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Anxiety and Interpretation of Ambiguous Events in the Postnatal Period: An Exploratory Study

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Abstract. There is now considerable evidence that anxiety disorders aggregate in families. Whilst genetic heritability plays a part, environmental factors are another factor explaining this aggregation. However, little is known about the cognitive mechanisms involved. This study examined maternal attentional focus as a possible mechanism in a community sample of mothers of young infants, using an ambiguous scenarios paradigm. In particular, we examined whether more anxious mothers were more likely to interpret everyday scenarios concerning their young children as more threatening and whether this affected their predictions of their own reactions to the situations. Anxiety scores were associated with a greater likelihood of anxious interpretation in first-time mothers but not in the whole sample. Mothers who scored higher on state and trait anxiety were found to perceive ambiguous scenarios involving infants as more threatening than mothers scoring lower on anxiety and were more likely to indicate that

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they would seek external reassurance. These relationships were stronger when data were only analysed for the sub-group of first-time mothers. This suggests that anxious interpretations by the mother may ultimately influence the child's assessment of and response to threat. However, direct observational research is needed to examine this issue.

Keywords: Anxiety, ambiguous events, postnatal, infant, attention.

Introduction

Anxiety disorders are relatively common and there is considerable evidence that they aggregate in families (see review by Rapee, 2001). Research has indicated that both genetic and environmental factors play important roles in explaining this aggregation (e.g. Eley et al., 2003). One potentially important environmental mechanism may involve parental attentional focus. With time, infants and young children become increasingly sensitive to the quality of their parents' affective responses to different situations. When the threat of a stimulus is unclear to the infant, they use these responses as a guide and alter their own behaviour in response to parental communication, in a process known as social referencing (Campos, Hiatt, Ramsay, Henderson and Svejda, 1978). If parental attentional focus and consequently their interpretation of situations are distorted, this could then have a significant negative impact on the child's interpretation and therefore their affective and behavioural responses.

Research suggests that attentional focus in people with anxiety is indeed distorted with a bias towards perceived threat. Considering this in the parent-child context, it is possible that through their own interpretations and responses anxious parents may guide their children's attention to potential threats in the environment. In partial support, Whaley, Pinto and Sigman (1999) found that anxious mothers tended to catastrophize events and in interactions were more critical and less granting of autonomy than controls. These parenting behaviours in turn predicted anxiety levels in their children. In other studies, parents of anxious children encouraged avoidant responding and expected their children to select threatening interpretations of ambiguous scenarios (Dadds, Barrett, Rapee and Ryan, 1996).

The distorted attentional focus and associated anxious interpretations and behaviours in response to everyday situations may be one mechanism whereby anxiety in mothers affects their care of their young children and ultimately the child's own development. If this is the case, it is important to examine the relationship between levels of maternal anxiety and whether common everyday events involving children are associated with mothers' anxious interpretations. The purpose of this study was to examine this issue in a community sample of postnatal mothers. First, we hypothesized that mothers with higher levels of anxiety would be more likely than mothers with lower anxiety levels to interpret ordinary, common child behaviours, events and minor physical symptoms as threatening to the baby's health or safety. Second, we hypothesized that first-time mothers would be likely to have higher levels of anxiety and be more likely to make anxious interpretations of ambiguous situations than mothers for whom this was a subsequent baby. The wider implication of these findings would be that information-processing bias (such as a consistently negative interpretation of everyday events) may be a cognitive mechanism whereby anxiety influences mother-child interaction and, potentially, child development.

Method

Participants

Participants were mothers with 4–12-month-old babies, of mixed socio-economic background, recruited through community Well Baby clinics in an area of North London. On recruitment days all eligible mothers present were invited to participate; no reimbursement was offered. Forty-four mothers were approached and six refused, leaving 38 mothers in the study. An appointment was then made for the consenting mothers to be seen at home at a time convenient to them in order to conduct the study. Maternal age ranged from 18 to 43 (mean 31.9, *SD* 5.42); 26 were first-time mothers. There were 20 male and 18 female infants.

