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Maternal Anxiety, Behaviors, and Expectations During a Behavioral Task: Relation to Children's Self-Evaluations

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Abstract

This study examined the associations between maternal anxiety, behaviors, and expectations and children's self-evaluations of distress, coping, and performance during a stressful performance evaluation task. Seventy-five mothers (38 clinically anxious and 37 nonanxious) along with one of their children aged 6–14 (52.0% female; 78.7% Caucasian) were videotaped while preparing the child to deliver a speech about themselves. Child and parent assessments were obtained before and after the speech, and independent coders rated maternal behavior during the speech preparation. Maternal anxiety and behaviors accounted for a greater proportion of variance in children's self-evaluations than did maternal expectations, such that children of mothers who reported higher task anxiety and demonstrated more overcontrol and anxious behavior during the task evaluated themselves more negatively. These findings extend the literature by providing information about the relative associations between maternal factors and children's self-evaluations within the context of an in vivo stressful situation.

Keywords

Child anxiety; Maternal anxiety; Expectations; Overcontrol; Anxious behavior

Introduction

Maladaptive cognitions, particularly negative self-evaluations, are a hallmark feature of excessive anxiety in youth. For decades, researchers have sought to understand which and how parental factors influence the development of children's maladaptive thoughts. Parental anxiety has been found to play a role in the development of children's anxious cognitions, yet the mechanisms of transmission are unclear. Offspring of anxious parents may be biologically predisposed towards negative self-cognitions [1, 2] and more likely to exhibit cognitive biases than are children of nonanxious parents [3]. Although biological and genetic factors may play a role, it is likely that there are multiple mechanisms by which parents may influence children's cognitive biases.

Children's maladaptive cognitions may be shaped by parenting behaviors such as anxious behavior and overcontrol. Anxious behavior such as verbal threat transmission (i.e.,

expression of threat, uncertainty about ability to cope or likelihood of successful outcome; [4]) and parental modeling (i.e., demonstration of anxiety or avoidance in response to anxiety-provoking situations; [5, 6]) may shape children's perceptions that benign or ambiguous situations are threatening and that successful outcomes are unlikely, thereby reducing self-efficacy beliefs [7–11]. Parents may also engage in overcontrolling parenting behaviors that are intended to protect their children from anxiety-provoking situations and distress. However, rather than decreasing distress, overcontrol may increase children's perceptions of external locus of control [12–15]. Children's negative self-evaluations may develop as a result of restriction of opportunities for mastery and control over their own environment.

Theory suggests that children's self-evaluations are shaped also by the perceptions others hold of them [16, 17] and research supports the hypothesis that the expectations of significant others influence children's self-cognitions [e.g., 18, 19]. Specifically, negative parental cognitions about their children (e.g., lower expectations for success) are associated with higher levels of child negative self-cognitions and poorer expectations for coping [e.g., 8, 20–23]. Several studies have demonstrated that parents may convey their own negative cognitions to their children through family discussions, thereby potentially enhancing children's threat biases and negative perceptions of their ability to cope with anxiety-provoking situations [e.g., 24, 25], although other studies have not demonstrated this effect [e.g., 26].

Although our understanding of the association between parental factors and child cognitions is growing, there exist certain limitations in the literature. First, the majority of samples were selected either on parental or child anxiety but most researchers have not controlled for anxiety in the other person, thereby introducing a potential confound into the association between parenting factors and children's cognitive biases. Second, few studies have examined the association between specific parental behaviors in relation to child self-evaluations or cognitions. Third, much of the research regarding the association between maternal factors and children's cognitions involves ambiguous situation paradigms. These studies examine cognitive biases regarding the interpretation of ambiguous stimuli but provide no information regarding how mothers respond in vivo to stressful situations and how their responses shape their children's self-evaluations.

Finally, with few exceptions [e.g., 13], the relative influence of parental anxiety, cognitions, and behaviors on children's cognitions, particularly self-evaluations, has not been examined. A previous study with the current sample examined mechanisms of transmission between parental and child anxiety (not specifically self-evaluations) [13]. Results using questionnaire data indicated that the influence of maternal behavior was independent of the influence of maternal anxiety and may be stronger than the influence of certain maternal cognitions (i.e., external locus of control), suggesting that examining the relative importance of parental factors is worthwhile as it may identify the most robust parental risk factor [13].

