

RUNNING HEAD: FEAR ACQUISITION AND ATTACHMENT

Fear Acquisition through Maternal Verbal Threat Information in Middle Childhood:

The role of Children's Attachment to Mother

## SYNOPSIS

**Objective.** Maternal verbal threat information influences fear acquisition during childhood.

The current study investigated whether attachment modulates the impact of verbal threat information both on fear beliefs and behavioral avoidance. **Design.** Mothers of 60 children provided verbal threat information about one of two unfamiliar Australian animals. Change in children's fear beliefs was measured with a questionnaire and behavioral avoidance was observed. Attachment anxiety and attachment avoidance were measured using children's self-report. **Results** indicated that the impact of verbal threat information on fear beliefs was not moderated by attachment. However, attachment anxiety enhanced the effect of maternal verbal threat information on behavioral avoidance.

**Conclusion.** These results provide some preliminary insights into the complex processes that explain the impact of parent-child relationships on fear acquisition through maternal verbal threat information.

## INTRODUCTION

During middle childhood, fears are a common and transient developmental phenomenon. However, if fears lead to behavioral avoidance, they put children at risk to develop long-lasting and severely impairing anxiety problems (e.g., Kim-Cohen et al., 2003). Previous research has identified maternal verbal threat information as one important mechanism through which children develop fears (Rachman, 1991; Remmerswaal, Muris, Mayer, & Smeets, 2010). However, it is an important theoretical and clinical question whether the effects on fear beliefs and subsequent behavioral avoidance are similar for all children, or whether these effects are affected by other variables such as the quality of the mother-child attachment relationship.

Attachment is an important moderating variable to consider because Bowlby (1969) proposed that the attachment system and the fear system are intrinsically interwoven. Anxiety activates the child's need for maternal support to help regulate this emotion. If children experience a lack of sensitive support, they remain exposed to elevated levels of anxiety. As such experiences gradually result in lost confidence in the availability of mother's support to regulate anxiety, children start relying on secondary, less adaptive, attachment-related coping strategies (Cassidy, 2008). Insecure ambivalent children are concerned that they might lose their mother's care (Ainsworth, Blehar, Waters, & Wall, 1978). As a result, they heighten or hyperactivate emotional responses to negative stimuli as a strategy to maintain her proximity (Cassidy, 2008). Insecure avoidant children appear motivated to avoid further disappointment in maternal care by showing little interest in contact and care from their mother and by actively avoiding her proximity (Ainsworth et al., 1978). As a result, they appear to minimize or deactivate the expression of negative affect as a strategy to maintain distance from her (2008). These coping patterns were derived from infant observation research, but have been replicated in middle childhood using self-reported attachment anxiety (expecting inconsistent care) and attachment avoidance (preference to avoid maternal support) as predictors of emotional hyper- and deactivation (Brenning, Soenens, Braet, & Bosmans, 2012).

Regarding the current study's hypotheses, it seemed reasonable to assume that specifically attachment anxiety-related coping strategies might amplify the effect of maternal verbal threat information on fear beliefs and behavioral avoidance. Anxiously attached children are more easily overwhelmed by negative emotions (Brenning et al., 2012; Mikulincer, Shaver, & Pereg, 2003) and, therefore, maternal verbal threat information should enhance fear and behavioral inhibition towards that animal. Avoidantly attached children might be less straightforwardly affected by maternal verbal threat information because they are more motivated to deactivate negative emotions (Brenning et al., 2012; Mikulincer et al., 2003) and, therefore, maternal threat information will not necessarily be linked to fear and behavior inhibition effects.

Middle childhood studies demonstrated a link between insecure attachment and anxiety problems (e.g., Brumariu & Kerns, 2010). However, there is an ongoing debate regarding which insecure attachment orientation is the strongest predictor and the existing meta-analyses do not provide a clear answer (for an overview, see Kerns & Brumariu, 2014). Moreover, previous research focused only on anxiety as the developmental outcome and not on the mechanisms that explain anxiety development (Kerns & Brumariu, 2014). Nevertheless, these studies support the hypothesis that insecure attachment might increase the effect of verbal threat information on fear beliefs and behavioral avoidance.

