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Attention Orientation in Parents Exposed to the 9/11 Terrorist Attacks and Their Children

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Abstract

While trauma affects both parents and their children, minimal research examines the role of information-processing perturbations in shaping reactions to trauma experienced by parents and, in turn, the effect this trauma has on their children. This study examines familial associations among trauma, psychopathology, and attention bias. Specifically, group differences in psychopathology and attention bias were examined in both adults and their children based on trauma exposure. In addition, the association between attention bias in parents and attention bias in their children was examined. Parents exposed to the 9/11 World Trade Center attacks and their children were recruited from the New York City Metropolitan area. Levels of trauma exposure, psychiatric symptoms, and attention bias to threat, as measured with the dot-probe task, were each assessed in 90 subjects, comprising of 45 parents and one of their children. These measures were examined in parents and their children separately; each parent and child was categorized on the presence of high or low levels of trauma exposure. Although trauma exposure did not relate to psychopathology, parents who were highly exposed to trauma showed greater attention bias towards threat than parents with low trauma exposure. However, the children of high trauma-exposed parents did not show enhanced attention bias towards threat, though threat bias in the high trauma-exposed parents did negatively correlate with threat bias in their children. This association between trauma and attention bias in parents was found four-to-five years after 9/11, suggesting that trauma has enduring influences on threat processing. Larger, prospective studies might examine relationships within families among traumatic exposures, psychopathology, and information-processing functions.

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INTRODUCTION

Trauma engenders risk for anxiety and post-traumatic stress disorder (PTSD) in both parents and children (Breslau 2002; Pine and Cohen 2002; Pine 2003; Hoven, Duarte et al. 2005). Some studies find associations between trauma in parents and biological functioning in their children (Yehuda and Bierer, 2008), yet, conversely, children living in traumatized families can show signs of resilience, even when their parents manifest psychopathology (Laor, Wolmer et al. 2001). These data raise key questions on parent-child transmission of stress-related anxiety vulnerability.

The current study examined associations among trauma exposure, psychopathology, and cognitive markers of trauma vulnerability in parents exposed to the 9/11 terrorist attacks and their children. Perhaps the strongest prior findings in this area report associations between biased orienting of attention and post-traumatic anxiety (Bar-Haim, Lamy et al. 2007). Experimental work suggests that such biases arise through the effects of experience (Wilson et al., 2006; Pine et al., 2009), and that anxiety arising after trauma is associated with changes in threat-related attention bias (Pine et al., 2005c; Bar-Haim et al., 2010).

Considerable work relating trauma, anxiety, and attention bias relies on the dot-probe task. This task assumes that reaction times to probes appearing in pre-cued locations are faster than to probes appearing in non-cued locations, thus providing an index of attention bias. In one frequently-used version of the task, two cues, one threat-related and one neutral, appear side-by-side. A probe replaces one cue and participants indicate the probe's location by button-press. An attention-bias measure is generated from reaction-time data.

No study has examined the relationship between attention bias and trauma exposure in parents and the effects on their children. While any such study might generate important insights on mechanisms that could account for inter-generational transmission, the 9/11 terrorist attacks provide a particularly unique opportunity for such work. Prior work using subjects affected by 9/11 and other traumas suggests that parents who become anxious about terrorism influence their children's anxiety (Hoven et al., 2005; Pine et al., 2005a; Conejo-Galindo et al., 2008). Exploring attention biases in parents and their children after a traumatic event in parents is relevant because children may react to a parent's hyper-vigilant style by making an effortful attempt to redirect attention away from potential threats in the environment, possibly as a method of regulating responses to emotional events.

