

Parental and Family Factors as Predictors of Threat Bias in Anxious Youth

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Abstract The present study examined the relative predictive value of parental anxiety, parents' expectation of child threat bias, and family dysfunction on child's threat bias in a clinical sample of anxious youth. Participants ($N = 488$) were part of the Child/Adolescent Anxiety Multi-modal study (CAMS), ages 7–17 years ($M = 10.69$; $SD = 2.80$). Children met diagnostic criteria for generalized anxiety disorder, separation anxiety and/or social phobia. Children and caregivers completed questionnaires assessing child threat bias, child anxiety, parent anxiety and family functioning. Child age, child anxiety, parental anxiety, parents' expectation of child's threat bias and child-reported family dysfunction were significantly associated with child threat bias. Controlling for child's age and anxiety, regression analyses indicated that parents' expectation of child's threat bias and child-reported family dysfunction were significant positive predictors of child's self-reported threat bias. Findings build on previous literature by clarifying parent and family factors that appear to play a role in the development or maintenance of threat bias and may inform etiological models of child anxiety.

Keywords Anxiety · Family functioning · Child · Threat bias

Introduction

The cognitive-behavioral theory of anxiety disorders highlights the importance of maladaptive cognitive biases as impacting a person's internal thought processes and external perception of his/her environment, ultimately resulting in an anxiety disorder (Beck and Clark 1997; Beck et al. 1985). One such cognitive bias is threat bias, which suggests that when a person is faced with an ambiguous situation he or she will tend to interpret the situation as negative, or threatening. While there are variations in methodology, numerous studies have found that anxiety symptoms in children positively correlate with threat bias (Gifford et al. 2008; Hughes and Kendall 2008; Muris et al. 2000, 2005; Waters et al. 2008a, b). In a study examining attention bias to threatening stimuli Roy et al. (2008) found that clinically anxious children ($N = 101$;

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mean age: 11.5 years), regardless of presenting diagnosis (i.e. separation anxiety, social phobia, generalized anxiety disorder or any combination of the three) exhibited greater attention bias to threat than healthy controls. Muris et al. (2000), using a sample of typically developing children ($N = 76$; mean age: 10.4 years), found that children who reported higher levels of anxiety via self-report simultaneously displayed elevated rates of threat bias, as measured by an ambiguous scenarios task. Gifford et al. (2008) measured threat bias as a negative interpretation of ambiguous word choices and found that children with clinical anxiety disorders ($N = 56$; mean age: 10.8 years) were more likely to endorse a negative interpretation than children with an externalizing disorder.

Further exploration of threat bias in children has shown that children's threat bias can be altered through intervention or experimental manipulation. Muris et al. (2009), by utilizing a program referred to as the "space odyssey paradigm," were successfully able to instill positive or negative interpretation bias in a non-clinical sample of youth ($N = 120$; mean age: 10.9 years). Further analysis through division of the sample into high and low anxious subgroups indicated that the children's anxiety level did not affect their ability to be trained in interpretation bias. Similarly, Lester et al. (2011) found that children ($N = 103$; ages 7–15) could be trained to positive or negative interpretation bias following a brief intervention, hypothesizing that children may develop sustaining threat biases through ongoing environmental experiences. Studies such as Muris et al. (2009) and Lester et al. (2011) lend support to the idea that threat bias may develop, and persist, through environmental influences, and encourages the evaluation of environmental factors that may predict children's threat bias. Additionally, a small study by Warren et al. (2000) found that 5-year-old children ($N = 35$) who completed ambiguous stories with a negative outcome (as compared to positive or neutral) at time 1 significantly predicted anxiety symptoms reported 1 year later (after controlling for anxiety symptoms at time 1), suggesting that threat bias may be indicative of future vulnerability to anxiety or other disorders. Dodd et al. (2012) also found that threat bias (measured in 131 children mean age at baseline was 4 years-old) was significantly associated with anxiety symptoms measured at 1 year follow-up, above and beyond baseline anxiety symptoms. Taken together these studies emphasize the importance of examining threat bias above and beyond child anxiety.

