The bidirectional relation between parental controlling behavior and child anxiety
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The Netherlands. You will be contacted as soon as possible.
3 What influences parental controlling behavior? The role of parent and child trait anxiety*

The relative contribution of child and parent trait anxiety on paternal and maternal controlling behavior was examined. Thirty-seven children, aged 8-11 years, completed two difficult Tangram puzzles, one with their father and one with their mother. Videotapes of the parent-child interactions were rated on parental control and child dependent and withdrawn behavior. Results indicated that, opposite to expectations, higher mother and father trait anxiety was associated with lower levels of parental control, and that the relation between parent trait anxiety and parental control was curvilinear. Furthermore, a significant stronger effect between child trait anxiety and parental control was found for boys than for girls. Moreover, more child withdrawal during the parent-child interaction was related to more parental control. The findings offer new insights which may guide future theories on child and parent anxiety and parental control. Specifically, the role of parent and child gender need further conceptualisation and research.

Bidirectionality between parental control and child anxiety

3.1 Introduction

A body of theoretical literature and research has emphasized the importance of parental control or overinvolvement—considered as the pressure parents put on their children to behave in desired ways—in relation to child anxiety. Of all parenting behaviors, parental control is considered most central to the development of anxiety in children. This parental control may lead to an increase in the children’s perception of threat and to a reduction of the children’s perceived control over threat. This pattern may enhance child trait anxiety by increasing children’s avoidance to challenging events, as children will not develop new skills to cope with these situations (Barlow, 2002; Rapee, 2001). Recently, two meta-analyses by Van der Bruggen, Stams, and Bögels (2008) and McLeod, Wood, and Weisz (2007) showed a medium-to-large overall effect size for the relation between parental control during a parent-child interaction and child anxiety. These analyses underscore the importance of gaining more knowledge regarding the role of child and parent factors that are associated with the level of control parents exert interacting with their children.

Researchers have discussed the transactional nature of parent-child interactions and the effect of child trait anxiety on parental control. Trait anxious children have the tendency to behave anxious during challenging situations (Lau, Eley, & Stevenson, 2006). Parents exert control in anticipation of the children’s anxiety-related distress (Rapee, 2001). Trait anxious children tend to externally display their distress with avoidant behaviors during situations they perceive as threatening: dependent behavior (e.g., asking parents for help) and/or withdrawal (Barlow, 2002). These avoidant behaviors provoke parental controlling behavior (Bugental, Caporael, & Shennum, 1980; Osofsky & O’Connell, 1972), suggesting that children’s avoidant behaviors displayed in interaction with their parents may be the mechanism through which parental control is influenced by child trait anxiety.

Children’s anxiety-related avoidant behaviors alone, however, might not be a sufficient explanation for the degree of control that parents execute. In particular parents’ trait anxiety level has been proposed to influence parental control (e.g., Bögels & Brechman-Toussaint, 2006; Turner, Beidel, Roberson-Nay, & Tervo, 2003). Highly trait-anxious parents tend to perceive challenging new situations for their children as threatening. They therefore may execute increased parental
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control to avoid threatening situations and to avoid feeling anxious. These parents control their children’s behavior by preventing them from facing new challenging situations (Wood, 2006; Woodruff-Borden, Morrow, Bourland, & Cambron, 2002). In contrast to expectations, the meta-analysis of Van der Bruggen et al. (2008) found no significant overall effect size for the relation between parent anxiety and observed parental control. Results of the few observational studies examining the link between parent anxiety and parental control have been inconsistent (e.g., Moore et al., 2004; Turner et al., 2003). Possibly, parent anxiety may not only result in control but also in a lack of control or withdrawal. Parents may become more withdrawn to avoid their own anxious feelings. Indeed, Woodruff-Borden et al. (2002) found preliminary evidence for a relation between parent anxiety and parental withdrawal during an anagram and a speech task. They argued that high parent anxiety may lead to a reduction in parental effort during interaction with their children. It may be that parents’ resources are allocated to managing their own distress with little reserve for assisting their child in challenging situations.