We used the dot probe task in 9/11 trauma-exposed families to study the relationship between attention bias and trauma in parents and possible inter-generational transmission to their children. We compared responses in families, where the parent was exposed to trauma, to responses in families where the parent was not exposed to trauma. In adults exposed to trauma, research reveals positive associations between PTSD severity and attention bias towards threats (Bar-Haim, Lamy et al. 2007). Therefore, we hypothesized that parents with high, relative to low, levels of 9/11-related trauma would show greater attention bias towards threat. Among children, in contrast, the data relating PTSD or anxiety severity to attention bias appear less consistent (Pine et al., 2005c; Roy et al., 2008). The weight of the evidence supports competing hypotheses, due to potential age-related plasticity in attention bias (Fox, 2007; Lindstrom et al., 2009; Pine et al., 2009). As with studies of pediatric anxiety, a recent review of attention bias research in traumatized youth notes that some studies indicate increased attention to threat, whereas other studies indicate threat-avoidance (Dagleish et al., 2005). Hence, our hypothesis for children was non-directional. Children with increased trauma exposure either in their parents or themselves are hypothesized to show either greater attention bias toward threat or greater bias away from threat, compared to youth with less trauma exposure in either their parent or themselves. This, in turn, raises

the expectation of correlated bias scores in parents and their children, though the direction of this correlation could appear either positive or negative.

1. METHODS

2.1 Sample

This study examined families living near the site of the 9/11 World Trade Center attacks. The families consisted of a parent who was the primary caregiver and one biological child between 9–15 years old. Forty-five parent and child sets were divided into two groups: i) 14 families with a parent highly exposed to the 9/11 World Trade Center attacks and; ii) 31 families with a parent with lower levels of exposure. The exposure rating scale that was used to divide the groups is described in detail in section 2.4. Highly-exposed parents scored greater than two on an established trauma-severity scale; low-exposed parents scored less than or equal to two.

2.2 Procedures

All procedures were approved by the Columbia University-New York State Psychiatric Institute Institutional Review Board. All parents and their children provided informed consent or assent, respectively. Subjects were recruited by telephone and were seen in their homes for an assessment of trauma-exposure severity, psychopathology, and attention bias, based on the dot-probe task, in both the selected parent and child. Data were collected between 2005 and 2006, four-to-five years after the 9/11 attacks.

2.3 Recruitment

An initial set of families was recruited by approaching potentially eligible subjects participating in an ongoing epidemiological study. An additional set of families was recruited using an internet service to identify other eligible families living within a 0.5 mile radius of families who had already agreed to participate. Notices were mailed to potentially-eligible households, notifying families that they would be subsequently re-contacted; one week later, households were contacted via telephone or visited if a phone number was unavailable to determine eligibility. In total, 428 families were contacted. Among these 428, 86 (20.1%) refused participation and 292 were excluded because they did not have a biological child in the appropriate age range. One child was randomly selected from families with multiple children; therefore, no siblings were used. Fifty families were enrolled, but data were incomplete in five families. The final sample yielded 45 families, with 45 parents and 45 children. Of the final sample, three families did not have both parents living together; one family consisted of a biological and adoptive parent.

2.4 Trauma Exposure Level

Groups were defined by trauma exposure severity. Severity of traumatic exposure was measured using scales developed and validated in a previous epidemiological investigation examining psychiatric outcomes after the 9/11 terrorist attack in New York City. Full descriptions of these scales appear in prior work (Hoven et al., 2005), which established the sensitivity of the scales to trauma-related psychopathology. The key scale used in the current study was based on the responses to the World Trade Center (WTC) Questionnaire, which assessed the trauma level through a series of questions: i) Did you see the planes crash or the towers collapse with your own eyes (in real life, not on television); ii) On Sept. 11th, were you in or near the cloud of smoke or dust from the WTC; iii) Were you physically hurt in the attack; iv) Did you have to leave the place you were at for safety reasons; and v) Right after the attack, were you worried about the safety of a loved one. Parents considered highly exposed provided affirmative answers to two of the questions on the scale. Of note,

exposure to other traumas unrelated to 9/11 also was assessed on another similarly-constructed scale. This other scale assessed the occurrence of various traumatic events, occurring since the 9/11 attacks. However, due to low levels of unrelated trauma, only associations with 9/11-related trauma were considered in the current study.