The present study addressed these limitations and included two aims. The primary aim was to examine the associations between maternal factors (i.e., task anxiety, behaviors, and expectations for children's outcomes) and children's self-evaluations of distress, coping, and performance within the context of an anxiety-provoking performance evaluation task (i.e., child preparing and delivering a speech). The secondary aim was to examine the relative influence of each maternal factor on children's self-evaluations.

We selected a speech paradigm similar to that used in two previous studies [i.e., 22, 26] that was expected to elicit sufficient levels of anxiety. Use of a stressful performance evaluation task was unique and necessary to examine the overarching questions of how do anxious

mothers respond in actual stressful situations and how do their responses in these situations relate to children's perceptions of their own distress, coping, and performance?

We assessed maternal and child variables using multiple informants that included self-report and behaviors coded by an independent evaluator. Because child anxiety is believed to affect children's cognitions as well as parental variables [e.g., 27, 28] and has not been accounted for in previous studies, levels of child anxiety were controlled. We measured maternal and child task anxiety rather than global anxiety symptoms so that we could better understand the *real-time* associations among maternal factors and child self-evaluations related to a stressful situation. Based on the extant literature, we hypothesized that maternal task anxiety, behaviors (i.e., overcontrol and anxious behavior), and negative expectations (i.e., low expectations for child success) would each be related to children's negative self-evaluations following the speech. Based on our previous study [i.e., 13] we also predicted that, of the maternal factors, parental behaviors would have the strongest relation with child self-evaluations following the speech.

Method

Participants

The sample comprised 38 mothers who met criteria for a DSM-IV anxiety disorder and 37 ("healthy") mothers who did not meet criteria for any psychiatric disorder, along with one of their children. Mothers ranged in age from 26 to 54 years ($M = 39.91$, $SD = 5.80$) and most were currently married (81.3%). Children were between the ages of 6 and 14 years ($M = 9.03$, $SD = 1.68$). This age range was selected because it is a high-risk period for the development of anxiety disorders [29]. Approximately half the children were female (52.0%) and the majority of children were Caucasian (78.7%; 15% were African American) and from families from upper socioeconomic backgrounds (58.7% annual income \$80,000 or higher). There were no group differences in terms of parent income, parent age, child age, or child gender, although significantly more children in the healthy mothers group were African American ($\chi^2 = 9.40$, $p < .05$).

Anxious mothers were recruited through a variety of methods, including advertisements in local papers, mailings to local doctors and psychiatrists, and community flyers to participate in a study examining the impact of an anxiety prevention program [30] on their nonanxious offspring. Families who contacted the project responded to screening questions designed to identify ineligible families according to the exclusion criteria prior to the full assessment. Eligible families were scheduled for in-person evaluations that included semi-structured diagnostic interviews, questionnaires, and a behavioral observation task that was the focus of the present study.

Trained Ph.D. or MA level evaluators conducted semi-structured interviews to determine participant diagnoses. Maternal diagnoses were determined using the Anxiety Disorders Interview Schedule: Lifetime Version (ADIS) [31]. Child diagnoses were assessed using the Anxiety Disorders Interview Schedule: Child Version (ADIS-C) [32]. Each mother in the anxious sample received a current anxiety disorder diagnosis. Primary diagnoses for the anxious mothers included generalized anxiety disorder ($n = 21$), social phobia ($n = 6$), panic disorder with agoraphobia ($n = 5$), panic disorder without agoraphobia ($n = 3$), specific phobia ($n = 2$), and obsessive-compulsive disorder ($n = 1$). The majority of mothers (74.0%) met criteria for a current comorbid disorder, most commonly anxiety ($n = 22$) and mood ($n = 5$) disorders. Over half the mothers (55.3%) were currently in psychiatric treatment for their anxiety disorder.

Nonanxious mothers were recruited with flyers describing a study of stress and coping in families. These mothers were eligible to participate as healthy controls only if there was no current or lifetime diagnosis of an anxiety or mood disorder as indicated through the ADIS interview.