The current study examined the relative contribution of child trait anxiety and parent trait anxiety on actual parental controlling behavior observed during a parent-child interaction. The main goal was to investigate the relative contribution of child trait anxiety and parent trait anxiety on maternal and paternal controlling behavior. We hypothesized that higher child trait anxiety would be associated with a higher level of parental control. Second, the role of children’s avoidant behaviors (dependency and withdrawal) in mediating the hypothesized association between child trait anxiety and parental control was examined. Third, the possibility of a curvilinear relation between parent trait anxiety and parental control was investigated. That is, high parent trait anxiety being associated with both high and low levels of parental control. Fourth, although past research on anxiety and parental control has been mostly limited to mother-child interactions, there are no a-priori reasons to assume that the father’s role would be less important (Bögels & Phares, 2008). Evidence for a relation between child and father anxiety and paternal control is inconclusive (e.g., Greco & Morris, 2002; Hudson & Rapee, 2002). Therefore, the present study examined both maternal and paternal control. We examined whether the relationships between child trait anxiety, parent trait anxiety and parental control differed as a function of both parent and child gender.
3.2 Method

3.2.1 Participants

Thirty-seven children (21 boys and 16 girls) of two elementary schools in Brabant, the Netherlands, and both their parents participated. The children ranged from 8 to 11 years of age, with a mean of 9.62 (SD = .89) years. All participating mothers and 87% of fathers were biological parents and all parents were living in the same household as the participating child. The families were primarily Dutch (97%) and college-educated (60% of the mothers and 68% of the fathers having a college degree or more).

At school, 55 children completed the self-reported trait version of the Spielberger State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973). Of these 55 children, 12 were excluded, because they had a sibling who scored higher on the STAIC. This higher trait anxious sibling was selected to increase the variance in child trait anxiety in the sample. After completion of the STAIC, two families declined to participate in the parent-child interactions. Of the remaining 41 families, four fathers declined to participate in the observation, citing time constraints, divorce or single parenting. Videotaped observations of the mother-child interactions of these families were used for training the raters.

3.2.2 Measures

Tangram Task (Hudson & Rapee, 2002). Solving a difficult Tangram puzzle was the standardized situation chosen for observing parental control, because it facilitates stress in parents and children. Also, a behavioral task is helpful because observations of parenting are less subject to the parents’ tendency to present their parenting behaviors as more favourable than they actually are than parent-self reports of child-rearing practices (O’Connor, 2002). Parental control was easy to elicit because parents received the solution to the puzzle, and control was measured in unambiguous ways (e.g., parent touching the puzzle). Parental control during the Tangram puzzles was defined as intruding in the child’s behavior while the child is completing the puzzles. To measure parental control as a broad concept, different scorings systems were used to focus on micro-level of non-verbal parental control as well as global verbal aspects of parental control. Children’s avoidant behaviors (dependency and withdrawal) were coded to
measure children’s external displays of their anxiety-related distress during the Tangram puzzles.

*Spielberger State-Trait Anxiety Inventory for Children (STAIC) and adults (STAI).* In line with the study of Krohne and Hock (1991), child and parent trait anxiety were assessed using the STAIC and STAI (Spielberger, 1973; 1983). The STAIC trait version was investigated in a Dutch sample of non-clinical children ($M = 12$ years). The scale has satisfactory to high internal consistency, reasonable test-retest reliability, and high convergent and discriminative validity (Bakker, Van Wieringen, Van der Ploeg, & Spielberger, 1989). The STAI was studied in a Dutch sample of students and the scale has high internal consistency and test-retest reliability, and satisfactory convergent validity (Van der Ploeg, Defares, & Spielberger, 1979).

