

# Rough-and-Tumble Play and Other Parental Factors as Correlates of Anxiety Symptoms in Preschool Children

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**Abstract** The present study investigated the relationship between parental rough-and-tumble (R&T) play and young children's anxiety symptoms. Parents of 105 non-clinical children (61 boys and 44 girls aged between 2 and 6 years) completed indices of childhood anxiety symptoms and parental trait anxiety and overprotection, as well as the Parental Play and Care Questionnaire, which was developed for the purpose of this study to assess parental R&T play and care activities. Results showed that fathers exhibited more R&T play towards their offspring, while mothers more often engaged in care activities. As predicted, trait anxiety and overprotection of mothers were positively related to child anxiety symptoms. No support was found for the idea that parental R&T play would be negatively related to childhood anxiety. However, an interaction effect of fathers' trait anxiety and R&T play on anxiety symptoms of the child was found: children tended to display higher levels of anxiety symptoms when their low trait anxious fathers were more involved in R&T play. The results provide support for the notion that mothers and fathers have unique parenting roles, which may have a differential impact on the development of anxiety symptoms in children.

**Keywords** Children's anxiety · Rough-and-tumble play · Parental anxiety · Overprotective parenting

## Introduction

Fear and anxiety are common in childhood (Muris and Field 2011). In general, these phenomena have a normative character as they occur in response to developmental challenges which children usually learn to master within a relatively short period of time. However, a sizable minority of the children develop an anxiety disorder: in these cases the emotional symptoms become so chronic and intense that they start to interfere with daily functioning (Costello et al. 2003). It is a well-established fact that fear, anxiety, and their disorders run in families. According to top-down studies, children of parents with anxiety disorders are more likely to suffer from anxiety problems than children of non-anxious parents (e.g., Micco et al. 2009). Bottom-up studies have revealed that the reverse is also true: anxiety disorders are more prevalent in parents of anxious children than in parents of non-anxious children (e.g., Cooper et al. 2006). Part of this relationship can be attributed to heritability (Eley 2001), but a significant proportion is thought to be accounted for by learning mechanisms that occur within the family, including parental modeling, reinforcement, and threat information transmission (Fisak and Grills-Taquechel 2007).

Within the context of the family, a considerable amount of research has also focused on overprotective parenting as a variable that increases the risk for anxiety problems in young people (for reviews, see McLeod et al. 2007; Van der Bruggen et al. 2008). It is assumed that parents with this style try to shield their child from potential danger by intrusively providing unnecessary help and restricting exposure to a broad range of situations. The net effect is that the child's fear and anxiety are enhanced because parents increase the awareness of danger, reduce the level of perceived control, and promote avoidance behavior in

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their offspring (Rapee 1997). Research has indeed demonstrated that overprotective parenting is associated with or even predictive of anxiety problems in youths (Edwards et al. 2010a; Hudson and Rapee 2001, 2002), and it has been suggested that this may be especially true in the preschool years (Lewis-Morrarty et al. 2012) when the family environment plays a dominant role in children's lives (Baumrind 1967).

Besides parental influences that promote fear and anxiety in children, there may also be factors within the family that shield offspring from developing these emotional problems. In a theoretical model specifying the parental influences in the etiology of childhood anxiety, Bögels and Phares (2008) advanced 'physical and challenging play' as a parental variable that protects children against fear and anxiety. 'Rough-and-tumble' (R&T) play is a specific type of this physical and challenging play, which is defined as a physically vigorous set of behaviors such as chase, jump, and play fight, accompanied by positive affect from the players towards one another (Pellegrini 1995). Parents who frequently engage in R&T play would learn their children to interpret the internal arousal that is elicited during these exciting activities (e.g., accelerated heart rate) as 'fun and pleasure' rather than 'fear and anxiety', thereby making them more tolerant to such arousal in other socially and physically challenging situations (Bögels and Phares 2008; Bögels and Perotti 2011).

Studies investigating parental influences on childhood anxiety have typically focused on mothers while neglecting the role of fathers, which is likely to be the result of the fact that the former are more easy to recruit than the latter. Although this has been partly justified by pointing out that mothers are the main caregivers as they usually spend more time with their child, it can also be considered as an important shortcoming of this research because there are good reasons to assume that fathers play a quite different role than mothers in the upbringing of their offspring. From an evolutionary perspective it has been argued that mothers try to establish an attachment relationship with their children by engaging in care activities, whereas fathers try to form an activation relationship with their children and thus promote their offspring to conduct physical and socially competitive behaviors (Dumont and Paquette 2013; Paquette 2004). There are indications that these differential roles of mothers and fathers indeed exist and already are present at a fairly young age (Verhoeven et al. 2012). Furthermore, it is generally assumed that parents have a significant impact on the formation of children's gender roles (Witt 1997). This implies that both mothers and fathers are more inclined to enhance physical play behaviors in their sons, while they have a stronger tendency to promote care behaviors in their daughters (Möller et al. 2013), although it has also been found that fathers

differentiate more strongly in their gender typing behavior towards boys and girls than mothers (Jacklin et al. 1984; Lindsey and Mize 2001). Altogether, as there are sufficient indications for the differential roles of mothers and fathers in the upbringing of children, it is clear that the strong focus on mothers in previous studies has yielded an incomplete picture of the effects of parenting on childhood anxiety. So it seems important to consider the contribution of parenting behaviors of both mothers and fathers to the development of this type of child psychopathology (Bögels and Phares 2008; Paquette 2004).