Measures

Maternal interpretation: ambiguous scenarios. Seven ambiguous scenarios concerning everyday parenting situations with infants were devised to measure negative interpretation bias, based on the paradigm used by Butler and Mathews (1983). This comprised the principal outcome measure. Items were generated and chosen on the basis of clinical experience by consensus amongst a group of researchers. The situations covered separation, social situations, feeding, soothing, sleeping, and minor physical symptoms. Originally there were nine scenarios, but two items were dropped because there was almost no variability in one item (further enquiry indicated that it was not really ambiguous), and some mothers found the second item somewhat distressing and hence it was discontinued. After listening to each scenario, the parents were asked four questions:

(i) What do you think is happening?
(ii) Which of the following explanations do you think is most likely? (Participants had to choose from 2 threatening and 2 non-threatening responses.)
(iii) What would you do in this situation?
(iv) How anxiety provoking would this situation be for you (on a scale of 0–8)?

All the interviews were audio-taped and then transcribed to permit coding of the free response questions (i) and (iii). The participants received four scores from the task. "Perceived threat" was determined by their response to question (i) "What do you think is happening?". The coding was designed to assess the presence (or absence) of anxious or threatening thoughts, using a scale of 0–2; nil for not threatening, 1 for moderately threatening, and 2 for severely threatening. "Reassurance seeking" was determined by the participants' response to question (iii) "What would you do in this situation?", where the scenarios were examined for evidence that the mothers would take action to alleviate their anxiety/concern in the form of reassurance or other help, for example, medical treatment in the case of illness or injury. These were also rated on a 3-point scale; nil for no action, 1 for moderate, and 2 for extreme reassurance seeking. These were then coded independently by a rater blind to the mother's anxiety level. The responses of all but six subjects were co-rated. The inter-rater reliability for question (i) was 95.8% and question (iii) 92.2%. Disagreements were resolved by consensus. Finally, "Infant-related anxiety" score was obtained by summing the participants' ratings of how anxiety-provoking they found each scenario (each item on a scale 0–8).

Table 1. Means of participants on the STAI and the Ambiguous Scenarios Task (standard deviations in parentheses)

	Whole group	First-time mothers
STAI trait	33.18 (8.45)	33.38 (7.66)
STAI state	29.13 (7.34)	29.96 (6.86)
Perceived threat (free response; max. 14)	8.79 (1.26)	8.46 (.95)
Perceived threat (forced choice; max. 7)	1.03 (.85)	1.04 (.92)
Reassurance seeking (max. 14)	8.79 (1.39)	8.74 (1.48)
Infant-related anxiety (max. 56)	19.84 (10.4)	19.27 (9.74)

Table 2. Correlation matrix showing the relationships between the anxiety measures and scores in the Ambiguous Scenarios Task for the whole group

	STAI trait	STAI state	Perceived threat (free response)	Perceived threat (forced choice)	Reassurance seeking	Infant situation anxiety
STAI trait	–	.833***	.283	.204	.384*	.436**
STAI state	–	–	.301	.270	.404*	.458**
Perceived threat (free response)	–	–	–	.368*	.404*	.496**
Perceived threat (forced choice)	–	–	–	–	.575***	.485**
Reassurance seeking	–	–	–	–	–	.666***
Infant-related anxiety	–	–	–	–	–	–

*$p < .05$. **$p < .01$. ***$p < .001$.

Maternal anxiety

At the end of the interview and following a debriefing, the mothers completed the State-Trait Anxiety Inventory (STAI) to assess maternal anxiety.

Results

Univariate analyses were conducted to examine the relationship between maternal state and trait anxiety, infant gender, maternal age and the four dependent variables. Maternal age and infant gender did not relate to the measures of maternal interpretation or anxiety, and thus were not included in subsequent analyses. The means and standard deviations for the anxiety measures and the scores for the Ambiguous Scenarios task are presented in Table 1, both for the whole group and separately for the subgroup of first-time mothers. The means of the subgroup were very similar to those of the whole group.