Relation Between Parents' Expectations and Child Threat Bias

Studies have explored associations between parents' expectation of their child's threat bias (i.e., the belief that

their child would perceive an ambiguous situation as threatening), parent threat bias and child's self-reported threat bias with mixed findings (Creswell et al. 2011). Creswell et al. (2006) examined mothers' cognitive bias, expectations of their children's threat bias, and offspring's threat bias (10–11 years-old) at two different assessment periods occurring 6 months apart ($N = 54$) in a non-clinical sample. Results indicated a significant positive correlation between mothers' own threat bias reported during the first assessment and child's self-reported threat bias reported during the second assessment. Further regression analyses indicated that maternal expectation of their child's threat bias was a stronger predictor of child's self-reported threat bias at time two than mothers' own threat bias. In a 3 year longitudinal study by Creswell et al. (2011) researchers followed children ($N = 110$) from ages 5 or 6 years until they were 8 or 9 years, assessing parent and child threat bias and parents' expectation of child's threat bias annually during the 3 year study period. Again, parents' expectation of child's threat bias was a significant positive predictor of child's threat bias (though only at time three). Follow-up analyses indicated that parents' expectation of child's threat bias mediated the relation between child's self-reported threat bias measured at times two and three. These findings emphasize the importance of examining parents' expectation of child's threat bias as a predictor of child's self-reported threat bias, as parents who expect their child to endorse threat bias may be acting in ways to reinforce this threat bias (such as encouraging avoidance or overemphasizing threat in ambiguous situations). The unclear relation between parents' expectation of child's threat bias and child's self-reported threat bias warrants further examination as it may inform etiological models of anxiety and targets for intervention.

Relation Between Parental Anxiety and Child Threat Bias

Gifford et al. (2008) examined relations between child and parent anxiety symptoms and threat bias, finding that, despite a non-significant relation between child and parent threat bias, there was a significant association between mothers' self-reported anxiety and child's threat bias, suggesting that parents' anxiety may be another important factor to examine as a predictor of child threat bias. Lester et al. (2009) examined the endorsement of threat bias in non-clinical parents ($N = 40$), who had a child between the ages of 4 and 10 years, in both self-referent (stories involving the parent) and child-referent (stories involving the child) ambiguous scenarios. In addition, data were collected on parental anxiety. Results indicated that parental trait anxiety predicted the extent to which parents endorsed threat bias in scenarios related to their children. Moreover, this relation was

mediated by parents' own self-referent threat bias (the extent to which they endorsed threat bias in the scenarios involving themselves). Thus, it may be that parents' anxiety leads them to perceive threat in ambiguous situations involving themselves which then generalizes to perceiving threat in ambiguous situations involving their children. Similarly, Lester et al. (2010) assessed parental anxiety and children's threat bias ($N = 92$; mean age: 9.13 years) in relation to their beliefs about their mother's reactions to ambiguous situations in a community sample. Offspring of mothers with elevated, but subclinical, anxiety were found to endorse greater threat bias in response to ambiguous scenarios, suggesting a relation between parental anxiety and child threat bias. Importantly, children displaying higher threat bias were more likely to report that they believed their mothers would similarly perceive the situations as threatening. These findings suggest that parents may transmit, or reinforce, threat bias by the way they assist their children in disambiguating situations the child encounters over time. Taken together, these studies suggest that parents' anxiety and parents' expectation of child threat bias may be important predictors of child's threat bias in a clinically anxious sample.