*Krohne and Hock’s parental control rating.* Parental control during the parent-child interaction was coded with a hierarchical coding system consisting of three stages: (1) coding behavioral states; (2) measuring the frequency of controlling and autonomy granting transitions between those states; and (3) obtaining the total parental control versus autonomy granting score. In the first stage, the behavioral state of every 5 second interval, was coded for a visually perceptible behavior: (a) both child and parent working on the Tangram puzzle, (b) child working alone, (c) parent working alone, or (d) nobody working. In the second stage, frequencies of controlling and autonomy granting transitions between states were determined. In the coding system of Krohne and Hock parental autonomy granting was conceptualized as the opposite of parental control. If any of the following five transitions were observed between states, they were coded as parental control: child working alone followed by parent working alone, both child and parent working followed by parent working alone, child working alone followed by both child and parent working, nobody working followed by parent working alone, and finally parent working alone followed by parent working alone. If the following four transitions were observed between states, they were coded as parental autonomy granting: child working alone followed by nobody working, nobody working followed by child working alone, both child and parent working followed by child working alone, and child working alone followed by child working alone. In the third stage the frequency of parental autonomy granting transitions was subtracted from the frequency of parental controlling transitions to obtain one score (parental control versus...
autonomy granting). A high total score indicated a high parental control level. Inter-rater reliabilities were almost perfect, for mother, $IC = .999$, and father, $IC = .999, ps < .001$.

**Hudson and Rapee’s parental control rating.** Global parental control during the parent-child interaction was coded on five global scales: (a) degree of unsolicited help, (b) general degree of help, (c) touching of the Tangram pieces, (d) parent’s focus during the interaction: towards the child (autonomy granting) or towards the task (control), (e) parent’s posture: leaning back in own chair (autonomy granting) or hovering over the child, seated right at the table (control). Each of these five scales ranged from 0 (indifference) through to 4 (neutral) to 8 (extreme controlling). Scores on the scales were averaged to obtain a total score and a high score indicated a high level of parental control. Inter-rater reliabilities were almost perfect, for mother, $IC = .997$, and father, $IC = .998, ps < .001$. Based on the high correlation between Hudson and Rapee’s and Krohne and Hock’s scoring system, $r = .68$ for mothers, and $r = .66$ for fathers, $ps < .001$, scores of the two scoring methods were centred and averaged.

**Rating child avoidant behavior.** Child dependent and withdrawn behaviors during the parent-child interaction were coded. Child dependent behavior was rated on a verbal scale (e.g., “asks parent for help”) and a non-verbal scale (“leans against parent”). Withdrawn behavior towards the Tangram puzzle (e.g., “complains that the task is not fun”) was coded on one scale. Each of these three scales ranged from 0 (no presence of the behavior) to 6 (presence of the behavior for most of the parent-child interaction). Scores on verbal and non-verbal dependent behavior scales were averaged, as the scales correlated, $r = .45$ for mothers, and $r = .46$ for fathers, $ps < .01$. Inter-rater reliabilities were excellent for child dependent and withdrawn behavior with mother and father, $IC = .92, .96, .93$, and .85 respectively, $ps < .001$.

### 3.2.3 Procedure

The study was approved by a university general research ethics board and informed consent was obtained from parents and children. Parent-child interactions were videotaped during the Tangram puzzles task, twice in a 10-minute period, once with the mother and once with the father sitting next to the child (order was counterbalanced). Parents were told that they could help the child, when they thought the child needed help solving the puzzles. Parents were
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given puzzles solution to ensure that help was not limited by their own skills. One parent completed the self-reported trait version of the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger, 1983) while the other parent was in interaction with the child. To improve ecological validity of the parent-child interactions, the observations were conducted in the family’s home. Two trained raters (clinical psychologists), who were blind to trait anxiety levels, coded all parent-child interactions on parental control level. Two other trained raters (clinical psychologists), who were blind to parental control and trait anxiety levels, coded all parent-child interactions on child dependent and withdrawn behaviors. Based on the high inter-rater reliabilities (.85 < IC < .999), the raters’ scores on parental control, child dependency, and child withdrawal were averaged for further data analyses.