Research examining the relation between arousing and challenging play and the development of internalizing disorders is sparse. One exception is a study by Gaumon and Paquette (2013) who employed the Risky Situation procedure to assess the father-child activation relationship in 51 children aged between 2 and 5 years. The Risky Situation procedure (Paquette and Bigras 2010) consists of challenging social (i.e., interacting with a stranger) and non-social (i.e., climbing a stepladder) activities, during which it can be observed to what extent fathers encourage their offspring to explore the environment and to engage in risk-taking behaviors. Results demonstrated that those children who were under-activated by their fathers exhibited higher scores on the internalizing symptoms scale (which includes items about fears and anxiety) of the Child Behavior Checklist (Achenbach and Rescorla 2000) than children who were properly activated by their fathers. This result fits nicely with the idea that children are less prone to display fear and anxiety symptoms in case fathers stimulate them to face possible challenges in the external world.

Another study by Majdandžić et al. (2014) investigated the relation between parental challenging activities and child social anxiety in 94 families. Fathers and mothers were separately observed while interacting with one of their two children aged 2 and 4 years, who had to conduct a series of novel activities. Children's social anxiety was measured by observing their response to a stranger at Time 1, and half a year later at Time 2. Only in the 4-year-old children significant effects were documented, but in line with the predictions, the results showed that fathers' challenging parenting behavior predicted lower levels of subsequently observed social anxiety. Surprisingly, however, mothers' challenging parenting behavior predicted higher levels of observed social anxiety, which further underlines the idea that parenting behaviors of mothers and fathers may have a quite different impact on child anxiety.

It is important to note that the Gaumon and Paquette (2013) and the Majdandžić et al. (2014) study employed an observational approach to assess the social-emotional challenging behaviors of parents, thereby neglecting physical play and challenge (such as R&T play) activities, which according to the model proposed by Bögels and Phares

(2008) are so pertinent within the context of childhood anxiety. The present study was conducted to fill this gap, and further explored the relationship between challenging parenting—in particular R&T play—and childhood anxiety. Parents of 105 2- to 6-year-old children were asked to complete the Parental Play and Care Questionnaire (PPCQ), a scale that was specifically designed for the purpose of this study to measure mothers' and fathers' challenging/encouraging activities, R&T play, and care behaviors towards their offspring. In addition, parents filled out measures of their own dispositional anxiety and overprotective rearing behavior as well as an index of anxiety symptoms in their children. This enabled us to study (1) differences in R&T play as well as care activities between both parents, with the expectation that fathers would exhibit more R&T play with their children, while mothers would display more care behaviors. Furthermore, we examined whether (2) the R&T play activities of both parents would differ depending on the gender of the child. Here we expected that in particular fathers would more often engage in R&T play with boys than with girls, while such a distinction in the gender-specific employment of R&T play was not predicted for mothers. We also investigated (3) the relations between R&T play of parents on the one hand, and parental anxiety and overprotection on the other hand. The hypothesis was that these relations would be negative, which is in keeping with the notion that more anxious and overprotective parents are more cautious and thus engage less in R&T play with their offspring. In addition, we examined (4) whether R&T play would show the expected negative relationship with children's anxiety symptoms, and (5) whether this link would still be present when controlling for parental anxiety and overprotection. The latter would suggest that R&T play makes a unique contribution to the development of childhood anxiety that is independent of other family risk factors. Finally, we explored (6) interactive effects of parental R&T play and other familial risk factors on children's anxiety symptoms, which is in keeping with current theories suggesting that pathological anxiety in children results from a complex interplay of risk and protective factors (e.g., Mian et al. 2011). We anticipated that levels of anxiety symptoms would be particularly high in those children for which parents showed high levels of dispositional anxiety and overprotection (i.e., high risk) and low R&T play (i.e., low protection).

## Method

### Participants

Parents (105 mothers and 97 fathers; mean ages being 35.12 years,  $SD = 5.99$  and 38.05 years,  $SD = 5.80$ ,

respectively, range 22–56 years) of 105 non-clinical children (61 boys and 44 girls) aged between 2 and 6 years ( $M = 4.27$ ,  $SD = 1.07$ ) participated in this study. The vast majority of the caregivers were the biological parents of the children; only three stepmothers and two stepfathers filled out the questionnaires. Based on information as provided by both parents about their professions, it was estimated that 45 and 41 % of respectively mothers and fathers had a low, 45 and 53 % had a medium, while 10 and 6 % had a high educational level.