Familial Predictors of Anxiety

While studies have started to examine the specific relation between parental anxiety and parental expectation of threat bias in relation to threat bias in children, studies have not yet begun to explore the relation between familial factors and child threat bias, despite evidence of familial factors relating to childhood anxiety disorders (Bögels and Brechman-Toussaint 2006; Cummings 1994; Peleg-Popko 2002). Among the potential familial factors, family functioning specifically has been linked to child anxiety (e.g. Bögels and Brechman-Toussaint 2006). Examining how family functioning, (i.e. communication, interpersonal relationships and consistency of rules and expectations) relates to child threat bias may shed light on the manner in which family functioning impacts child anxiety. That is, it is possible that the relation between family functioning and child anxiety may be partially explained by a relation between family functioning and child threat bias, if children from families with greater reported dysfunction endorse more threat bias. Specifically, it is possible that children from families where punishment or parenting is inconsistent may have greater difficulty assessing consequences in a predictable manner and thus approach situations "prepared" for a negative outcome and perceive more potential threat in ambiguous situations. Additionally, children from families with poor interpersonal relationships or perception of external locus of control may interpret ambiguous situations as less under their control and thus more threatening.

In an effort to extend current knowledge about predictors of children's threat bias, the present study examined whether: (1) parents' expectations of child's threat bias, (2) parental anxiety, and (3) family functioning were predictors of child threat bias. The present study adds to the literature by clarifying the relative predictive value of previously examined parental predictors of threat bias (i.e. parents' expectation of child threat bias and parental anxiety) as well as examining a previously unexplored predictor of child threat bias, family functioning. We also examined the relative importance of these variables in predicting children's threat bias. The present study addressed specific gaps in the existing literature and identified important variables for future research. Specifically, the current study was able to examine parental and familial factors in relation to child threat bias in a large, geographically diverse, treatment seeking sample of anxiety-disordered youth, a limitation of previous research. A recent longitudinal study by Creswell et al. (2011) found that threat bias remains relatively consistent in children as young as 5 years-old. The present study recruited participants between the ages of 7–17 years, which theoretically would allow for reliable assessment of established threat bias. However, given the broad age range, we also examined whether age functioned as a moderator variable.

Method

Participants

Participants for the present study included 488 children with a current clinical anxiety diagnosis who enrolled in the Child/Adolescent Anxiety Multimodal Study (CAMS; Walkup et al. 2008). Children were included in the study if they met diagnostic criteria for separation anxiety disorder, generalized anxiety disorder or social phobia as determined via the Anxiety Disorder Interview Schedule-Child during the study's baseline testing session (ADIS-IV-C/P; Silverman and Albano 1996). Children were excluded if they met diagnostic criteria, with greater or equal impairment, for another psychiatric disorder, including attention deficit-hyperactivity disorder, post-traumatic stress disorder, obsessive-compulsive disorder, oppositional defiant or conduct disorder, or if they presented with history of a disorder that required treatment with other interventions (i.e. major depressive disorder, bipolar disorder, pervasive developmental disorder or a psychotic disorder). Children with an IQ less than or equal to 80 were excluded due to possible difficulty completing self-report measures. Additional exclusion criteria included pregnancy, pattern of school refusal, lack of English fluency, suicidal/homicidal ideation, or history of failure to respond to, or side effects

with SSRIs. Of the 488 children recruited through CAMS, 246 (50.4 %) were boys. The mean age for the sample was 10.69 (SD = 2.80) with an age range of 7–17 years of age. The participants in the sample were 385 (78.9 %) Caucasian, 44 (9.0 %) Black, 12 (2.5 %) Asian, 2 (0.4 %) Native Hawaiian/Pacific Islander, 6 (1.2 %) American Indian and 39 (8.0 %) Other and 429 (87.9 %) were non-Hispanic.