Finally, the acquisition of fear within the context of the mother-child relationship is not only affected by the quality of the attachment relationship, but also by children's trait anxiety and parenting behaviors (Vasey, Bosmans, & Ollendick, 2014). Children's trait anxiety enhances the likelihood that they experience anxiety in response to potentially threatening stimuli (Strelau & Zawadzki, 2011). Parenting styles, like psychologically controlling parenting or excessive and intrusive regulation of children's behavior through manipulation, explicitly induces anxiety, impairs exploration, and leads to anxiety development (McLeod, Wood, & Weisz, 2007). Moreover, all these factors are interrelated, exacerbating the development of anxiety problems (Vasey et al., 2014). Consequently, investigating attachment as moderator of the effect of maternal verbal threat information on fear beliefs and

behavioral avoidance, requires testing whether any attachment effects hold after controlling for the effect of trait anxiety and parenting behavior.

## METHOD

### Participants

In this study, 60 children participated (20 boys, 40 girls) with ages ranging from 9-12 years ( $M = 10.47$ ;  $SD = 1.05$ ). All children had close contact with their mother, and 75% lived with both biological parents. All mothers were Caucasian and reported they had been the primary attachment figure during the first three years of their children's lives. Regarding parental level of education, 1.7% of the mothers had an elementary school degree, 40% had a high school degree, 41.7% had a post-high school technical training or a technical bachelor degree, and 15% had a master's degree. Furthermore, 1.7% of the fathers had an elementary school degree, 43.3% of the fathers had a high school degree, 30% had a post-high school technical training or a technical bachelor degree, and 23.3% had a master's degree. For one parent, education data were missing.

### Procedures

Children and their mothers were invited with flyers distributed in schools. During the experiment, mothers were introduced to two unknown (Australian) animals: the Cuscus and the Quoll (see Field & Lawson, 2003). Mothers received threat information about one animal and no information about the other (in a fully counterbalanced order). The information was read aloud by an actor and recorded. Mothers received a picture of the animals and listened to the recording about the threat-information animal. Preliminary analyses showed that mothers' fear beliefs about the animals were significantly affected by the information they heard (repeated measures ANOVA, significant Information Type  $\times$  Time interaction effect:  $F(1, 56) = 63.59$ ,  $p < .001$ ;  $\eta^2_p = .53$ ). Mothers' fear beliefs were significantly higher in the threat information condition than the no information condition.

Children filled out questionnaires measuring attachment, trait anxiety, and pre-manipulation fear beliefs about both animals. Subsequently, mothers were asked to inform their children about the animal about which they had received threat information. After mothers provided the verbal threat

information, children filled out the fear belief questionnaire and then completed a behavioural task to measure avoidance of the animals (Field & Lawson, 2003). The children were asked to put their hand in two boxes covered with a burlap curtain to conceal their contents. Children were told that each box contained one of the two animals. Each box contained straw and a stuffed animal to create the illusion that the boxes contained real animals. Then children were asked to put their hand in the boxes. The order of the boxes was counterbalanced to exclude effects of habituation. This procedure was approved by the local university's ethical board.

### **Measures**

**Fear Beliefs** about the animals were twice measured with the Fear Beliefs Questionnaire (FBQ, Field and Lawson, 2003), before and after children received information from their mother about one animal. Children responded to 7 statements repeated once for each animal, each with a 5-point Likert response scale ranging from 0 (No, not at all) to 4 (Yes, definitely). A high score represented more fear beliefs. The internal consistencies in the current sample were comparable to past research: before the information (FB pre)  $\alpha = .85$  and  $.90$  for the Cuscus and Quoll subscales respectively and  $\alpha = .94$  and  $.94$  after the information (FB post).

