in ms) as well as standard deviation values for the total sample, low abuse group, and high abuse group are listed in Table 1.

3.2. Childhood abuse, attachment, and attention bias

A hierarchical multiple regression model was used to test whether child maltreatment history and attachment anxiety or avoidance predicted attention bias scores for same-race stimuli. For analyses with each of our attention bias variables—threat or happy bias—as the dependent variable, we entered level of childhood abuse at the first step of the regression model, attachment anxiety or avoidance as a continuous variable at the second step, and the interaction of these two variables at the third step. Attachment avoidance did not predict happy or threat bias in the regression analysis and the interaction with abuse was not significant. The results of analyses focused on attachment anxiety are discussed below, as the associations between attachment anxiety and attention bias differed according to the emotion of facial stimuli.

3.2.1. Threat bias

As shown at the first step of our analysis in Table 2, childhood abuse history did not account for a significant amount of the variance in attention bias to same-race threatening faces. At the second step, the addition of attachment anxiety to the model accounted for a significant amount of variance in threat bias above and beyond the variance accounted for by high childhood abuse history ($b= -0.381, P=0.037$). We did not find that the interaction between child abuse and attachment anxiety added significantly

Table 1 Mean reaction times (in ms) and standard deviations of congruent and incongruent dot probe trial types.

Trial Type	Congruency	Total sample		Low abuse		High abuse	
		M	S.D.	M	S.D.	M	S.D.
Happy-neutral	Congruent	579.25	148.16	584.18	115.64	571.14	72.82
	Incongruent	584.92	157.33	585.97	114.60	578.82	70.52
Threat-neutral	Congruent	590.28	158.31	595.15	120.60	581.95	74.53
	Incongruent	594.42	105.04	598.02	118.30	586.77	71.83

Table 2
Regression table for threat bias.

	Variable	B	R ²	Sig
Step 1	Child abuse history	1.663	0.000	0.846
Step 2	Child abuse history	6.778	0.045	0.037
	Attachment anxiety	−0.381		
Step 3	Child abuse history	19.567	0.050	0.494
	Attachment anxiety	−0.238		
	Interaction of attachment anxiety and child abuse history	−0.250		

Table 3
Regression table for happy bias.

	Variable	B	R ²	Sig
Step 1	Child abuse history	−6.394	0.005	0.485
Step 2	Child abuse history	−3.654	0.017	0.701
	Attachment anxiety	−0.201		
Step 3	Child abuse history	37.725	0.061	0.040
	Attachment anxiety	0.275		
	Interaction of attachment anxiety and child abuse history	−0.802		

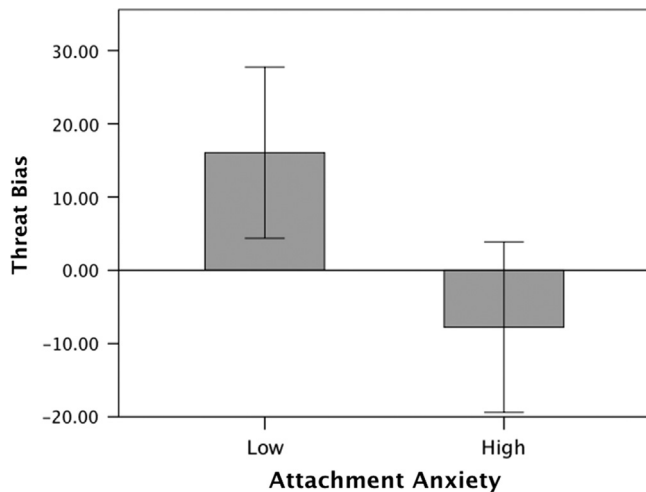


Fig. 1. Relationship of threat bias and attachment anxiety. Threat bias scores are displayed along the vertical axis and the sample population is represented by two groups of low and high attachment anxiety along horizontal axis. Error bars reflect standard deviation.