3.3 Results

3.3.1 Descriptive statistics and data analysis framework

The means for child, mother, and father trait anxiety were 33.38, 32.73, and 30.27 respectively (SDs = 6.75, 6.53, and 6.23); the means for child, mother, and father trait anxiety from Dutch norm data were 32.3, 39.4, and 37.0 respectively (SDs = 6.0, 11.2, and 10.3) (Bakker et al., 1989; Van der Ploeg et al., 1979). The means for child dependent and withdrawn behavior with mother and father were 2.43, .54, 2.36, and .46, respectively (SDs = 1.44, 1.22, 1.31, and 1.20). Standardized variable values of child trait anxiety, parent trait anxiety, their cross-product interaction with child gender, and child dependent and withdrawn behaviors were examined.

To examine the relative contribution of child trait anxiety and parent trait anxiety on parental control, two separate hierarchical regression analyses were calculated for both mothers’ and fathers’ parental control (in total 4 regression models). For the first analysis, in step 1, child trait anxiety, parent trait anxiety, and child gender were added in the model to examine their unique contribution on parental control. To determine whether the relation of child trait anxiety with parental control differed as a function of child gender, in step 2, the child trait anxiety × child gender interaction term was entered. For the second analysis, in step 1, child trait anxiety, parent trait anxiety, and child gender were entered in
the model and in step 2, parent trait anxiety × child gender was added. To examine the nature of the significant interaction effects, additional regression analyses, separately for boys and girls, were calculated. Child and parent trait anxiety were entered in step 1.

To examine if children’s dependent and withdrawn behaviors (avoidant behaviors) mediate the hypothesized relation between child trait anxiety and parental control, two separate mediation models were tested for mothers’ and fathers’ parental control (in total 4 mediation models). Baron and Kenny’s (1986) criteria were used to test for mediation: (1) child trait anxiety must be related to parental control, (2) child trait anxiety must be associated with child avoidant behaviors, (3) child avoidant behaviors must be related to parental control, and (4) the relationship between child trait anxiety and parental control is no longer significant after controlling for child avoidant behaviors. Criteria 1-3 were assessed with hierarchical regression analyses and parent trait anxiety and child gender were controlled for. The effects for criterion 4 were examined when criteria 1-3 were met. The results of step 1 in the regression analyses, examining the relative contribution of child trait anxiety on parental control, showed whether criterion 1 of the mediation model was met. To examine criterion 2, separately for interacting with mothers and fathers, child trait anxiety, parent trait anxiety, and child gender were added in the model explaining child withdrawn or dependent behaviors (in total 4 regression analyses). To examine criterion 3, separately for mothers and fathers, child withdrawn or dependent behaviors, parent trait anxiety, and child gender were added in the model explaining parental control (in total 4 regression analyses). In addition, the possibility of a curvilinear instead of a linear relation between parent anxiety and parental control was investigated by calculating curve estimations.