Correlation coefficients were calculated to evaluate the relationship between mothers' anxiety level and responses in the Ambiguous Scenarios task. These are presented in Table 2. The mothers' perceived threat scores, either by free response or by forced choice, did not significantly correlate with their anxiety levels (state and trait), while mothers' anxiety scores correlated significantly and positively with their reassurance seeking and the infant-related anxiety score.

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Table 3. Correlation matrix showing the relationships between the anxiety measures and scores in the Ambiguous Scenarios Task for the first-time mothers

	STAI trait	STAI state	Perceived threat (free response)	Perceived threat (forced choice)	Reassurance seeking	Infant-related anxiety
STAI trait	–	.788***	.422*	.297	.495*	.528**
STAI state	–	–	.437*	.215	.508*	.588**
Perceived threat (free response)	–	–	–	.283	.378	.368
Perceived threat (forced choice)	–	–	–	–	.644**	.560**
Reassurance seeking	–	–	–	–	–	.704***
Infant situation anxiety	–	–	–	–	–	–

*$p < .05$. **$p < .01$. ***$p < .001$.

The same analysis was run for the group of first-time mothers only (Table 3). Overall, the coefficients were higher, and in these analyses the correlation coefficients between anxiety scores and perceived threat scores were significant, although only for free responses (state: $r = 0.42$ and trait: $r = 0.44$) The correlations between anxiety scores and both reassurance seeking and infant-related anxiety were higher for first-time mothers and remained significant.

Discussion

In this community sample of mothers studied in the postnatal period, mothers who scored higher on state or trait anxiety rated the ambiguous scenarios as more anxiety-provoking than mothers who scored lower on anxiety. Also, higher-scoring mothers were more likely to report that they would take action to alleviate anxiety or seek reassurance than lower-scoring mothers. Furthermore, when analyses were restricted to the first-time mothers in the sample, the associations between anxiety scores and perceived threat in the Ambiguous Scenarios task were stronger, despite the relatively small sample. This was not the case for the full sample, although the correlations were (non-significantly) positive. In addition, first-time mothers' interpretations of ambiguous scenarios were significantly and positively correlated with their anxiety levels, with higher scoring mothers interpreting the scenarios as more threatening on the free responses. These findings suggest, at least "in vitro", that maternal anxiety in the postnatal period is likely to influence the way the mother perceives and responds to situations concerning her children. This is especially the case with first-time mothers. It appears that the anxious mother interprets threat to a greater extent than a mother who is not anxious, and consequently reports seeking more extensive reassurance.

It is important to keep in mind that this study was intended as an initial study to examine whether there was any evidence that mothers' cognitions concerning their infants were related to their levels of anxiety. There are several limitations to the study that need to be addressed in future research. The sample was relatively small and we used self-report measures to measure anxiety in the mothers. The results should be replicated using a larger sample of mothers and, preferably, using interview measures of anxiety. Also, given that anxiety was measured as a continuous variable in a community sample, a replication of this research using mothers diagnosed with clinically significant anxiety is an important next step.

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Moreover, showing that anxious mothers have more threatening interpretations of ambiguous scenarios involving their infants is only the first, although crucial, step. It is also necessary to demonstrate that these cognitions then drive the mothers' behaviour towards their infant and that this in turn adversely affects child development. Therefore, the results concerning maternal cognitions need to be tested in direct observations of mothers and their young babies, preferably in a longitudinal design.

Thus, there are still major questions to be resolved before the role of maternal cognitions in influencing child anxiety can be firmly established. However, the results reported here do suggest that anxious cognitions in mothers may well impinge on the parenting of their infants, and this might represent one environmental mechanism explaining the aggregation of anxiety in families.

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