### Procedure

Parents were recruited via three Belgian preschools and the Union of Babysitting in the eastern, Flemish part of Belgium. Informed consent letters were sent to the parents. About 39 % of parents gave permission to participate. Parents were asked to complete several questionnaires at home and to return these to the researchers. The study was approved by the Ethical Committee of Psychology at Maastricht University, The Netherlands.

### Measures

As noted in the introduction, the PPCQ was construed for the purpose of the present study. The questionnaire initially contained 25 items about activities of parents with their children. Parents have to indicate the frequency of these activities on a four-point Likert scale (0 = never, 1 = sometimes, 2 = often, 3 = always). Exploratory factor analyses with direct oblimin rotation were performed on the separate mother and father data of the current sample and an additional sample of 95 non-clinical children (41 boys and 54 girls) aged between 7 and 13 years old ( $M = 10.69$ ,  $SD = 1.64$ ; total  $N = 200$ ). Inspection of the eigenvalues and the scree plots yielded three consistent factors for mothers and fathers, retaining 18 of the items (see “Appendix” for a copy of the final questionnaire). The factors were R&T play (6 items; range 0–18), care (8 items; range 0–24) and challenge/encouragement (4 items; range 0–12), for which scores can be computed by summing across relevant items. In the current study, Cronbach's alphas of the three factors/subscales were .67, .61, and .60 for mothers, and .80, .75, and .74 for fathers, indicating that the PPCQ has sufficient to good reliability.

The Preschool Anxiety Scale-Revised (PAS-R; Edwards et al. 2010b) was used to measure the level of anxiety symptoms in children. The PAS-R is a slightly modified version of the Preschool Anxiety Scale (Spence et al. 2001). Parents respond to the 30 items of this scale using a five-point Likert scale (0 = not at all true, 1 = rarely true, 2 = sometimes true, 3 = quite often true, 4 = very often true). The PAS-R includes items referring to symptoms of

separation anxiety (5 items; e.g., “My child would be upset when sleeping away from home”), social anxiety (7 items; e.g., “My child worries that he/she will do something to look stupid in front of other people”), obsessive–compulsive symptoms (2 items; e.g., “My child becomes distressed by thoughts or images in his/her head”), generalized anxiety (7 items; e.g., “My child has difficulty stopping him/herself from worrying”), and specific fears (9 items; e.g., “My child is afraid of the dark”). A total score can be obtained by summing all items (range 0–120). Research has shown that the PAS-R generally has good internal consistency, test–retest reliability, and validity (Edwards et al. 2010a, 2010b). In the current study, the Cronbach’s alpha of the PAS-R total score was .88 for mothers and .87 for fathers, which confirms the satisfactory internal consistency of the scale.

The Parental Overprotection Measure (POM; Edwards 2007) is a questionnaire for assessing parenting behaviors that restrict the child’s exposure to situations of perceived physical or social threat. Thus, all 19 items refer to overprotective rearing behaviors (e.g., “I do not allow my child to climb in trees” and “I protect my child from criticism”), and are scored on a five-point Likert scale (0 = not at all, 1 = a little, 2 = somewhat, 3 = quite often, 4 = very often). A total score can be obtained by summing all items (range 0–76). The scale was found to have high internal consistency, strong test–retest reliability, and good validity (Edwards 2007). In the current study reliability was good, with Cronbach’s alphas of .90 for the mothers and .88 for the fathers.

The Y2-version of the Spielberger State-Trait Anxiety Inventory (STAI; Dutch translation by Van der Ploeg et al. 1980) was used to assess trait anxiety in parents. The questionnaire includes 20 statements (e.g., “I feel nervous” and “I worry too much about little things”) that have to be answered on a four-point Likert scale (1 = almost never, 2 = sometimes, 3 = often, 4 = almost always). After recoding the positively phrased items, a total score can be obtained (range 20–80). There is clear support for the psychometric properties of the STAI (Spielberger 1983). Cronbach’s alphas in the present sample were .88 for the mothers and .93 for the fathers, indicating good reliability.

#### Data analyses

One mother and one father did not complete various items of the STAI and one father did not fill out several items of the POM (missing items were more than 15 %). As a result, these participants were excluded from the data analysis involving these scales. Descriptive statistics were computed and the distributions of all variables were checked for violations of normality. Some questionnaires were clearly skewed and in these cases analyses on log