Children were eligible if they were between the ages of 7 and 12 and without an anxiety disorder. (Two children who were 6 and two children who were 13–14 years old were also included). Children currently receiving psychological or pharmacological treatment for anxiety reduction were excluded from the study. Mothers and children with a medical or psychiatric condition contraindicating study intervention (e.g., suicidality) were also excluded from participation.

Fifty-one families completed the assessment battery and were considered for enrollment in the anxious group. Eleven families were ineligible on the basis of their child's anxiety disorder ($n = 9$), the parent's major depression ($n = 1$), and the absence of a parental anxiety disorder ($n = 1$). We excluded from the present analyses two families in which the father presented as the anxious parent; thus, our anxious sample comprised 38 mothers. Fifty families with nonanxious parents completed the assessment battery. Nine families were excluded on the basis of lifetime diagnosis of major depressive disorder or current pharmacological treatment of a mood disorder, as was an additional family who was unable to complete the full assessment. We excluded from the present analyses three families in which the father presented as the anxious parent. The final sample included 38 families with anxious mothers and 37 families with healthy mothers.

Procedure

Following completion of the semi-structured diagnostic interviews and questionnaires, mother–child dyads participated in a behavioral task designed to assess mother–child interactions in a social performance situation. Mother–child pairs were given the following instructions by the interviewer: “Now we are going to do something a little different. I want you to prepare a speech about yourself. For the next 5 min, try to plan what you want to say about yourself. When I come back, we will film you as you deliver your speech into the camera. It's okay for your mom to help.” After these instructions were given, each child and mother completed several brief questionnaires (described below). Five minutes were allotted for the preparation time, during which time the mother and child were videotaped in a room alone. After the 5 min, the interviewer returned and the child was asked to deliver a speech into the camera. Parents remained in the room during the speech delivery. Immediately after the speech was delivered, parent and child again completed several brief questionnaires.

Measures

Maternal Task Anxiety—Maternal task anxiety was indicated by mothers' ratings of their own anxiety on a 9-point scale (0 = not at all anxious to 8 = extremely anxious) immediately following the interviewer's instructions and just before the 5-min speech planning session.

Maternal Expectations—Immediately following the interviewer's instructions, mothers also rated their expectations by completing the following three questions: (1) “To what degree do you expect your child to become upset about giving the speech?” (2) “To what degree do you feel that your child will be able to cope or stay calm during the speech?” and (3) “How well do you feel your child will perform while giving the speech?” Mothers responded to each of these items on a 5-point scale (1 = not at all to 5 = very). These items corresponded to each of the outcomes on which children rated themselves (i.e., distress, coping, performance).

Maternal Behavior—The overall frequency of two maternal behaviors during the speech planning phase of the task was coded by independent raters: overcontrol and anxious behavior. *Overcontrol* involved intrusive unsolicited help or commands delivered by the parent to direct the child’s behavior. Examples include pressuring the child to talk about specific topics, rapidly listing a set of topics for the child to talk about, and directing the organization of the speech. The delivery of helpful instructions or redirection to an off-task child was not coded as overcontrol. *Anxious behavior* involved anxious or worried statements about the speech topics (e.g., “I don’t know if that is a good topic to talk about.”), the child’s ability to deliver the speech (e.g., “Do you think you’ll be able to do this in front of the camera?”), the length of time for speech planning (e.g., “We only have 5 min to plan your speech. I don’t think we have enough time to plan a good speech.”), and the length of time for speech delivery (e.g., “Five minutes is a really long time. I don’t think you’ll have enough to say.”). Nonverbal actions such as displaying worried facial expressions, biting the lip, wringing the hands, or rocking in the chair were considered anxious behaviors depending on the context.

Videotapes were coded by undergraduate and graduate level research assistants who were blind to maternal diagnostic status. All coders were required to obtain 80% agreement across five sample tapes of parent–child interaction prior to coding the study tapes. Training of each coder took approximately 15 h. After establishing initial interrater reliability for each coder, reliability checks were performed on a random sample of 44% of the coded research tapes. Inter-rater reliability was assessed using a 2,1 model of intraclass correlations (ICCs) [33]. ICCs were adequate for the both parenting domains: overcontrol (.85) and anxious behavior (.68).