Severity of trauma exposure was rated both in parents and in their children. Compared to children, a higher proportion of parents had experienced direct exposure to the 9/11 attacks. As a result, two classification schemes were used to examine associations between trauma severity and other variables. In the main analysis, families were classified based on severity of trauma experienced by the parent, and data were examined in both parents and their children. In a secondary analysis, data in children were examined based on severity of trauma experienced directly by the child. For both sets of analyses, data were compared based on high or low level of exposure to the events of 9/11, as defined above, based on prior work using this trauma-severity scale (Hoven et al., 2005).

2.5 Psychopathology

During the home visit, psychopathology was assessed in the parent and the child using the Composite International Diagnostic Interview (CIDI) and the Diagnostic Interview Schedule for Children (DISC), respectively. The CIDI is a structured interview previously used in many large-scale epidemiological studies of adults (Kessler, Demler et al. 2005). The version used here assessed both lifetime and current prevalence according to the definitions and criteria of ICD-10 and the DSM-IV. The CIDI assessment of parents measured mood, anxiety, and substance-related problems. The DISC is a highly structured psychiatric assessment tool designed to be administered to children by lay interviewers and is used extensively in epidemiological investigations (Shaffer et al., 1996). The current study utilized the DISC to assess both current and lifetime presence or absence of eight disorders previously linked to trauma: PTSD, major depression, generalized anxiety disorder, separation anxiety disorder, panic, agoraphobia, conduct disorder, and substance-use disorders (Hoven et al., 2005).

Rates of current psychopathology were low in both parents and children. As a result, findings are presented for lifetime presence or absence of disorders. In addition, symptom counts were used to assess symptom severity for two conditions, PTSD and MDD, where considerable prior work notes associations with trauma. The parent symptom counts for PTSD and MDD indexed DSM-IV-TR (2000) positively-endorsed CIDI questions related to diagnostic criteria for each disorder. The child symptom counts used established DISC algorithms derived from established methods (Lucas et al, 2001). These measures were used to examine the relationship between psychopathology severity and attention bias.

A structured medical history also was obtained. Four parents reported a prior need for mental-health services due to concerns unrelated to 9/11. Only one parent reported need for services specifically related to 9/11, and a second parent reported such a need related to both general concerns and specific concerns related to 9/11. Two of these six parents were currently taking psychotropic medications; identical results were obtained when these two parents were excluded from the data analysis. Five children sought help for feelings about the WTC attack.

2.6 Dot-Probe Task

The dot-probe task was used to assess attention biases in parents and their children. The task was administered on a laptop computer in a quiet room selected by the research participant. During the experiment, 32 angry-neutral trials, 32 happy-neutral trials, and 16 neutral-neutral trials were presented. Threatening angry faces were used because there is substantial

evidence indicating that these are effective stimuli in eliciting attention bias for threat in anxious adults (Bar-Haim et al., 2007). Happy-neutral and neutral-neutral face pair conditions were included as control conditions. Trial presentation order was fully randomized for each participant.

The same procedures and stimuli were used as described previously (Mogg and Bradley 1999). Each trial began with a centrally located fixation cross displayed for 500 ms, followed by a pair of faces that appeared on the left and right sides of the screen for 500 ms. The faces were replaced by an asterisk-probe which appeared in right or left visual fields for 1100 ms. Participants were instructed to press one of two buttons as quickly and as accurately as possible to indicate the location of the probe (left or right). Figure 1 depicts the two key trial types contained in the task. In congruent trials, the probe occupied the location of the emotional face in emotion-neutral pairs. In incongruent trials, the probe occupied the location of the neutral face in the emotion-neutral pair. The number of congruent and incongruent trials was balanced. Reaction time (RT) and accuracy were recorded.