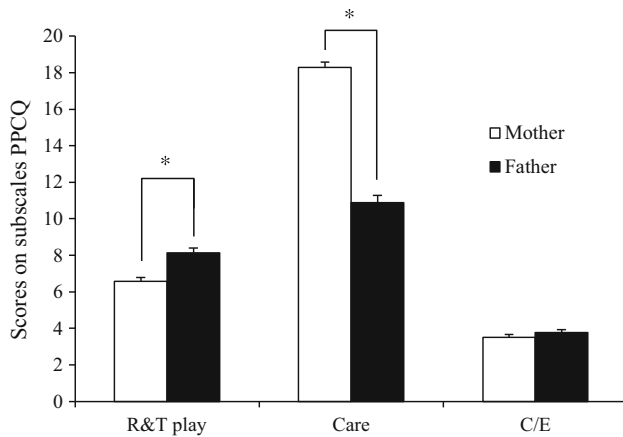
transformed data were carried out. Paired *t* tests were conducted to examine whether mothers and fathers differed in terms of parental R&T play, challenging, and care activities as well as other variables. Independent samples *t*-tests were performed to evaluate differences between boys and girls for relevant questionnaires. To examine the relations between parental R&T play and all other variables, partial correlations (corrected for child gender and age) were computed. Hierarchical regression analyses were performed for mothers and fathers separately to investigate (unique) main and interactive effects involving parental R&T play on child anxiety. For the regression analyses, transformations were not undertaken, because transformed variables are often difficult to interpret and regression analysis is robust against violations of normality (Kirk 1982).

## Results

Parental agreement on anxiety symptoms of the child was quite high, as indicated by a strong correlation between mothers and fathers ( $r = .67, p < .001$ ), although scores of mothers ( $M = 55.59, SD = 13.08$ ) were significantly higher than scores of fathers ( $M = 53.46, SD = 12.17$ ) [ $t(96) = 2.26, p < .05$ ]. A positive correlation between the scores of parents was also found for overprotective parenting ( $r = .59, p < .001$ ). A paired *t* test revealed that overprotection scores also differed between fathers and mothers, with mothers ( $M = 36.28, SD = 12.86$ ) reporting significantly higher scores than fathers ( $M = 32.74, SD = 11.55$ ) [ $t(95) = 3.12, p < .01$ ]. The correlation between mothers’ and fathers’ trait anxiety was not significant ( $r = .14, p = .16$ ). However, mothers had significantly higher trait anxiety scores ( $M = 35.40, SD = 7.22$ ) than fathers ( $M = 33.39, SD = 9.15$ ) [ $t(96) = 2.63, p < .01$ ].

#### Differences in R&T Play, Challenging Activities and Care Between Mothers and Fathers

Paired *t* tests were conducted to examine hypothesis 1 on differences in R&T play, challenging, and care activities between both parents. As can be seen in Fig. 1, significant differences between mothers and fathers were found with regard to two subscales of the PPCQ: on the R&T subscale, fathers ( $M = 8.13, SD = 2.71$ ) scored higher than mothers ( $M = 6.57, SD = 2.17$ ) [ $t(96) = 5.63, p < .001$ ], whereas on the care subscale, mothers ( $M = 18.30, SD = 2.67$ ) scored higher than fathers ( $M = 10.89, SD = 3.88$ ) [ $t(96) = 14.94, p < .001$ ]. No significant sex differences were found with regard to the challenge/encouragement scale of the PPCQ [ $t(96) = 1.61, p = .11$ ]. A correlational



**Fig. 1** Mean scores (standard errors) of mothers and fathers on the three subscales of the PPCQ. Note. *N*'s were 97. PPCQ Parental Play and Care Questionnaire, R&T rough-and-tumble, C/E challenge/encouragement. \**p* < .001

analysis revealed positive associations between the scores of fathers and mothers on the R&T play (*r* = .39, *p* < .001) and the challenge/encouragement (*r* = .45, *p* < .001) subscales; no significant association existed between mothers' and fathers' care activities (*r* = −.08, *p* = .44).

**Children's Age and Gender Effects**

Correlational analyses revealed that children's age was significantly correlated to mothers' anxiety level (*r* = −.21, *p* < .05). Furthermore, the girls in the sample were

significantly older (*M* = 4.55, *SD* = 1.00) than the boys (*M* = 4.07, *SD* = 1.08) [*t* (103) = 2.32, *p* < .05]. When comparing sons' and daughters' scores for mothers and fathers separately on all relevant scales, we found that mothers of boys had significantly higher anxiety levels (*M* = 36.70, *SD* = 6.81) than mothers of girls (*M* = 33.64, *SD* = 7.46) [*t* (103) = 2.18, *p* < .05]. Fathers of boys scored them as more anxious (*M* = 55.92, *SD* = 12.07) than fathers of daughters (*M* = 49.66, *SD* = 11.47) [*t* (95) = 2.54, *p* < .05]. With regard to hypothesis 2 about whether R&T play activities of both parents would differ depending on the gender of the child, it was found that mothers of boys (*M* = 12.95, *SD* = 2.22) reported higher scores on the R&T play subscale of the PPCQ than mothers of girls (*M* = 11.98, *SD* = 1.86) [*t* (103) = 2.37, *p* < .05]. In contrast with our expectations, no difference between boys and girls was found in R&T play as reported by the fathers [*t* (95) = 1.56, *p* = .12].