Procedure

Data for the present study were from baseline visits of a large, multi-site study evaluating the efficacy of pharmacological and cognitive-behavioral interventions for children with anxiety disorders (CAMS). Recruitment, through referral or advertisement, for the CAMS study took place between 2002 and 2007 at New York State Psychiatric Institute-Columbia University Medical Center-New York University, Johns Hopkins Medical Institutions, Duke University Medical Center, Temple University–University of Pennsylvania, University of California, Los Angeles and Western Psychiatric Institute and Clinic-University of Pittsburgh Medical Center. Following phone screens (N = 3066), eligible participants came into their local study site to complete additional baseline screenings. At that time parents and children completed informed consent and assent (N = 761). Presence of a *DSM-IV* anxiety disorder was verified by the completed Anxiety Disorders Interview Schedule-Child (ADIS-IV-C/P; Silverman and Albano 1996) during the initial in-person assessment (N = 524). All ADIS-IV-C/P interviews were conducted by independent evaluators (IEs) blind to participants' study condition. The training for all IEs involved specific reading materials, passing a written exam regarding study protocol, completing training case that were reviewed and approved by the quality assurance site (NYSPI), and previous experience working with or treating anxiety disordered youth. Independent evaluators also met specific educational requirements (i.e. MA, RN, PhD or MD). The New York State Psychiatric Institute conducted regular monthly conference calls to monitor IE ADIS-IV-C/P evaluations for quality assurance. Eligible participants as determined by the ADIS-IV-C/P completed study questionnaires at baseline assessment (N = 488) within 1 week after the diagnostic interview. Participants were compensated for their time and travel expenses.

Measures

Screen for Child Anxiety Related Emotional Disorders: Child/Parent Version (SCARED-C/P)

The SCARED (Birmaher et al. 1997) is a 41-item questionnaire, with both parent and child versions, assessing

child anxiety symptoms experienced in the last 3 months such as “I worry about sleeping alone.” Participants rate each item on a three-point Likert-type scale ranging from *Not True/Hardly Ever True* (0) to *Very True/Often True* (2). The measure includes subscales for panic/somatic (13-items, i.e., “When I feel frightened, it is hard to breathe”), generalized anxiety (9-items, i.e., “I am nervous”), social phobia (7-items i.e., “It is hard for me to talk to people I don't know well”), separation anxiety (8-items i.e., “I get scared if I sleep away from home”), and school phobia (4-items, i.e., “I get headaches when I am at school”). The measure yields a total score (ranging from 0 to 123), as well as a score for each of the five subscales, with higher scores indicating more anxiety. Both the subscales and total scores have sufficient reliability and have been shown to differentiate among anxiety, depressive and externalizing disorders in children as well as among panic disorders, generalized anxiety disorders and social phobia (Birmaher et al. 1999). The present study utilized the total scale to assess children's anxiety at the baseline assessment for both child, ($M = 23.31$; $SD = 14.98$) and parent ($M = 32.18$; $SD = 12.82$). The SCARED yielded sufficient internal consistency for both child ($\alpha = 0.93$), and parent ($\alpha = 0.90$).

Ambiguous Situations Questionnaire (Parent and Child)

The Ambiguous Situations Questionnaire (ASQ; Langley et al. (2007), manuscript in preparation) is a 6-item measure designed to assess threat bias originally derived from the Ambiguous Situations and Family Interactions Task developed by Barrett et al. (1996). The original task included 12 items divided into social (6 items) and physical (6 items) threats. Langley et al. (2007) (manuscript in preparation) created short scenarios from the original storylines followed by four closed-choice responses. Factor analysis indicated the social items stood out as a one factor solution, whereas the physical items fell out; therefore, the final ASQ includes 6 social threat scenarios. The general storylines from the Barrett et al. (1996) task were turned into short scenarios followed by four closed-choice responses. Each of the six items consists of a brief interpersonally-based scenario. Respondents are asked to infer the reason for an event and/or another's behavior that impacts the child portrayed in the scenario. Each scenario has four possible interpretations/responses, two coded for threat bias and two coded for no threat bias (i.e., “You notice at school 1 day that a favorite book of yours is missing. Later you notice a boy/girl in your class has a similar book in their bag. What do you think is most likely to have happened to your book?” A. “That child has stolen the book and put it in his/her bag” [*threat bias*] B. “Someone who doesn't like you has taken your book so

that you will be in trouble” [*threat bias*] C. “You left your book at home” [*no threat bias*] D. “A friend borrowed the book thinking you wouldn’t mind” [*no threat bias*]). Possible scores on the ASQ range from 0 to 6, with threat bias responses earning a one and those without threat bias a zero. For the present study both parents ($M = 3.26$; $SD = 1.71$) and children ($M = 1.93$; $SD = 1.63$) completed the measure assessing the child’s threat bias. The measure yielded adequate internal consistency for both parent ($\alpha = 0.67$) and child ($\alpha = 0.64$) versions.