**Behavioral Avoidance** was assessed with the Touch Box Task (Field and Lawson, 2003). For each animal, a touch box was created according to the instructions in Field and Lawson (2003). Children were seated on a chair in front of the boxes at a distance of 2.5 m and were given the opportunity to put their hand in the box to caress the animal. Children were invited by the experimenter to approach each box one at a time. In between they were asked to return to their seat. For ethical reasons (to avoid causing undue distress), children who did not leave their chair to start approaching the box after 15 seconds were considered as unwilling to approach the box, the approach task was stopped and they were given the opportunity to approach the second animal. Due to this procedure, 24 children did not put their hand in the box of either animal (independent of information type,  $\chi^2(1) = 44.49, p < .001$ ). However, to include the children for which time recording stopped after 15 seconds in the final analyses, all these children received the same reaction time score as the child who needed the longest time before they put their hand in the box (threat information animal box: 49.91 sec; no information animal box: 19.97 sec). This way, we created a Behavioral Avoidance index reflecting how long children needed to put their hand in the box.

**Attachment** was measured using the Experiences in Close Relationships Scale–Revised for Children about mother (ECR-RC, Brenning et al., 2012), which consists of 18 Attachment Anxiety items (e.g., “I worry about being abandoned by my mother”) and 18 Attachment Avoidance items (e.g., “I prefer not to show to my mother how I feel deep down”). Items are rated on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much). Cronbach’s  $\alpha$ s were .86 and .83 for Attachment Anxiety and Avoidance respectively.

**Trait anxiety** was measured using the 20 item Trait Anxiety subscale of the State-Trait Anxiety Inventory for Children (Spielberger, Edwards, Lushene, Montuori & Platzek, 1973). Children rated items using a 3-point Likert-scale (e.g., “I can feel my heart beat”). Higher scores on Trait Anxiety reflect that children more frequently feel anxious. In the current sample,  $\alpha = .85$ .

**Psychologically controlling parenting** was measured with the Psychological Control Scale—Youth Self Report (PCS-YSR; Barber, 1996). Given the current study’s purpose to control for parenting-specific effects, mother-report of psychological control was used to reduce the impact of shared information source. Mothers responded to eight items using a 5-point Likert-scale (e.g., “I am less friendly to my son/daughter if (s)he does not see things like I do”). Higher scores indicate elevated levels of Psychological Control. In the current sample,  $\alpha = .80$ .

## RESULTS

In this section, we first provide descriptive statistics and preliminary correlation analyses to test variables for their potential inclusion as covariates in subsequent models. Then, two repeated measures ANCOVAs were carried out to investigate the effect of verbal threat information on either Fear Beliefs or Behavioral Avoidance with Attachment Anxiety and Avoidance as moderators. We then repeated the analysis but adding each separate covariate (Trait Anxiety and Psychological Control). If the covariates were significant they were retained in the model, if not they were removed for the sake of parsimony.

Means and standard deviations of the predictors are shown in Table 1. Given the moderate correlation between Attachment Anxiety and Attachment Avoidance, analyses were carried out using

both insecure attachment dimensions as simultaneous predictors to test for unique effects. Gender and age were not significantly related to the predictors. FB post threat information was related to Behavioral Avoidance to both animals ( $r_{threat\ animal} = .34, p < .01$ ;  $r_{no\ information\ animal} = .32, p < .05$ ). No significant correlations were found with FB post no information.

A 2 (Information Type: Threat versus No information)  $\times$  2 (Time: Pre versus Post receiving threat information about one animal) repeated measures ANCOVA with Attachment Anxiety and Avoidance as covariates was carried out to predict children's Fear Beliefs. The Information Type  $\times$  Time interaction effect was significant,  $F(1, 55) = 4.18, p = .046, \eta^2_p = .07$ , but not the interactions with either attachment scale ( $p_{avoidance} = .333$ ;  $p_{anxiety} = .683$ ). In subsequent analyses, no significant effects were found for Trait Anxiety ( $p = .251$ ) or Psychological Control ( $p = .459$ ).