**Correlations Among Parental Anxiety, Parenting, and Child Anxiety**

Table 1 displays partial correlation coefficients (corrected for child gender and age) among the main variables of this study, calculated for mothers and fathers separately. In this table, the results concerning our third and fourth hypotheses can be found. As can be seen, the mother data did not show the expected negative correlations between R&T play on the one hand and maternal overprotection and trait

**Table 1** Mean scores (standard deviations) on various questionnaires used in this study, and partial correlations (corrected for gender and age) among various scales computed for mothers and fathers separately

|                      | <i>M</i> ( <i>SD</i> ) | (1)    | (2)    | (3)    | (4)     | (5)   |
|----------------------|------------------------|--------|--------|--------|---------|-------|
| <i>Mother report</i> |                        |        |        |        |         |       |
| 1. PAS-R             | 55.59 (13.08)          |        |        |        |         |       |
| 2. POM               | 36.28 (12.86)          | 0.25*  |        |        |         |       |
| 3. STAI              | 35.40 (7.22)           | 0.31** | 0.02   |        |         |       |
| 4. PPCQ-R&T          | 6.57 (2.17)            | 0.00   | 0.04   | 0.12   |         |       |
| 5. PPCQ-C            | 18.30 (2.67)           | 0.23*  | 0.27** | −0.05  | 0.08    |       |
| 6. PPCQ-C/E          | 3.50 (1.42)            | 0.14   | −0.07  | 0.30** | 0.46*** | 0.05  |
| <i>Father report</i> |                        |        |        |        |         |       |
| 1. PAS-R             | 53.46 (12.17)          |        |        |        |         |       |
| 2. POM               | 32.74 (11.55)          | 0.06   |        |        |         |       |
| 3. STAI              | 33.39 (9.15)           | 0.08   | 0.11   |        |         |       |
| 4. PPCQ-R&T          | 8.13 (2.71)            | 0.11   | −0.20* | 0.11   |         |       |
| 5. PPCQ-C            | 10.89 (3.88)           | −0.03  | 0.16   | −0.12  | 0.12    |       |
| 6. PPCQ-C/E          | 3.77 (1.66)            | 0.03   | −0.19  | 0.10   | 0.38*** | 0.24* |

*N*'s were 105 for mothers and 97 for fathers

PAS-R preschool anxiety scale-revised, POM parental overprotection measure, STAI state-trait anxiety inventory, PPCQ Parental Play and Care Questionnaire, R&T rough-and-tumble play subscale, C care subscale; C/E challenge/encouragement subscale

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001

anxiety on the other hand. Surprisingly, a significant positive correlation was found between maternal trait anxiety and scores on the challenge/encouragement subscale (partial  $r = .30$ ,  $p < .01$ ), which suggests that high anxious mothers were more challenging and encouraging to their children. The father data, however, did reveal a significant negative correlation between paternal overprotection and R&T play (partial  $r = -.20$ ,  $p < .05$ ), which provides some support for hypothesis 3 demonstrating that at least in fathers a stronger tendency towards overprotective parenting was associated with less engagement in R&T play. Further, neither the mother nor the father data provided evidence to substantiate hypothesis 4 on the expected negative correlation between R&T play and child anxiety symptoms.

A number of additional findings can be found in Table 1 that deserve some attention. First, the mother-report data revealed that anxiety symptoms of the child were positively correlated to maternal trait anxiety (partial  $r = .31$ ,  $p < .01$ ), which means that higher levels of anxiety symptoms of the child were associated with higher levels of trait anxiety of the mother. Second, the mother-report data also indicated that anxiety symptoms of the child were positively correlated to overprotection (partial  $r = .25$ ,  $p < .05$ ) and care (partial  $r = .23$ ,  $p < .05$ ), implying that higher levels of anxiety symptoms of the child were associated with higher levels of overprotection and care behaviors of the mother. Third, a significant positive correlation was found between overprotection and care (partial  $r = .27$ ,  $p < .05$ ), indicating that in mothers higher levels of overprotective behaviors were associated with higher levels of care behaviors. Fourth, another significant correlation was found between mothers scores on the R&T play and the challenge/encouragement subscales (partial  $r = .46$ ,  $p < .001$ ), showing that mothers who engaged more in R&T play were also more challenging and encouraging. Fifth, although the father-report data generally revealed few significant correlations, it was still found that the challenge/encouragement subscale of the PPCQ was positively related to the R&T (partial  $r = .38$ ,  $p < .001$ ) and the care subscales (partial  $r = .24$ ,  $p = .05$ ), indicating that challenging/encouraging behaviors were associated with higher levels of R&T play as well as care behaviors.