Brief Family Assessment Measure (Parent and Child)

The Brief Family Assessment Measure-III (BFAM-III; Skinner et al. 1995), completed by parents and children, measures overall family functioning and has shown adequate internal consistency (Crawford and Manassis 2001). The 14 items assess different aspects of family functioning within the last 2 weeks, such as inconsistency (e.g. “When you do something wrong in our family, you don’t know what to expect”), communication (e.g. “We are free to say what we think in our family”) and interpersonal relationships (e.g. “We don’t really trust each other”). Total scores are converted into *t*-scores, with higher scores indicating more family dysfunction. The BFAM-III parent mean score was 46.18 ($SD = 10.97$) for the present study, and yielded a Cronbach’s alpha of 0.85. The child mean score was 48.23 ($SD = 8.60$) and yielded a Cronbach’s alpha of 0.76.

State-Trait Anxiety Inventory-Trait (Parent)

The State-Trait Anxiety Inventory-Trait (STAI-T; Spielberger 1983) is a 20-item measure that assesses parent trait anxiety (relatively stable over time), by assessing thoughts and feelings experienced in the previous 2 weeks, with higher scores indicating more symptoms. The STAI-T has shown sufficient reliability and validity (Spielberger 1983). For the present sample the STAI-T mean score was 38.71 ($SD = 9.63$). The STAI-T had sufficient internal consistency ($\alpha = 0.91$).

Data Analysis

Analyses were conducted using the Statistical Package for the Social Sciences Version 19 (SPSS v19). Initial analyses examining relations between demographic variables and child’s self-reported threat bias included bivariate correlations for continuous variables (i.e. age) and independent *t* tests or ANOVAs for categorical variables (e.g. sex and race). Pearson product moment correlation was used to explore relations between each predictor variable and child’s self-reported threat bias individually. Predictor variables that were significantly correlated with child’s

threat bias were entered in the regression equation. Parent and child reported anxiety symptoms and child’s age were entered in Step 1 of the regression equation. Parents’ expectation of child’s threat bias, parental anxiety and child-reported family functioning were entered in Step 2. To explore whether age moderated the relation between parents’ expectation of child’s threat bias and child’s self-reported threat bias child age and parents’ expectation of child threat bias were centered by subtracting the mean for each variable, respectively. After controlling for child anxiety, the centered main-effect variables were entered into the equation and then the interaction term (child age \times parents’ expectation) was entered.

Results

Preliminary Analyses

Initial analyses examined demographic characteristics in relation to child’s self-reported threat bias. The demographic variables examined included: ethnicity, race and sex, all of which were not significant. Only child’s age was significantly related to child’s threat bias ($r = 0.21$, $p < .001$), such that older children endorsed more threat bias. Accordingly, age was controlled in further analyses. Predictor variables were examined in relation to child’s self-reported threat bias (See Table 1). Only predictor variables that were significantly correlated with child’s self-reported threat bias were entered in the regression analysis, including child-reported family functioning, parents’ expectation of child threat bias and parental anxiety.

Primary Analyses

Due to the extensive literature supporting a significant association between child’s anxiety and threat bias, the SCARED-C/P (child’s anxiety symptoms as reported by parent and child separately) as well as child’s age were entered into Step 1 of the regression equation. The predictors, parents’ expectation of child’s threat bias, parental anxiety, and child-reported family functioning were entered at Step 2. The overall regression model was significant, $F(6, 477) = 14.00$, $p < .001$, $R^2 = 0.15$, $f^2 = 0.18$, 95 % CI [0.10, 0.26] (See Table 2). Specifically, parents’ expectation of child’s threat bias ($\beta = 0.17$, $p < .001$), and child-reported family functioning ($\beta = 0.09$, $p = .05$) were significant predictors of child’s threat bias. Parental anxiety was not a significant predictor of child’s threat bias ($\beta = 0.04$, $p = .33$) when controlling for child anxiety. Examination of whether age moderated the relation between parents’ expectation of child threat bias and child threat bias revealed that after controlling for child