Using coding procedures created based on those used in other observational studies [e.g., 34–36], coders paused the 5-min speech planning segment after each minute and coded only those interactions observed within that minute. Coders then watched the entire 5 min preparation task and rated the overall frequency of maternal overcontrol and anxious behavior using a 5-point Likert-type scale from 0 (no presence of the behavior within the 5 min task = 0% of the time) to 4 (presence of the behavior for most of the 5 min task = 76–100% of the time).

Child Task Anxiety—Immediately following the interviewer’s instructions and just before the speech planning phase, children rated their own anxiety (0 = not at all anxious to 8 = extremely anxious).

Child Self-Evaluations—Children provided self-evaluations after they delivered the speech. Specifically, children responded to three questions that paralleled the maternal expectations items: (1) “How upset did you get about giving the speech?” (2) “To what degree were you able to cope or stay calm during the speech?” and (3) “How well do you feel you performed while giving the speech?” Children responded to each of these items on a 5-point scale (1 = not at all to 5 = very).

Results

Preliminary Analyses

Means and standard deviations for each measure are presented for each parent diagnostic group and for the total sample in Table 1. We compared anxious and healthy mothers on maternal task anxiety and, as expected, anxious mothers reported significantly higher levels of task anxiety ($M = 1.97$, $SD = 1.76$) than healthy mothers reported ($M = 0.70$, $SD = 1.05$; $t(72) = 3.78$, $p < .01$). We examined the skewness and kurtosis statistics for scores on each measure and found them to be within the acceptable range according to published standards

in the field (<2 for skewness, <7 for kurtosis) [37], therefore, no transformations were necessary.

Prior to conducting regression analyses related to the study hypotheses, we examined child gender, child age, and parent age as potential covariates with our dependent variables, yet found no significant correlations.

Aim 1: Relation Between Maternal Variables and Child Self-Evaluations

Correlations were conducted among the primary variables (Table 2). Three significant correlations were identified between maternal factors (i.e., predictor variables) and child outcomes. Specifically, higher maternal task anxiety was associated with children's lower ratings of their performance. Higher maternal overcontrol was associated with higher levels of child-reported distress. Higher levels of maternal anxious behavior were associated with poorer child-reported coping. Significant correlations were also apparent among the maternal factors as well as among the child outcome variables (see Table 2). Multicollinearity was not a concern for the regression equations because correlations were low to moderate and appropriate tolerance statistics were in the appropriate range within each regression ($>.2$) [38].

Aim 2: Relative Importance of Maternal Variables

Three separate hierarchical regression analyses were conducted to examine the extent to which maternal task anxiety, behavior, and expectations accounted for variance in children's self-evaluations across three domains: distress, coping, and performance. Child task anxiety (i.e., post-instruction) was entered in step one of the regression to control for initial anxiety level. Maternal task anxiety, overcontrol, anxious behavior, and corresponding expectation were entered on step two. One-tailed tests were conducted to examine hypothesized associations.

Distress—When the maternal variables were entered into the model, the model accounted for a significantly greater proportion of variance in children's self-evaluations of distress ($\Delta R^2 = 0.16$; $F(4, 60) = 2.88$, $p < .05$; Table 3) than that accounted for by child task anxiety alone and the entire model was statistically significant ($F(5, 60) = 2.34$, $p < .05$). Higher maternal overcontrol was significantly related to higher levels of child-reported distress.

Coping—The model for predicting children's self-evaluations of coping that included all maternal variables was statistically significant ($F(5, 60) = 2.72$, $p < .05$), although the proportion of variance in children's self-evaluations of coping it accounted for above and beyond that accounted for by child task anxiety demonstrated only a trend towards statistical significance ($\Delta R^2 = 0.13$; $F(4, 60) = 2.29$, $p = .07$; Table 4). Higher anxious behavior was significantly related to lower self-evaluations of coping.