#### Unique and Interactive Effects of Parenting Behaviors on Child Anxiety

The unique and interactive effects between R&T play and child anxiety, as stated in hypothesis 5 and 6, will be discussed next. Hierarchical regression analyses were carried out on the mother- and father-report data separately, in

which age and gender of the child (step 1), parental overprotection and anxiety (step 2), R&T play, care, and challenge/encouragement (step 3), and the interactions of R&T play with moderators parental anxiety and parental overprotection (step 4) were predictors. Anxiety of the child was the dependent variable. Inspection of tolerance and variance inflation factor (VIF) statistics showed that there was no multicollinearity problem in the regression models. To enhance a meaningful interpretation of the regression coefficients, all continuous predictors were centered around the mean.

As shown in Table 2, the analysis performed on the mother-report data revealed that anxiety of the mother ( $p < .01$ ), overprotection ( $p < .05$ ), and care behaviors ( $p < .05$ ) were all significant and unique, positive predictors of child anxiety. Besides the fact that R&T play did not make a unique contribution, this parenting variable neither had an interactive effect in combination with any of the two moderators on child anxiety.

The analysis of the father-report data (see Table 3) only revealed a significant main effect of child gender ( $p < .01$ ); that is, fathers of sons rated them as more anxious than fathers of daughters. Interestingly, the analysis did yield a significant interaction effect: paternal anxiety appeared to be a significant moderator in the relation between R&T play and child anxiety ( $p < .05$ ). A follow-up analysis of simple slopes was conducted at one standard deviation

**Table 2** Results of hierarchical regression examining the relative contributions of various maternal factors to children's anxiety levels

|                 | <i>B</i> ( <i>SE</i> ) | $\beta$ | $\Delta R^2$ |
|-----------------|------------------------|---------|--------------|
| Step 1          |                        |         | .00          |
| Sex             | −0.66 (2.68)           | −.03    |              |
| Age             | −0.53 (1.24)           | −.04    |              |
| Step 2          |                        |         | .15*         |
| STAI            | 0.57 (0.17)            | .31**   |              |
| POM             | 0.24 (0.09)            | .24*    |              |
| Step 3          |                        |         | .05          |
| PPCQ–R&T        | −0.66 (0.65)           | −.11    |              |
| PPCQ–C          | 1.03 (0.47)            | .21*    |              |
| PPCQ–C/E        | 1.15 (1.00)            | .12     |              |
| Step 4          |                        |         | .01          |
| STAI × PPCQ–R&T | −0.09 (0.07)           | −.13    |              |
| POM × PPCQ–R&T  | −0.01 (0.05)           | −.02    |              |

*N* = 96

Betas reported are those from the step at which the variable was entered into the equation

PPCQ Parental Play and Care Questionnaire, R&T rough-and-tumble play subscale, C care subscale, C/E challenge/encouragement subscale, STAI state-trait anxiety inventory, POM parental overprotection measure

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

**Table 3** Results of hierarchical regression examining the relative contributions of various paternal factors to children’s anxiety levels

|                        | <i>B (SE)</i> | $\beta$ | $\Delta R^2$ |
|------------------------|---------------|---------|--------------|
| Step 1                 |               |         | .09*         |
| Sex                    | -7.42 (2.54)  | -.30**  |              |
| Age                    | 1.77 (1.13)   | .16     |              |
| Step 2                 |               |         | .01          |
| STAI                   | 0.09 (0.14)   | .07     |              |
| POM                    | 0.06 (0.11)   | .05     |              |
| Step 3                 |               |         | .02          |
| PPCQ-R&T               | 0.57 (0.50)   | .13     |              |
| PPCQ-C                 | -0.16 (0.34)  | -.05    |              |
| PPCQ-C/E               | -0.04 (0.84)  | -.01    |              |
| Step 4                 |               |         | .05          |
| STAI $\times$ PPCQ-R&T | -0.12 (0.05)  | -.23*   |              |
| POM $\times$ PPCQ-R&T  | -0.01 (0.03)  | -.04    |              |

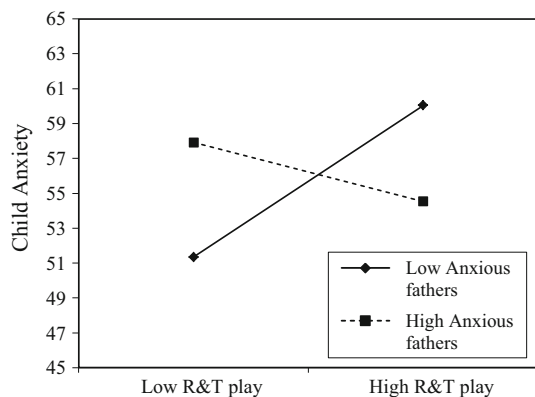
*N* = 96

PPCQ Parental Play and Care Questionnaire, R&T rough-and-tumble play subscale, C care subscale, C/E challenge/encouragement subscale, STAI state-trait anxiety inventory, POM parental overprotection measure

Betas reported are those from the step at which the variable was entered into the equation

\* *p* < .05, \*\* *p* < .01

above and below the moderator (STAI) mean, using the MODPROBE macro for SPSS designed by Hayes and Matthes (2009). This analysis revealed that there was only a significant effect of R&T play on child anxiety for low trait anxious fathers (*p* < .01), whereas no significant effect was found for high anxious fathers. As shown in Fig. 2, children displayed higher levels of anxiety symptoms when their low trait anxious fathers displayed higher levels of R&T play.