Table 1 Correlations between predictor variables and child's self-reported threat bias

Measures	1	2	3	4	5	6	7	8
1. Child ASQ	1.00							
2. Child Age	.21**	1.00						
3. SCARED-C	.28**	.15**	1.00					
4. SCARED-P	.13**	.007	.41**	1.00				
5. Parent BFAM-III	-.01	.11**	.08*	-.002	1.00			
6. Parent ASQ	.21**	-.02	.11*	.30**	.16**	1.00		
7. Child BFAM-III	.16**	.04	.16**	.001	.26**	.16**	1.00	
8. STAI-T	.08*	-.04	.04	.08*	.45**	.14**	.11**	1.00

ASQ Ambiguous Situations Questionnaire, SCARED Screen for Child Anxiety Related Emotional Disorders, BFAM-III Brief Assessment Measure-III, STAI-T State-Trait Anxiety Inventory-Trait

* $p < .05$, ** $p < .01$

Table 2 Multiple regression analysis examining parental and familial traits as predictors of child's threat bias

Predictor	R^2	β	B	95 % CI
Step 1	.11**			
Child Age				
SCARED-C				
SCARED-P				
Step 2	.15**			
STAI-T		.04	0.007	[-0.007, 0.022]
Child BFAM-III		.09*	0.02	[0.000, 0.032]
Parent ASQ		.17**	0.16	[0.08, 0.25]

$N = 477$

CI confidence interval, ASQ Ambiguous Situations Questionnaire, SCARED Screen for Child Anxiety Related Emotional Disorders, BFAM-III Brief Assessment Measure-III

* $p < .05$, ** $p < .01$

anxiety, there was not a significant interaction effect between parent expectation of child's threat bias and child age ($\beta = 0.08$, $p = .062$).

Discussion

The current study examined parental and familial predictors of child's self-reported threat bias in a large clinically anxious sample. Previous studies have examined specific parental variables in relation to offspring's threat bias, namely parents' expectation of child's threat bias and parental anxiety; however, findings from these studies have been inconsistent (Creswell et al. 2006; Gifford et al. 2008). The present study sought to clarify these results within a larger clinical sample. Additionally, the literature examining other familial characteristics as predictors of specific symptomatology within child anxiety has been limited (Rapee 2012). Results revealed that children's

negative perceptions of the family environment and parents' expectations of their child's threat bias were predictive of greater child threat bias, even after controlling for levels of child anxiety. Moreover, these variables were stronger predictors than parental anxiety.

Parental Predictors of Children's Threat Bias

Findings from this study revealed that parents who expected their child to endorse greater threat bias had offspring who also perceived more threat when presented with ambiguous scenarios (e.g. "You are showing your school project in front of the class and two students in the back are giggling. What is the reason that they are giggling? They think the project is really dumb" [*threat bias*]). This finding is in line with previous research that suggests that parents' expectation of their child's threat bias is a significant predictor of child's threat bias (Creswell et al. 2006). It is possible that parents who expect their child to interpret ambiguous situations as threatening act in ways to maintain this bias, such as encouraging their child's avoidance of particular situations; therefore, it is the parents' expectation of how the child will feel, rather than their own threat bias, that acts in a way to reinforce child's threat bias. It is also possible, however, that parents' expectation of child threat bias is merely an indication of parents' knowledge of child's threat bias and remains consistent across child age, which might further explain the non-significant interaction between child age and parents' expectation of threat bias. Previous research has indicated that the relation between parenting and child anxiety may be reciprocal, such that child's anxiety might reinforce certain parenting behaviors (Hudson et al. 2009). A similar phenomenon may be at work here, such that parents may be acting in ways to encourage child threat bias, based on how the child has interpreted and responded to situations in the past, and therefore how the parent expects them to

respond in the present. In this way it is the parents' expectation of their child's threat bias, rather than the parents' own negative interpretation of an ambiguous stimulus that incites their behavioral response.