Performance—The model for predicting children's self-assessments of their performance that included all maternal variables was statistically significant ($F(5, 59) = 2.09$, $p < .05$), although the proportion of variance in children's self-evaluations of coping it accounted for above and beyond that accounted for by child task anxiety demonstrated only a trend towards statistical significance ($\Delta R^2 = 0.14$; $F(4, 59) = 2.34$, $p = .06$; Table 5). Maternal anxiety and overcontrol were significantly related to children's lower evaluations of their performance.

Discussion

The primary purpose of this study was to examine the associations between maternal factors (i.e., task anxiety, behaviors, and expectations for children's outcomes) and children's self-evaluations of distress, coping, and performance within the context of a stress-provoking performance evaluation task. We hypothesized that maternal anxiety, expectations, and behaviors (i.e., overcontrol and anxious behavior) would each be related to children's self-evaluations, even after controlling for child anxiety related to the task. The secondary purpose of the study was to examine the relative influence of each maternal factor on children's self-evaluations and we hypothesized that maternal behaviors would demonstrate the strongest association with children's self-evaluations. Partial support was obtained for each hypothesis.

Relation Between Maternal Variables and Children's Self-Evaluations

Maternal Task Anxiety—Consistent with our hypothesis, higher maternal task anxiety was associated with children's lower self-evaluations, but only of performance, a finding that also converges with previous literature on maternal anxiety and children's cognitions [13]. While there are multiple explanations for this finding, mothers who experience an increase in their state anxiety level when presented with a performance evaluation situation may be more likely to verbalize their worry regarding child performance and subtly communicate lower expectations for successful outcomes for their children's performance. Moreover, because they remained in the room during the speech delivery, it is possible that anxious mothers provided verbal or nonverbal feedback to their children regarding their performance that were then reflected in children's reports of their own performance.

However, contrary to our hypothesis, maternal task anxiety was not associated with children's self-evaluations of their distress and coping. It may be the case that maternal anxiety does not play as prominent a role in children's perceptions of their distress and coping relative to other parenting or child factors (e.g., maternal attributions, children's locus of control; [13, 14, 22]).

Maternal Behaviors—In line with our hypothesis, and consistent with theory [i.e., 14] and research [12, 13, 15, 34], analyses revealed that higher levels of overcontrolling maternal behaviors were associated with children's poorer self-evaluations of distress and performance. Specifically, children whose mothers told them what to talk about or directed the organization of the speech reported more distress after and poorer delivery of the speech compared to children whose mothers were more supportive of their independence and autonomy in generating the speech. As has been hypothesized by others, parenting behaviors that discourage independence may convey that the child does not have the ability to successfully navigate a challenging situation without significant assistance [14, 39], thereby increasing child distress and views of poor performance in a particular stressful situation (regardless of the child's level of anxiety).

In contrast to our hypothesis, maternal overcontrol was not related to children's self-evaluations of their coping. It may be that despite overcontrolling maternal behaviors that increase their distress, children are able to cope with their upsetting emotions, although they still perceive decrements in performance. Another explanation is that perhaps the speech task, although anxiety-provoking, did not elicit enough anxiety to see a range in coping outcomes. All children were able to complete the speech task and none of them exhibited behavioral signs of significant distress (e.g., crying, attempting to leave the room).

Children whose mothers made anxious verbalizations about speech topics or modeled anxious behaviors (e.g., wringing hands, biting the lip) reported more difficulty coping with

the situation compared to children whose mothers did not model as much anxiety. By selectively focusing on negative aspects of the situation (e.g., “Do you think you’ll be able to find enough to say for 5 min?”) rather than constructive cognitive coping (e.g., “You’ve never done this before, but I bet we can work together to come up with a good plan.”), mothers scoring high on anxious behavior may have shown less effective coping strategies that then shaped the perceived coping abilities of their children following the speech. Additionally, the content of some of the verbalized worries (e.g., “Do you think you’ll be able to give the speech without looking nervous?”) directly reflected mothers’ uncertainty (i.e., expectations) regarding children’s ability to manage their anxiety. In any one stressful situation, anxious behavior may result in a child’s questioning if and how he or she will cope with anxiety. Repeated exposure to threat transmission and/or anxious modeling by parents may shape children’s self-concept regarding how they cope with stressful situations.