3.3.2 Maternal control

Examining the relative contribution of child trait anxiety and parent trait anxiety on maternal control (n = 37), in step 1 mother trait anxiety was significant, $\beta = -.37, p < .05$, that is high mother trait anxiety was associated with low levels of maternal control. Not child anxiety, $\beta = .15, p > .10$, nor child gender were significant, $\beta = -.15, p > .10, F(3, 36) = 2.11, p > .10$. Examining the interaction between child trait anxiety and child gender, step 2 showed a significant interaction, $\beta = -.46, p < .05, F(4, 32) = 2.83, p < .05$. Examining the
interaction between mother trait anxiety and child gender, step 2 revealed a non-
significant effect, $\beta = -.11$, $p > .10$, $F(4, 32) = 1.60$, $p > .10$. Interpreting the
interaction effect of child trait anxiety $\times$ child gender, regression analyses,
separately for boys and girls, revealed a positive trend between child trait anxiety
and maternal control for boys ($n = 21$), $\beta = .41$, $t = 1.75$, $p = .10$, but not for girls
($n = 16$), $\beta = -.22$, $t = -1.02$, $p > .10$. Figure 1 demonstrates, separately for boys
and girls, the scatterplots and regression lines of the relation between child trait
anxiety and parental control. The results of these regression analyses showed that
criterion 1 of the mediation model of child avoidant behaviors in the hypothesized
relation between child trait anxiety and maternal control was not met. That is, in
step 1, child trait anxiety was not related to maternal control. Examining criterion
2, child trait anxiety was neither significantly related to child dependent, $\beta = -.19$,
$p > .10$, $F(3, 36) = .46$, $p > .10$, nor withdrawn behaviors in interaction with
mother, $\beta = -.14$, $p > .10$, $F(3, 36) = 1.68$, $p > .10$. Examining criterion 3, a
positive trend between child withdrawn behavior and maternal control was found,
$\beta = .32$, $p < .10$, $F(2, 36) = 3.25$, $p < .05$, but no relation with child dependent
behavior, $\beta = .10$, $p > .10$, $F(2, 36) = 1.95$, $p > .10$. As not all criteria were met,
criterion 4 was not examined.

In addition, a significant curvilinear relation was found between mother trait
anxiety and maternal control, $F(2, 34) = 6.76$, $p < .01$. Figure 2 demonstrates the
scatterplot and curvilinear line of the association between mother anxiety and
maternal control.
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Figure 1
Scatterplot and Regression Lines of the combined Association between Child Anxiety and Maternal and Paternal Control controlled for Mother and Father Anxiety separately for Boys and Girls
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Figure 2
Scatterplot and Curvilinear Lines of the Association between Parent Anxiety and Parental Control separately for Mothers and Fathers with Girls
3.3.3 Paternal control

Examining the relative contribution of child trait anxiety and parent trait anxiety on paternal control \((n = 37)\), in step 1 neither child trait anxiety, father trait anxiety nor child gender, \(\beta = .17, \beta = .02,\) and \(\beta = -.11,\) respectively, \(ps > .10,\) were significant, \(F(3, 36) = .43, p > .10.\) For both analyses step 2 showed an effect of child trait anxiety \(\times\) child gender, \(\beta = -.54, p < .05, F(3, 32) = 1.83, p > .10\) and father trait anxiety \(\times\) child gender, \(\beta = -.65, p = .001, F(4, 32) = 3.60, p < .05.\) Interpreting the interaction effect of child trait anxiety \(\times\) child gender, analyses showed a positive trend between child trait anxiety and paternal control for boys \((n = 21), \beta = .39, t = 1.91, p < .10,\) but not for girls \((n = 16), \beta = -.15, t = -.82, p > .10\) (see Figure 1). Results on the father trait anxiety \(\times\) child gender interaction, revealed that higher father trait anxiety was significantly associated with lower paternal control for girls, \(\beta = -.70, t = -3.73, p < .01,\) but no significant effect for boys, \(\beta = .31, t = 1.53, p > .10\) (see Figure 2).

The results of these regression analyses showed that criterion 1 of the mediation model of child avoidant behaviors in the hypothesized relation between child trait anxiety and paternal control was not met. That is, in step 1, child trait anxiety was not related to paternal control. Examining criterion 2, child trait anxiety was neither significantly related to child dependent, \(\beta = -.26, p > .10, F(3, 36) = .83, p > .10,\) nor child withdrawn behaviors in interaction with father, \(\beta = .25, p > .10, F(3, 36) = 1.20, p > .10.\) Examining criterion 3, child withdrawn behavior was significantly related to paternal control, \(\beta = .34, p = .05, F(2, 36) = 1.52, p > .10,\) but not to child dependent behavior, \(\beta = .22, p > .10, F(2, 36) = .71, p > .10.\)