Despite being significantly correlated to child's self-reported threat bias, parental anxiety as measured by the STAI-T (which assessed thoughts and feelings from the previous 2 weeks) was not a significant predictor of child's threat bias when controlling for parent and child reported child anxiety. Previous research has indicated that the relation between parental anxiety and child's threat bias may not be direct (Lester et al. 2009, 2010). The findings of Lester et al. (2009, 2010) coupled with the results of the present study suggest that parental threat bias, or expectation of child's threat bias, may be a better predictor of child's threat bias than parental psychopathology itself, such that it is not the parent's anxiety directly, but the parent's maladaptive behavioral or cognitive styles that contribute to child's threat bias (Lester et al. 2009).

Familial Predictors of Offspring Threat Bias

The present study also examined child-reported family functioning as a predictor of child's threat bias. As expected, child-reported family functioning significantly predicted threat bias, such that children who perceived their families as providing inconsistent expectations and having poor communication and interpersonal relationships, were more likely to perceive threat in ambiguous situations. Children who experience inconsistent punishment, or perceive punishments to be unfairly harsh or random at home, may perceive other situations (e.g., meeting with the principal at school) as similarly unclear and possibly threatening or dangerous. Similarly, the lack of effective communication or poor family relationships that these youth perceive may also deprive them of social support that would otherwise act as a protective factor against anxiety symptomatology. It is also possible that children with greater threat bias tend to interpret family interactions in a negative light, resulting in higher-reported family dysfunction. The relation between child psychopathology and family functioning has been previously established (Bögels and Brechman-Toussaint 2006; Cummings 1994; Peleg-Popko 2002). Thus, the present study supports the notion that one way in which family functioning relates to child anxiety may be through its relation with child's threat bias.

Limitations

It is necessary to keep in mind the limitations of the present study when evaluating the results. The dependent measure used to assess threat bias, the Ambiguous Situations Questionnaire, is somewhat limited in range (total score

range of 0–6), which likely affected the lower internal consistency of the measure (Cronbach's alpha of 0.64 and 0.67 for children and parents, respectively). Additionally, the scenarios presented in the ASQ depict interpersonal situations, excluding the ambiguous physical scenarios from the original task (Barrett et al. 1996). Thus, findings may not generalize to non-interpersonal ambiguous situations. Finally, the ASQ was completed via self-report, rather than as an observational measure, and therefore subject to possible social desirability effects. Overall, the measures utilized in the present study were based on self-report, and relied on the assumption that children with anxiety disorders exhibit disordered thinking and may come from families with greater dysfunction or disordered thinking. It is possible that parents' expectation of child threat bias is merely an accurate assessment of their child's threat bias. Additionally, it is possible that children with increased threat bias perceive more family dysfunction, rather than family dysfunction leading to greater child threat bias. Due to low reliability of the BFAM-III measure, the findings of a relation between child-reported family functioning and child threat bias should be interpreted with caution. Future longitudinal studies would help clarify these relations. The study also lacked a measure of parents' own threat bias, inhibiting the possibility of exploring relations between parents' own threat bias and expectations of his/her child's threat bias. Furthermore, the sample was predominantly Caucasian and Non-Hispanic, so results should be generalized with caution. Finally, the data used in the present study were cross-sectional in nature, collected during baseline assessments of a larger longitudinal study. It would be beneficial to examine these predictors longitudinally to better understand how family functioning, parental anxiety and parental expectation of child threat bias relate to child's threat bias over time.

Despite certain limitations the present study did address specific gaps in the existing literature and highlighted important variables for future research. The current study was able to examine parental and familial factors in relation to child threat bias in a large, geographically diverse treatment seeking sample of anxiety-disordered youth, a limitation of previous research.

Future Directions

Prospective studies are needed to evaluate additional familial and parental traits as they relate to child threat bias, such as overcontrol, parental attachment, inconsistent parenting or marital conflict. If threat bias does serve as a mechanism in the maintenance of childhood anxiety disorders it would be beneficial to focus intervention efforts on familial factors that may be playing a role in the development or maintenance of threat bias.

Conflict of interest None.

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