Contrary to our hypothesis, anxious behavior was not related to children’s evaluations of their distress or performance. This finding is consistent with another study that found no effect of parental anxious behavior on performance, although performance was indicated by actual performance on a spelling test [8]. Parental anxious behavior may share commonalities with child coping, such that observing a parent cope poorly makes their own coping more salient to children than distress or performance when they are prompted to reflect on their coping. A sample of healthy children may be able to rationalize displays of maternal anxiety (e.g., “That’s just mom being anxious.”) and not let it increase their own distress or interfere with their performance.

Maternal Expectations—We hypothesized that maternal expectations would be associated with children’s self-evaluations, but this hypothesis was not supported. The lack of association between maternal expectations and child self-cognitions is consistent with some previous research [e.g., 13, 26] but incongruent with other studies showing that maternal expectations of children’s coping overlap with children’s reports of their coping [22]. The absence of an association between maternal expectations and children’s self-evaluations may reflect the true absence of a relationship, suggesting that maternal behaviors, rather than expectations, play a larger role in shaping children’s negative self-evaluations. This may occur because it is not enough for mothers to simply have expectations about their children, but that these expectations need to be conveyed to children in some verbal or behavioral way in order to shape their self-evaluations. In other research, these expectations are made explicit during family discussions [24, 25] or are confirmed by the child’s report of how their mothers would react to a given situation [8, 40]. By examining how parents naturally behaved when presented with a stressful performance evaluation situation, our study provides a complementary approach to one study involving experimental manipulation of parental expression of low expectations for the child’s success [i.e., 8].

Relative Contribution of Maternal Variables to Children’s Self-Evaluations

Results of this study indicated that maternal variables accounted for 15–19% of the variance in children’s self-evaluations. Of the maternal predictors included in the model, maternal behavior was the most robust predictor of child self-evaluations. Children whose mothers exhibited overcontrolling behaviors reported greater distress and poorer performance and children whose mothers displayed anxious behavior rated their coping as poorer than children whose mothers did not display these behaviors. Even though children’s reported anxiety about the speech task was initially associated with lower ratings of coping, when all of the variables were entered into the model, mothers’ behavior played a greater role in shaping children’s self-perceptions. It was only in the case of children’s ratings of their performance that mothers’ higher task anxiety also predicted poorer self-evaluations.

Although the task in this study serves as just a snapshot of behavior, repeated interactions involving maternal overcontrol and anxious behavior may result in restricted opportunities for the child to practice skills to attain mastery of his or her environment and lower a child's evaluations of themselves as someone with appropriate emotion regulation skills and competence in a particular task.

Clinical Implications

These results suggest that parenting behaviors such as maternal overcontrol and anxious behavior may be potential targets within family-based treatments for child anxiety. Psychoeducation for parents about how parenting behaviors may exacerbate or maintain children's negative self-perceptions and anxiety would be important to provide as the rationale for changing these behaviors. Parental monitoring could illuminate the frequency and context of parental overcontrol and anxious behavior. Armed with this information, clinicians and parents could collaboratively identify situations in which parents could systematically practice alternative behaviors. For example, a parent who usually expresses anxiety prior to a birthday party her child is about to attend (e.g., "I hope the other kids talk to you.") and exhibits overcontrol while at the party (e.g., talking for the child or telling the child what to say) might instead practice expressing positive statements ("This party is going to be fun!") and demonstrating behaviors that reinforce her child's independence (e.g., praise for social interaction, rehearsing ahead of time what the child might say, allowing for periods of silence while child thinks of something to say). A recent controlled study from our lab of a family-based preventive intervention targeting parenting behaviors in a similar manner yielded promising results for the prevention of child anxiety [30].

Limitations

It is important to consider the results, particularly the null findings, in light of several methodological limitations. As is true for other published studies of this nature, the measurement of the constructs have several flaws including (1) the reliance on a single indicator which may have been insufficient to fully capture the constructs of interest, (2) the restricted range of some of the variables (e.g., mothers reported generally high expectations for their children's outcomes; thus, a restricted range may have dampened the association with children's self-evaluations), (3) the absence of external validity data on the observational measures, and (4) the low level of anxiety evoked by the speech task. Although there was variability in the anxiety reported by mothers and children regarding the task, in general, the anxiety evoked was relatively mild (see Table 1). Thus, it is unclear whether similar findings would be found in situations that elicit stronger anxiety.