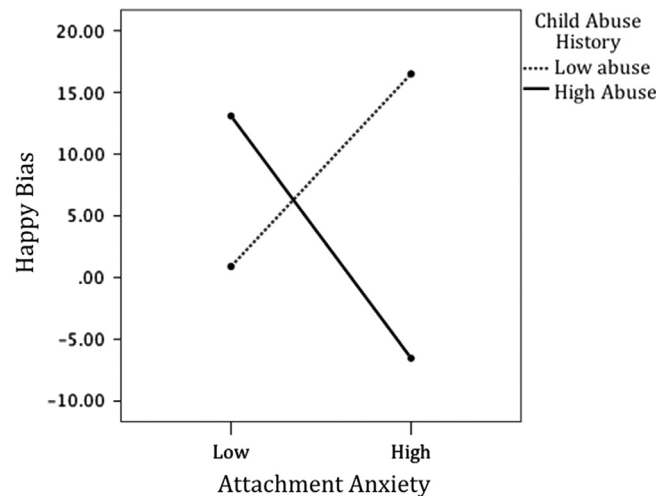


Fig. 2. Relationship of happy bias and attachment anxiety by abuse history. Happy bias scores are displayed along the vertical axis and the sample population is represented by two groups of low and high attachment anxiety along horizontal axis. Participants with low abuse history are represented by a dotted line. Participants with a high abuse history are represented by a solid line.

to the model. The main effect of attachment anxiety on threat bias was evident when we compared individuals with high and low attachment anxiety, based on a median split of attachment anxiety, as shown in Fig. 1. The mean threat bias score for those with low attachment anxiety was positive ($M=16.04$, $S.D.=40.64$), while the mean threat bias score for those with high attachment anxiety was negative ($M=-7.77$, $S.D.=40.49$). The difference between these two groups was statistically significant ($F(1,96)=8.45$, $P=0.005$).

3.2.2. Happy bias

The regression model predicting attention bias to happy faces is presented in Table 3. The first step of our analysis showed that childhood abuse did not account for a significant amount of the variance in attention bias to happy faces. Further, addition of attachment anxiety score at the second step of this model did not improve model fit significantly, nor did attachment anxiety independently account for a significant amount of the variance in happy bias. However, at the third step of the model, the results indicated that the interaction of child abuse and attachment anxiety was a significant predictor of happy bias ($b=-0.802$, $P=0.040$). To further expand on this finding, a second linear regression model was tested to examine associations between attachment anxiety and happy attention bias in the two abuse groups analyzed separately. After splitting the participants based on abuse history (high versus low), we found that attachment anxiety significantly predicted happy attention bias only in the high abuse group ($F(1,47)=4.514$, $P=0.039$). The association was

not significant in the low abuse group. In Fig. 2, the relationship between child abuse, attachment anxiety and attention bias for happy faces is displayed graphically.

4. Discussion

In our sample of adults, levels of insecure attachment differed between those with and without self-reported histories of childhood maltreatment, such that insecure attachment was more common in those reporting high maltreatment levels. This finding is not surprising; attachment insecurity, an expected response to abuse in early life (Bowlby, 1951), constitutes a vivid example of the influence that early trauma has on later social functioning. We found partial support for our hypothesis that insecure attachment and childhood maltreatment history would interact to predict attention biases away from attachment-relevant emotional cues when same-race happy stimuli were used.

When we examined both child maltreatment and attachment anxiety as predictors of threat bias scores, we found that attachment anxiety, but not maltreatment history, significantly and independently predicted variance in avoidance of threatening faces. This finding suggests that abuse history may not serve as a direct predictor of threat attention bias; attachment anxiety, in contrast, emerged as an independent candidate risk factor for biased attention to negative emotion. We found that regardless of abuse history, attachment anxiety was associated with attention bias away from threat. In light of this evidence, it seems unlikely

that abuse alone confers sufficient risk to predispose any maltreated individual to attention bias. However in individuals who report maladaptive social tendencies, such as attachment anxiety, errors on tasks relating to social information, especially regarding the attachment figure, may be likely, regardless of past abuse.

In analyses that included happy bias score as the dependent variable, we did not find main effects for either child abuse or attachment anxiety. We did, however, find evidence of a significant interaction between attachment anxiety and maltreatment history. Among those with a history of high levels of abuse, attachment anxiety was positively associated with a bias away from happy faces. Notably, the only individuals to show bias away from happy faces were those individuals with both high attachment anxiety and a history of high abuse levels. We believe that these findings reflect a cumulative effect of risk factors, such that a history of abuse, when combined with the development of attachment anxiety as an additional risk factor, markedly increases avoidance of positive facial stimuli.