2.7 Data Analysis

For the dot-probe task, individual task trials were excluded from analyses if participants responded incorrectly or if they responded in less than 200 ms or more than 800 ms after probe presentation. These methods have been used previously (Monk, Nelson et al. 2006). Also, as in prior studies, attention bias scores for emotionally-evocative faces were calculated by subtracting the mean RT of congruent trials in which the target appeared at the location of the emotional face from the mean RT of incongruent trials in which the target probe appeared at the location of the neutral face. Positive values indicate a bias towards the emotion (happy or angry), whereas negative values indicate a bias away from the emotion. Separate scores were calculated for the angry-neutral and happy-neutral trial types and directly submitted to data analyses. The main analysis focused on the “threat-bias” score, for angry-threat faces, as threat bias is the most relevant index for anxiety or trauma exposure.

Group differences in attention bias were examined using independent sample t-tests. Significant bias scores within each group were tested using one-sample t-tests. Group differences in trauma severity were examined using Chi-square, Fisher’s Exact Test. Significant correlations between symptom severity and attention bias scores were tested using Pearson’s correlation. All significant findings were denoted using $\alpha=0.05$.

3 Results

Table 1 summarizes the demographic data in parents and their children as well as the sample as a whole. Groups were formed based on level of 9/11-related trauma exposure in the parent. The groups were well matched in terms of age, gender, and social class.

3.1 Psychopathology and Attention Bias Based on Level of Parent Trauma Exposure

As shown in Table 2, lifetime rates of disorders were low in both groups of parents and their children and did not differ as a function of exposure status in parents (all $p>0.33$). Nevertheless, trauma severity in parents did predict MDD symptom counts in their children ($r=0.34$, $p=0.02$).

Table 2 also shows attention bias, reaction time, and error rate data on the dot-probe task in the sample as a whole as well as in the high and low-exposure groups of parents and their children, classified based on trauma exposure in the parent. Both groups of parents and their children performed the dot-probe task well, as indicated by generally low error rates. The key analysis examined threat-bias score, measured by a reaction time difference between threat-incongruent and threat-congruent trial conditions (as described earlier). Compared to

low-exposed parents, highly exposed parents had greater attention bias towards angry-face cues (independent sample t-test; $t_{43}=2.2$; $p=0.04$). There were no significant group differences in threat bias scores in the children based on parental trauma exposure (independent-sample t test: $t_{43}=-0.27$; $p=0.79$). Among parents and children, no group differences based on parent's exposure level were found for happy bias scores (adults: $t_{43}1.17$; $p=0.24$; children: $t_{43}=0.89$; $p=0.38$).

There were no group differences in threat bias based on diagnosis of PTSD or MDD in adults or children (all $p>0.49$). There was group difference in happy bias based on parents' PTSD and MDD diagnoses (PTSD: $t_{43} = 2.42$, $p=0.02$; happy bias in PTSD cases = $-22.99\text{ms} \pm 42.66$, Non-PTSD cases = 15.27 ± 31.50 ; MDD: $t_{43} = 2.01$, $p=0.05$, happy bias in MDD cases = $-17.30\text{ms} \pm 44.54$, No MDD cases = 13.08 ± 33.30), where PTSD and MDD groups showed greater bias away from happy faces. No group differences in happy bias were found in children based on diagnoses ($p\text{-values}>0.66$). Because these analyses are limited by the low rates of psychopathology, secondary analyses used symptom counts.

In parents and children, the PTSD symptom count did not correlate with bias scores (parents: threat bias $r=0.08$, $p=0.58$; happy bias $r=0.16$, $p=0.31$; children: threat bias $r=0.12$, $p=0.43$, happy bias $r=0.14$, $p=0.37$). Although adults MDD symptom counts did not correlate with threat bias in adults ($r=0.09$, $p=0.53$), the parents MDD symptom counts did show a tendency to correlate with threat bias in their children ($r=0.27$, $p=0.06$). A non-significant trend also emerged for the association between MDD symptoms and bias away from happy faces in parents ($r=-0.28$, $p=0.06$) but not in their children ($r=-0.18$, $p=0.24$).