Maternal task anxiety, rather than maternal diagnostic status ("anxious" or "nonanxious") was selected as our independent variable because it reflects the dimensional nature of anxiety and we wanted to examine how maternal anxiety, behaviors, and expectations relate to children's outcomes in vivo. Although some might consider this a limitation, we believe that this approach complements approaches that rely on global constructs by providing the opportunity to generate inductive inferences that can be tested and used to refine theory based on what occurs within the moment.

Sample characteristics reflect another limitation to our study. Reliance on a community sample of families with children with subclinical levels of anxiety may have weakened the associations among these variables. Findings from a recent meta-analysis suggest that effect sizes of parenting behaviors on child anxiety tend to be smaller in nonclinical samples [41], but it is not clear if the same holds true for parental expectations and children's self-evaluations. The null findings for the associations between maternal behaviors and children's evaluations of their performance may reflect the ability of non-anxious youth to

manage the effects that maternal behaviors have on their emotions and coping to still deliver a satisfactory performance. Therefore, the generalizability of these findings to youth with anxiety disorders is unknown. Additionally, our small sample size may have limited the statistical power to detect significant associations.

Finally, the study was correlational and therefore could not provide evidence of causal associations. A longitudinal design would permit stronger conclusions regarding the associations between maternal factors and children's self-evaluations.

Summary

This study examined the association between maternal factors (i.e., anxiety, behavior, expectations) and children's self-evaluations of distress, coping, and performance in a sample of 75 mothers and one of their children who participated in a speech delivery paradigm. Findings from the present study suggest that maternal factors account for a small (i.e., 15–19%) but significant proportion of variance in children's evaluations of distress, coping, and performance during an in vivo task. Maternal anxiety and behaviors (i.e., overcontrol, anxious behavior) demonstrated stronger associations with children's self-evaluations than did maternal expectations. Although the study is limited by the use of single indicators of constructs, it provides the groundwork for future researchers to use similar methodology to examine how maternal and child factors interact in anxiety-provoking situations. Continued refinement and use of ecologically valid assessments of parent-child interactions is important to identifying the specific situations that activate the influence of maternal factors on children's cognitions about themselves as well as potential mediators (e.g., maternal behaviors and cognitions, children's external locus of control) and moderators (e.g., child and parent gender) of the association between maternal factors and children's self-evaluations.

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Table 1

Means and standard deviations for anxiety, behavior, expectations, and outcomes

| Variable | Total sample (<i>N</i> = 75) M (SD) | Anxious mothers (<i>n</i> = 38) M (SD) | Healthy mothers (<i>n</i> = 37) M (SD) | <i>t</i> |
|---------------------------|---|--|--|----------|
| Maternal variables | | | | |
| Task anxiety | 1.34 (1.57) | 1.97 (1.76) | 0.70 (1.05) | 3.78** |
| Overcontrol | 0.88 (0.80) | 0.86 (0.91) | 0.91 (0.68) | 0.27 |
| Anxious behavior | 0.38 (0.55) | 0.49 (0.61) | 0.27 (0.45) | 1.62 |
| Expectations: distress | 1.99 (0.83) | 2.18 (0.73) | 1.78 (0.89) | 2.14* |
| Expectations: cope | 3.88 (1.00) | 3.66 (0.88) | 4.11 (1.07) | 1.99 |
| Expectations: Performance | 4.19 (0.74) | 4.06 (0.71) | 4.32 (0.75) | 1.57 |
| Child variables | | | | |
| Task anxiety | 2.18 (2.06) | 2.51 (2.05) | 1.83 (2.05) | 1.42 |
| Distress | 1.67 (0.94) | 1.86 (1.00) | 1.47 (0.84) | 1.81 |
| Coping | 3.86 (1.33) | 3.57 (1.34) | 4.17 (1.25) | 1.97 |
| Performance | 3.86 (1.27) | 3.65 (1.40) | 4.08 (1.11) | 1.47 |