A repeated measures ANCOVA was carried out with Information Type as within subject variable and Attachment Anxiety and Avoidance as covariates to predict Behavioral Avoidance. The Information Type  $\times$  Attachment Anxiety interaction was significant,  $F(1, 57) = 8.13, p = .006, \eta^2_p = .13$ . No significant effect was found for Attachment Avoidance ( $p = .217$ ). Attachment Anxiety was significantly correlated with Behavioral Avoidance of the threat animal ( $r = .31, p = .015$ ), but not with the no information animal ( $r = .21, p = .104$ ). Subsequent analyses revealed a marginally significant effect of Trait Anxiety,  $F(1, 58) = 3.73, p = .058, \eta^2_p = .06$ , and a significant effect of Psychological Control,  $F(1, 58) = 6.97, p = .011, \eta^2_p = .11$ . The effect of Attachment Anxiety remained significant after accounting for Trait Anxiety and Psychological Control,  $F(1, 55) = 4.57, p = .037, \eta^2_p = .08$ .

## DISCUSSION

The current study used an experimental paradigm to investigate whether insecure attachment amplifies the effect of maternal verbal threat information on fear beliefs and behavioral avoidance. For fear beliefs, no significant effects of insecure attachment were found. For behavioral avoidance, results supported the current study's hypothesis for anxious attachment, but not for avoidant attachment. More anxiously attached children waited longer to put their hand in the box of the animal about which



their mother provided threat information. This finding might be a first step in the attempt to uncover the mechanisms explaining why insecurely (anxiously) attached children are at elevated risk to develop anxiety disorders.

For the insignificant effect of attachment on fear beliefs, one explanation might be that ceiling effects due to high Fear Belief pre scores dampened the effects. Indeed, a post-hoc multiple regression analysis indicated that attachment anxiety was linked with elevated changes in fear belief scores only if the initial fear beliefs were lower. Nevertheless, the current findings do suggest that, with regard to fear acquisition, maternal verbal threat information is a vulnerability factor for all children, independent of their attachment status. This finding is in line with previous research showing that it is hard to find significant moderators of the maternal verbal threat information effect on fear beliefs (Muris & Field, 2010).

The finding that attachment anxiety was linked to increased vulnerability to the impact of maternal verbal threat information on behavioral avoidance adds to a growing body of research, which has heretofore been limited to merely describing the links between insecure attachment to anxiety problems (Kerns & Brumariu, 2014). The current findings are novel, as this is the first evidence that responsiveness to maternal verbal threat information might be one mechanism explaining the link between attachment anxiety and anxiety problems. Moreover, the importance of the current findings is emphasized by the fact that the effects held after controlling for important confounds due to trait anxiety and parenting style. Finally, no significant moderation effect was found for attachment avoidance. This was in line with our prediction that these children's emotion deactivation strategies would limit the impact of verbal threat information on their fear-related responses.

Nevertheless, although the current findings are promising and in spite of the elegance of the experimental manipulation, the question remains whether such experimental designs can indeed reveal ecologically valid causal mechanisms. More research in larger samples, with more equal gender distributions, including observation in more naturalistic settings is required to corroborate the current

findings. Moreover, future research should investigate whether these findings hold when attachment is measured without questionnaires that are vulnerable to reporter bias.

### **IMPLICATIONS FOR THEORY AND PRACTICE**

Despite these concerns, the current findings seem to provide a theoretically and clinically relevant insight into the relevance of insecure attachment for anxiety development. First, maternal verbal threat information appears to induce fear in all children, independent of their attachment status. However, when children are more anxiously attached, they are more likely to start behaviorally avoiding the threatening stimulus if they received maternal verbal threat information about that stimulus. As behavioral avoidance is the core mechanisms through which anxiety disorders develop (e.g., Kim-Cohen et al., 2003), this might help understand the effect of attachment anxiety on children's fear acquisition and might inform clinical practice to also take into account the parent-child attachment relationship during treatment.

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Table 1: Descriptive Statistics and Correlations Between the Main Variables

	1.	2.	3.	4.
1. Trait Anxiety	1			
2. Psychologically controlling parenting	.16	1		
3. Attachment Anxiety	.45***	.27*	1	
4. Attachment Avoidance	.30*	.33*	.55***	1
	<i>M</i> 32.32	15.90	2.36	3.14
	<i>SD</i> 6.68	4.97	.85	.88

Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$