**Fig. 2** Plot showing the interactive effect of paternal anxiety and R&T play on anxiety level of the child. Only the line for low anxious fathers is significant

**Discussion**

The present study explored the relation between R&T play and child anxiety. A questionnaire specifically construed to measure this type of parenting behavior was administered to the fathers and mothers of 105 non-clinical children aged 2–6 years, along with scales assessing other parental risk factors (i.e., trait anxiety, overprotection) and child anxiety symptoms.

The results first of all indicated that fathers engaged more in R&T play, while mothers were more involved in care activities. This is in accordance with our first hypothesis and confirms current views on parenting roles which posit that fathers are more engaged in physical play activities with their offspring, whereas mothers still fulfill the more caring role in the upbringing of their children (Bögels and Phares 2008; Paquette et al. 2003). Empirical studies have also demonstrated that fathers are more engaged in play activities, while mothers are more involved in care (Lindsey and Mize 2001; MacDonald and Parke 1986). On the challenge/encouragement subscale of the PPCQ, no differences were found between mothers and fathers, suggesting that these behaviors do not necessarily differ between both parents. Examination of whether R&T play activities are dependent on the gender of the child (hypothesis 2) indicated that only mothers engaged more in R&T play with boys than with girls, while no such difference was documented for the fathers. These results were somewhat surprising as most research has indicated that especially fathers exhibit more R&T play towards boys as compared to girls, while mothers do not distinguish between boys and girls with respect to this specific type of parenting activity (Jacklin et al. 1984; Lindsey and Mize 2001). Thus, altogether, these findings are only partly in accordance with the activation relationship theory of Paquette (2004), which assumes that fathers will show more R&T play with their children than mothers, and that this type of parenting behavior will be more often exhibited towards boys than towards girls.

Some support was found for our expectation that there would be negative relations between R&T play on the one hand and parental anxiety and overprotection on the other hand (hypothesis 3). More specifically, fathers’ R&T play was negatively correlated to paternal overprotection, although it should be immediately admitted that no significant correlation was documented between R&T play and paternal anxiety and that for mothers, none of these correlations were significant. The father findings are in accordance with the view of Gaumon and Paquette (2013), who noted that overprotective behaviors of fathers are associated with an under activation attitude towards their children in the Risky Situation procedure, which is characterized by

discouragement of exploration and prevention of risk-taking behaviors.

Hypothesis 4 stated that R&T play would be negatively related to child anxiety, and hypothesis 5 that this relationship would be independent of the other family risk factors of parental anxiety and overprotection. Both hypotheses were not substantiated by the data. Obviously, this is in disagreement with the notion that this parental variable would operate as a protective mechanism against the development of this type of psychopathology (Bögels and Phares 2008). One explanation for the absence of a relation between R&T play and child anxiety could be that our operationalization of R&T play was too ‘narrow’. That is, the PPCQ subscale assessing this type of parenting did not include social elements such as teasing or more extreme parental behaviors such as the promotion of risk taking, which have been shown relevant in previous research (Gaumon and Paquette 2013; Majdandžić et al. 2014; Paquette and Dumont 2013).

With regard to hypothesis 6, only the regression analysis performed on the father-report data revealed a significant interaction effect of R&T play and paternal trait anxiety on child anxiety, suggesting that anxiety of the father might act as a moderator in the relation between R&T play and anxiety of the child. Inspection of this interaction revealed that low trait anxious fathers who showed more R&T play had children who tended to display higher levels of anxiety symptoms, which is a result that is quite difficult to explain. It may well be that low anxious parents might be less sensitive to detect the anxiety signals of their child when they play too rough and too physical with them, but the bottom line here is again that the result is not in keeping with what we had expected. When also acknowledging the mixed findings as obtained by Majdandžić et al. (2014), the tentative conclusion seems to be that the role of R&T play in childhood anxiety might be more complicated than previously thought, and that further refinement of the theory is needed. Obviously, more research is needed to examine the conditions under which this type of parenting has negative or positive effects on child anxiety.