3.2 Relationship between Attention Bias in Parents and Children

Parent-child attention bias measures showed non-significant negative correlations, both for threat bias ($r=-0.24$, $p=0.11$) and for happy bias ($r=-0.16$, $p=0.24$). One association did emerge between attention bias in parents and their children, when sub-sets of parent-child pairs were formed by stratifying families based on levels of trauma exposure in parents: threat bias in highly exposed parents correlated negatively with threat bias in their children ($r=-0.55$, $p=0.05$). Of note, no such correlation existed in the low-exposed parents ($r=0.13$, $p=0.68$), and the difference between these two correlations was significant, based on a Fisher-r-to-z test ($z=-2.02$, $p=0.04$). No parent-child happy bias association emerged in either the high ($r=-0.13$, $p=0.68$) or low-exposure ($r=-0.24$, $p=0.20$) parent-child pairs.

3.3 Attention Bias Based on Level of Child Trauma Exposure

Although the focus of this study was the effect of parental trauma exposure, we did have a small sample of children that were also highly exposed to trauma. Therefore, a second set of analyses examined children with high and low 9/11-related trauma exposure, based on their own personal, as opposed to parental, levels of exposure. This analysis was limited by the small number of children with high exposures ($n=4$). Two of these children had parents that were in the high exposure group. The high and low exposed trauma children tended to show a difference in attention bias towards threat ($t_{43} = -1.9$; $p=0.06$). These four children who were highly exposed showed a similar attention bias pattern as parents with high trauma exposure. Although statistically non-significant, the highly exposed children showed a attention bias towards angry faces (23.0 ± 28.1); whereas, the children with low trauma exposure did not show a bias towards or away from threat (-2.5 ± 24.9). Attention bias to happy faces was highly similar, though non-significant, in children with (14.0 ± 25.7) and without (10.3 ± 31.0) high exposure.

4 DISCUSSION

Two main findings emerged in this study of parents exposed to the 9/11 terrorist attacks and their children. First, compared to parents with low levels of trauma exposure, parents with high levels of trauma exposure allocated attention towards threatening, angry faces on the dot-probe task; however, this group difference did not extend to their children. Yet, children with high exposure also tended to exhibit such a bias. Second, as threat bias in highly-exposed parents increases, threat bias in their children decreases.

The first main finding, concerning threat bias in parents with high levels of trauma exposure, can be placed in the context of previous research. Trauma-related and other forms of anxiety consistently predict biased allocation of attention to threat on the dot-probe and other attention bias tasks (Williams et al., 1996; Bar-Haim et al., 2007). Such associations emerge in research on diverse clinical, anxiety-related constructs, including trait anxiety, personality measures, and clinical diagnoses, such as PTSD. As with the current findings, the most consistent prior findings document a bias towards threats, such as angry faces or anxiety-related words, in anxious subjects, which significantly differs from the profile in non-anxious subjects, who typically show no bias either towards or away from threats.

Of note, few previous studies examine relationships between levels of trauma exposure and attention bias in non-clinical samples. Far more work using the dot-probe task compares anxious-traumatized subjects or subjects with PTSD to subjects with neither anxiety nor trauma (Bar-Haim et al., 2007). As such, these studies predominantly examine people who are actively struggling with their reactions to trauma, either because trauma has occurred recently or because they have failed to overcome their initial reactions to prior trauma. The unique circumstances of the current study extend this prior work. Highly exposed parents and the small sub-sample ($n=4$) of highly-exposed children suffered trauma four-to-five years before the assessment of attention in the current study. As a result, unlike in prior studies, the majority were free of psychopathology. Thus, the current results suggest that the impact of long-ago experienced severe trauma may endure, as is reflected in measures of threat bias, even when clinical effects are not detected via psychiatric assessments.

Two competing explanations exist for the current unique findings on associations between trauma exposure and attention bias in parents and their children. Such competing explanations exist due to the paucity of research directly comparing correlates of attention bias in parents and their children, coupled with limitations in the current study. The most likely explanation relates to differences in severity of trauma exposure between parents and their children. The differing extremes of trauma exposure might differentially shape attention bias in parents and their children. A group of parents in the current study experienced high exposure to 9/11-related trauma. Threat bias appeared particularly large in this group. A similar pattern, though non-significant, was seen in the small subsample of highly exposed children. Thus, effects of exposure to trauma on attention bias in adults could be greater than in children, either because there are different thresholds for experience to influence bias in different age groups or because such influences are more enduring in one group. This possibility remains minimally explored. The current study is the first to compare directly attention bias among samples of potentially traumatized adults and their children, but the study contained too few children directly exposed to severe trauma to generate clear, relevant insights.