Participants with high attachment anxiety showed a stronger attention bias away from negative facial stimuli than did securely attached individuals; they also showed a bias away from positive facial stimuli if they self-reported a history marked by high abuse levels. For individuals characterized by attachment insecurity, directing attention away from both negative and positive attachment-related stimuli could help alleviate anxious mood states that accompany exposure to aversive stimuli (Bowlby, 1988) and, potentially, to positive stimuli that might be associated with fears of disappointment. Averting attention from emotional cues may also provide protection against painful memories of past attachment-related experiences (Main, 1990; Main and Hesse, 1990). Such avoidance effects are proposed to be the strongest for social information that has the ability to cause psychological pain (Dykas and Cassidy, 2011). Our finding that avoidance of happy facial stimuli was more pronounced in insecurely attached individuals with a history of maltreatment, is consistent with this idea. Further, it raises the possibility that the intersection of these variables (insecure attachment and history of maltreatment) facilitates an exaggerated focus on the aversive or painful connotations of attachment-related stimuli and increases consequent behavioral avoidance of stimuli that activate the attachment system. In a generalized interpretation, threatening interpersonal cues may be commonly regarded as aversive for individuals with attachment anxiety, but happy interpersonal cues may only carry an aversive connotation in those individuals with attachment anxiety who also have a significant history of negative interpersonal relationships, such as those characterized by abuse.

Less expected was our finding that the interaction between attachment anxiety and maltreatment history did not significantly predict attention bias for threatening facial stimuli. Because both positive and negative interpersonal cues have the potential to activate the attachment system, and because insecurely attached individuals may experience anxiety in the face of both positively- and negatively-valenced interpersonal cues, it is unclear why responses to happy emotion would be influenced more strongly by these two risk factors than would responses to threat.

Research on the factors that influence attention provides a helpful context for understanding the present findings. People can magnify or minimize the effect of emotional experiences by directing or redirecting attention (Kaplan and Berman, 2012; Wadlinger and Isaacowitz, 2011). Individual differences, however, may modulate the capacity to engage in this type of attention-driven emotion regulation. For example, maltreated individuals who are nonetheless able to develop healthy attachment relationships with a caregiver or, more likely, another adult who is non-abusive, might be better equipped than other maltreated individuals to seek out and maintain attention towards positive cues, such as happy faces, in order to shape their environments in an adaptive manner. If this is the case,

then a bias towards happy faces in association with secure attachment, even in the face of maltreatment, could serve as a promising marker of resiliency.

In contrast, individuals with a history of abuse who also develop an insecure attachment style may develop a bias away from happy stimuli because of the cumulative burden that abuse and attachment activation confer. As Beck's cognitive information processing model (Beck and Clark, 1988) proposes, a bias to attend preferentially is more likely to be evident for stimuli that appear in contexts that are linked to internal cognitive schemas. It is thus possible that individuals with a history of maltreatment who also have limited experience of positive affect in their attachment relationship may avoid positive emotional cues because they are inconsistent with their schemas for interactions with others.

Limitations of our study include the fact that we used only self-report, retrospective measures of child abuse and attachment insecurity. Because of our reliance on this type of measure, our attachment-related and child abuse categorizations were necessarily based on self-perceptions of attachment-related beliefs and behaviors and childhood memories. Such measures can yield skewed results compared to observational measures of attachment or compilation of data from outside sources for child abuse history. However, both measures used in this study are standardized and have good psychometric properties. In addition they have been widely used in published studies on related topics, which renders findings from this study readily comparable to findings in prior work.

Additionally, our dot probe task only included female faces and although stimulus faces consisted of both same- and other-race models, significant findings emerged only for same-race stimuli. As Schmukle (2005) has pointed out, the reliability of the dot probe is questionable. However, because our primary use of this tool was to describe patterns of social information processing, rather than to discriminate between individuals with and without clinical conditions, such as anxiety, concerns about performance stability may be less salient. In addition, there is literature that supports the validity of the dot probe in assessing attention bias in traumatized individuals (Lindstrom et al., 2011; Fani et al., 2012, 2013). However, future research should employ other, promising approaches to the assessment of attention bias, such as eye tracking methodologies (Kimble et al., 2010). Lastly, our population consisted of adults recruited from general care hospital waiting rooms who may have already developed anxiety, depression, or PTSD. Therefore findings related to attention bias and attachment anxiety only suggest potential correlates of psychopathology and cannot be considered risk factors for their development, although this possibility remains.

The present findings lend partial support to the hypothesis that attachment insecurity moderates relationships between a distal history of abuse and attention bias in adults. They also, however, indicate that attachment insecurity relates directly and independently to a pattern of attentional avoidance for certain emotional cues, regardless of maltreatment history. Future research building on this work should explore whether and how attachment insecurity relates to the processing of threat-specific information in maltreated children, who are less temporally removed from their experiences of abuse. Such studies could help clarify the trajectory along which attention biases develop and may lead to the identification of optimal points for prevention or intervention efforts, such as attention bias retraining.

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