**
 $p < .01$;*
 $p < .05$

Table 2

Correlations among maternal task anxiety, behavior, and expectations

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------------------------|-------|--------|-------|--------|------|-------|------|--------|------|
| 1. Maternal task anxiety | | | | | | | | | |
| 2. Expectation: child upset | .24* | | | | | | | | |
| 3. Expectation: child cope | -.20 | -.34** | | | | | | | |
| 4. Expectation: child perform | -.26* | -.42** | .61** | | | | | | |
| 5. Maternal overcontrol | .06 | -.02 | -.02 | .06 | | | | | |
| 6. Maternal anxious behavior | .29* | .02 | -.05 | -.35** | .01 | | | | |
| 7. Child task anxiety | .25* | .17 | -.03 | -.11 | .21 | .09 | | | |
| 8. Child distress | .17 | .09 | .02 | .00 | .31* | .07 | -.03 | | |
| 9. Child coping | -.15 | .08 | .12 | .13 | -.15 | -.32* | -.19 | -.13 | |
| 10. Child performance | -.28* | .10 | .08 | .19 | -.23 | -.12 | -.13 | -.30** | .29* |

* $p < .05$;** $p < .01$

Table 3

Hierarchical linear regression predicting children's self-evaluations of distress

| | <i>B</i> | <i>SE B</i> | β |
|--------------------------------|----------|-------------|---------|
| Step 1 | | | |
| Constant | 1.70 | 0.17 | |
| Child task anxiety | -0.02 | 0.06 | -0.05 |
| Step 2 | | | |
| Constant | 1.10 | 0.32 | |
| Child task anxiety | -0.09 | 0.06 | -0.19 |
| Maternal task anxiety | 0.12 | 0.07 | 0.20 |
| Maternal overcontrol | 0.37 | 0.14 | 0.33** |
| Maternal anxious behavior | 0.03 | 0.21 | 0.02 |
| Maternal expectation: distress | 0.12 | 0.14 | 0.11 |

$R^2 = 0.003$ for Step 1 ($p > .05$); $\Delta R^2 = 0.16$ for Step 2 ($p < .05$).

**
 $p < .01$

Table 4

Hierarchical linear regression predicting children's self-evaluations of coping

| | <i>B</i> | <i>SE B</i> | β |
|----------------------------|----------|-------------|---------|
| Step 1 | | | |
| Constant | 4.25 | 0.23 | |
| Child task anxiety | -0.16 | 0.08 | -0.25* |
| Step 2 | | | |
| Constant | 3.90 | 0.68 | |
| Child task anxiety | -0.12 | 0.08 | -0.18 |
| Maternal task anxiety | -0.05 | 0.10 | -0.06 |
| Maternal overcontrol | -0.16 | 0.19 | -0.10 |
| Maternal anxious behavior | -0.65 | 0.29 | -0.28* |
| Maternal expectation: cope | 0.19 | 0.16 | 0.15 |

$R^2 = 0.06$ for Step 1 ($p < .05$); $\Delta R^2 = 0.13$ for Step 2 ($p < .10$).

* $p < .05$

Table 5

Hierarchical linear regression predicting children's self-evaluations of performance

| | <i>B</i> | <i>SE B</i> | β |
|-------------------------------|----------|-------------|---------|
| Step 1 | | | |
| Constant | 3.99 | 0.24 | |
| Child task anxiety | -0.07 | 0.08 | -0.11 |
| Step 2 | | | |
| Constant | 3.29 | 1.06 | |
| Child task anxiety | 0.01 | 0.08 | 0.12 |
| Maternal task anxiety | -0.21 | 0.11 | -0.26* |
| Maternal overcontrol | -0.35 | 0.20 | -0.22* |
| Maternal anxious behavior | 0.07 | 0.31 | 0.03 |
| Maternal expectation: perform | 0.27 | 0.23 | 0.15 |

$R^2 = 0.01$ for Step 1 ($p > .05$); $\Delta R^2 = 0.14$ for Step 2 ($p < .10$).

* $p < .05$