The attention bias in parents with high trauma exposure did predict bias in their children, albeit negatively. This finding is relevant to conceptualizations of parent-child transmission of trauma vulnerability. Prior work does suggest the effects of traumatic experiences on parents can, in some cases, be transmitted to their children. That is, severe trauma in parents

can influence some measures of vulnerability in their children, even when these children are not directly exposed to the trauma. For example, prior studies generate such findings using measures of hypothalamic-pituitary-adrenal (HPA) axis function and severity of 9/11-related trauma (Yehuda and Bierer, 2008). When considered in light of the current findings, this prior work suggests that exposure to trauma in parents may influence children's measures of vulnerability in some domains, such as those related to the HPA axis or psychopathology, more strongly than others, such as those related to attention bias. However, in the current study, it is notable that threat bias correlated negatively in parents and their children among families with high exposure. This raises the possibility of intergenerational influences on attention bias, which warrant further investigation given the relatively small sample size of parents with high trauma exposure. A possible explanation is that when parents are hyper-vigilant to minor threats, reflected by behavior or attitude but not with clinical symptoms, their children may respond to the parent's attitude with a psychological mechanism that serves to normalize this reaction.

Of note, in secondary analyses, the current study classified children based on their own, personal experiences with exposure to trauma. In these analyses, the small group of highly exposed children, like the larger group of trauma exposed parents, did exhibit bias toward threat, though the difference between children exposed to trauma and other children was not significant on statistical grounds. Thus, the increased threat bias found in trauma exposed parents but not in their children may reflect parents' unique, personal experiences. If the current study had included more children directly experiencing exposure to severe trauma, a comparable association between trauma exposure and bias may have emerged in parents and their children. Direct exposure to trauma may be more relevant in predicting patterns of attention bias in the child than the experience of trauma in a parent.

The current findings should be interpreted in light of some clear limitations. In some instances, these limitations reflect the early stage of research in this area, where no prior studies examine associations in parents and their children among traumatic exposures, attention bias, and anxiety or other forms of psychopathology. Thus, more family-based research is needed with many other measures of cognitive vulnerability, psychopathology, distress, impairment and traumatic exposure. The current study relied on a restricted set of measures four to five years post trauma, and the findings might encourage such future attempts to use these and other measures. Measures of attentional bias scores prior to the trauma were not available; therefore, we are unable to determine how attention biases changed over time. Similarly, this initial study was based in a small sample, where parents experienced more severe trauma than their offspring. The study focused on one, relatively unique form of trauma, associated with the 9/11 terrorist attacks. Nevertheless, despite these limitations, the study was able to generate hypothesized associations in adults linking 9/11-related trauma to threat bias. Moreover, the study also was able to collect data in children's homes on the dot-probe task, where appropriately high levels of accuracy were obtained. Thus, results from the current study should encourage attempts to examine similar associations in larger, more definitive studies.

Finally, the current study examined associations between psychopathology and threat bias four-to-five years following traumatic exposure. While highly exposed parents with low lifetime rates of psychopathology did exhibit threat bias, lifetime rates of psychopathology were determined through retrospective reports using clinical diagnostic criteria. Higher rates of psychopathology in highly exposed parents might be expected with repeated, prospective assessments, beginning immediately following severe exposure. Therefore, the absence of associations with psychopathology may reflect limitations in the assessment techniques. Moreover, recent studies suggest that relationships among trauma, attention bias, and psychopathology evolve over time following traumatic exposure (Pine et al., 2009; Bar-

Haim et al., 2010). Thus, larger, more definitive studies might repeatedly assess both attention bias and psychopathology, in both parents and children, in the wake of severe traumatic exposure.