In addition, as an effect of child gender was found in the relation between father trait anxiety and paternal control, the possibility of a curvilinear relation was examined separately for boys and girls. A significant curvilinear relation between father anxiety and paternal control was found for girls, \(F(2, 13) = 7.89, p < .01,\) but not for boys, \(F(2, 18) = 2.07, p > .10\) (see Figure 3).
Figure 3
Scatterplot and Regression Lines of the Association between Father Anxiety and Paternal Control controlled for Child Anxiety separately for Boys and Girls.
3.4 Discussion

This study examined the relative contribution of child trait anxiety and parent trait anxiety on parental controlling behavior. The main findings of this pilot study are as follows: (a) opposite to expectations, a higher level of mother and father trait anxiety was associated with a lower degree of maternal and paternal control; (b) in line with expectations, higher boys’ trait anxiety was related with more maternal and paternal control; (c) child withdrawn behaviors were positively related to maternal and paternal control.

Results of this study showed that mother and father trait anxiety was negatively related to their parental control level. Additional analyses revealed that the relation between parent trait anxiety and parental control is curvilinear. This indicates that high parent trait anxiety was associated with both high and low levels of parental control. These results suggest that in challenging new situations for their children, high trait anxious parents may become (a) more controlling to avoid these situations, or (b) more withdrawn to avoid their anxious feelings or caused by the high effort required to manage their own distress in these situations. It should be noted, however, that neither a linear nor a curvilinear effect was found for father-son dyads.

As expected, results indicated that high boys’ trait anxiety was related to a high level of maternal and paternal control. A significant different effect of child trait anxiety was found for boys and girls on parental control. A possible explanation for this gender difference is that boys are being socialized to control their emotions, whereas girls are being encouraged to express a wider range of emotions. By responding controlling, parents may try to ensure that their sons remain calm (Eisenberg, Cumberland, & Spinrad, 1998). This may derive from infant boys having more difficulty than infant girls in regulating their emotions (Weinberg, Tronick, Cohn, & Olson, 1999). Moreover, parents may attach more value to boys’ than to girls’ performance on tasks such as the Tangram puzzle (e.g., Alessandri & Lewis, 1993), thereby controlling their anxious sons’ performance more.

As no significant relation was found between child trait anxiety and child avoidant behaviors (dependency and withdrawal) during the parent-child interaction, these avoidant behaviors were apparently not the mediator through which child trait anxiety leads to parental control. Results suggested that in children more withdrawn behaviors and high trait anxiety (in boys) lead to more...
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maternal and paternal control. Children’s trait anxiety may represent parents’ expectations regarding their children’s behaviors in challenging situations, whereas children’s actual behavior during these situations is largely influenced by situation-specific environmental factors (Lau et al., 2006). Current results suggest that in parents, controlling behavior may be elicited due to their expectations regarding their children’s (sons’) anxiety level as well as the actual withdrawn behaviors their children express during a challenging task. It should be noted, however, that children’s withdrawal and parents’ controlling behaviors were measured during the same observation. Therefore, a high level of parental control could have caused more withdrawn behaviors in children.

An important limitation of the study that should be mentioned is that, because of the rather small sample size, the study lacked power. The findings regarding child gender differences, especially need to be interpreted with caution. Therefore, a replication of this study in a larger sample is necessary. The null-findings and unexpected results on parent trait anxiety, may be due to examining parent-child interactions during a challenging task instead of an anxiety-provoking task. Future research should examine parent-child processes during a task, which elicits child and parent anxiety. The focus on a relatively homogeneous non-clinical sample, limits the ability to generalize results of the present study to other families such as families with a clinically anxious child. The current study was correlational rather than experimental in nature, which limits the ability to make inferences regarding a causal link between child anxiety and parental control. The research field clearly needs experimental designs to investigate the causality between child anxiety and parental control.

Despite the limitations of this pilot study, results offer some new insights to guide future theories and research on child and parent anxiety and parental control. Future research may help clarify a possible curvilinear relation between parent trait anxiety and parental control. Moreover, the way child and parent gender shape the relations between child and parent anxiety and parental control needs special attention. Further growth of knowledge on the way child trait anxiety through specific child behaviors cause parental control is also needed.