Apart from the main results of this study, a number of additional interesting findings were documented. To begin with, the correlational analysis revealed significant positive associations between maternal trait anxiety, overprotection, and care on the one hand, and child anxiety on the other hand. Higher levels of anxiety and overprotective and caring behaviors of the mother were associated with higher levels of trait anxiety symptoms in the child. Most of these links are well in line with what has been previously reported in the literature (Hudson and Rapee 2001, 2002; McLeod et al. 2007; Van der Bruggen et al. 2008), but the relation between maternal care and child anxiety has not been found before. As it is not very plausible that typical

care behaviors such as cuddling, buying new clothes, and preparing dinner promote anxiety in the child, it seems best to conclude that care of the mothers may increase when they observe that their child is frequently or intensely anxious. For fathers, no significant relations between parenting variables and child anxiety were documented. Other studies have obtained inconsistent findings with regard to the role of paternal behaviors in relation to child anxiety. Some studies have shown that paternal behaviors (e.g., over-control) are involved in the development of child anxiety (Verhoeven et al. 2012), while other studies have demonstrated that father behaviors do not play a significant role in the etiology of child anxiety (Hudson and Rapee 2002).

Further, fathers rated boys as more anxious than girls, which is somewhat at odds with the results of the mother-report data and other research examining gender differences in childhood anxiety which generally show that girls are scored as more anxious than boys (Craske 2003). However, other studies can be found that have also documented that mothers and fathers provide quite different anxiety scores for their offspring (Tretler and Epkins 2003).

Finally, an unexpected finding emerged indicating that high trait anxious mothers reported that they were more challenging and encouraging towards their children. It is possible that high anxious mothers show this behavior on purpose, because they know that they should challenge and encourage their offspring to prevent them from becoming also anxious. On the other hand, it is also possible that anxious mothers interpret many ambiguous situations as threatening and thus find that they expose their children quite often to potentially dangerous events.

It should be admitted that the present study suffers from various limitations. One limitation pertains to the fact that our study focused on the quantity of R&T play activities by asking parents to complete a rating scale on which they had to indicate how often they engaged in this type of behaviors. However, it has been argued that the quality of the R&T play behaviors is more important than the quantity of these activities (Paquette et al. 2003). Thus, it seems preferable that future studies not only include rating scales for assessing frequency but also measure the quality of the parenting behaviors by observing parents and children in a naturalistic setting (e.g., Majdandžić et al. 2014). A second limitation of the study is that parents of boys were compared to parents of girls. For future studies, it would probably be better to compare the behavior of the same parents towards their sons and daughters, in order to avoid that data are influenced by possible confounding variables (e.g., in our study, mothers of boys were significantly more anxious than mothers of girls). Another limitation is that we relied on a non-clinical population. Given our explicit



interest in anxiety pathology, it would be interesting to include clinically referred children in this research. Despite these limitations, this is one of the few studies exploring the presumed protective role of R&T play within the context of childhood anxiety. The results support the idea that fathers and mothers differ in the extent to which they typically engage in specific parenting behaviors related to the development of anxiety in children (Bögels and Phares 2008), but we did not find evidence for the proposed protective effect of R&T play. Meanwhile the results provide several new leads that can be addressed in future research.

**Conflict of interest** The authors declare that they have no conflict of interest.

**Appendix**

See Table 4.

**Table 4** Parental Play and Care Questionnaire (PPCQ)

|  | Never<br>(0) | Sometimes<br>(1) | Often<br>(2) | Always<br>(3) |
|--|--------------|------------------|--------------|---------------|
| 1. I engage in exciting and sometimes scary activities with my child                       |              |                  |              |               |
| 2. I tell my child that he/she should seek out scary situations (instead of avoiding them) |              |                  |              |               |
| 3. I prepare dinner  |              |                  |              |               |
| 4. I encourage my child to seek out novel experiences                                      |              |                  |              |               |
| 5. I do my child’s laundry   |              |                  |              |               |
| 6. I talk to my child about his/her feelings   |              |                  |              |               |
| 7. When my child needs new clothes, i go out shopping with him/her                         |              |                  |              |               |
| 8. I involve my child in housekeeping activities (vacuuming, cleaning, doing the dishes)   |              |                  |              |               |
| 9. When playing with my child, we talk loudly and scream                                   |              |                  |              |               |
| 10. I often engage in competitive play with my child                                       |              |                  |              |               |
| 11. I engage in exciting activities with my child  |              |                  |              |               |
| 12. I accompany my child to the doctor or dentist  |              |                  |              |               |

**Table 4** continued

|  | Never<br>(0) | Sometimes<br>(1) | Often<br>(2) | Always<br>(3) |
|--|--------------|------------------|--------------|---------------|
| 13. When i engage in an activity with my child, it often gets wild       |              |                  |              |               |
| 14. I cuddle with my child   |              |                  |              |               |
| 15. When something bothers my child, he/she comes to me to talk about it |              |                  |              |               |
| 16. I tickle my child, and then he/she laughs                            |              |                  |              |               |
| 17. I play roughly with my child   |              |                  |              |               |
| 18. I throw my child up in the air, and then catch him/her again         |              |                  |              |               |

R&T play: items 9, 10, 13, 16, 17, 18; care: items 3, 5, 6, 7, 8, 12, 14, 15; challenge/encouragement: items 1, 2, 4, 11

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