In closing, considerable prior work notes similarities and differences in the correlates of traumatic exposure among parents and their children. Using the dot-probe task, a standard measure of anxiety-related attention bias, the current study found that parents who had been highly exposed to 9/11-related trauma had greater attention bias to threat than low-exposed parents; moreover, the children of highly trauma-exposed parents did not share their parents' attentional bias towards threat. Additionally, as threat bias in highly-exposed parents increases, threat bias in their children decreases.

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Figure 1.

Visual dot probe task presented to parents and children at home visit. Congruent trials occurred if the probe was located on the same side as the emotional face and incongruent trials occurred if the probe was located on the opposite side to the emotional face.

Table 1

Demographics of exposed and non-exposed parents and their children

	All Parents	Exposed Parents	Non-exposed Parents	Statistics	All Children	Children of Exposed Parents	Children of Non-exposed Parents	Statistics
Number	45	14	31		45	14	31	
Age	46.3 ± 5.5	45.7 ± 8.0	46.6 ± 4.1	$t_{44} = 0.5$	12.7 ± 1.8	13.1 ± 1.5	12.6 ± 1.9	$t_{44} = -0.8$
Female	41	11	30	$\chi^2 = 2.0$	20	5	15	$\chi^2 = 0.2$
Family Income	7.8 ± 1.3	7.5 ± 1.3	7.9 ± 1.3	$t_{43} = 1.0$	-	-	-	-
Education	5.89 ± 1.09	5.78 ± 1.30	5.93 ± 1.00	$t_{44} = 0.42$	-	-	-	-

* p<.05; Family Income is calculated on a nine-level scale (level 1 is \$75,000 – \$99,999 annual family income); Education was calculated on a seven-level scale (level 5 is at least one year of college or specialized training)

Table 2
Psychopathology and dot probe performance in exposed and non-exposed parents and their children

	All Parents	Exposed Parents	Non-exposed Parents	Statistics	All Children	Children of Exposed Parents	Children of Non-exposed Parents	Statistics
Number	45	14	31		45	14	31	
PSYCHOPATHOLOGY								
<u>Lifetime diagnosis (n)</u>								
PTSD	9	4	5	p=0.4,FET	0	0	0	-
MDD	6	2	4	p=1.0,FET	1	1	0	p=0.3FET
<u>Symptom Count</u>								
PTSD	4.08 ±2.77	3.35 ±3.34	4.41 ±2.47	t ₄₃ = 1.19	0.42 ± 1.12	0.25 ±0.93	0.50 ± .20	t ₄₃ = 0.69
MDD	3.14 ±4.91	3.78 ± 4.81	3.16 ± 5.16	t ₄₃ = -0.38	3.77 ± 2.44	5.00 ±2.88	3.22 ±2.03	t ₄₃ =2.37*
DOT PROBE								
<u>Threat Bias</u>								
	4.4 ± 36.2	26.8± 49.0	-5.0 ± 24.7	t ₄₃ =-2.2*	-0.2 ± 25.9	1.4 ± 33.2	-0.9± 22.4	t ₄₃ = -0.3
<u>Happy Bias</u>								
	8.9 ± 34.2	-0.4 ±35.7	12.8±33.4	t ₄₃ = 1.2	10.6 ±30.3	4.7 ± 26.1	13.4±32.1	t ₄₃ = 0.9
<u>Neutral RT</u>								
	551.9±104.8	520.1±69.1	565.2±114.9	t ₄₃ = 1.3	483.7±88.4	478.5±59.8	486.0±99.4	t ₄₃ = 0.3
<u>%Errors</u>								
	2.2 ± 3.4	2.5 ± 5.0	2.1± 2.5	t ₄₃ = -0.4	1.3 ± 3.5	0.5 ± 0.8	1.7 ± 4.1	t ₄₃ = 1.0

* p<.05; Parent diagnosis and symptom counts are from CIDI; Child diagnosis and symptom counts are from DISC; FET=Fisher Exact Test