

Parenting and social anxiety: fathers' versus mothers' influence on their children's anxiety in ambiguous social situations

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Background: The role of parenting in child social anxiety was examined in an information processing experiment. We tested the relative weight that children in general, and high versus low socially anxious children in particular, put on fathers' versus mothers' signal about whether a social situation is safe or a threat. **Method:** Children aged 8–12 ($n = 144$) varying in social anxiety were presented scripts of ambiguous social situations in which either the father or the mother acted anxious or confident. Children indicated how anxious or confident they would be. **Results:** Fathers' behaviour influenced high socially anxious children's confidence or anxiety more than mothers' behaviour. In contrast, in normal and low socially anxious children, mothers' behaviour was more influential than fathers'. **Conclusions:** Mothers might have the role of teaching social wariness to their low socially anxious children, whereas fathers may teach social confidence to socially anxious children. **Keywords:** Aetiology, anxiety, fathers, information processing, parenting, shyness, information processing.

Social anxiety disorder is a highly prevalent mental disorder in children as well as adults. It is the most important precursor of depressive disorder and alcohol abuse, has an enormous negative impact on the individual's life in terms of social and relational functioning as well as school and occupational functioning, and on quality of life, and has high societal costs (Bögels & Stein, 2009).

The overlap between social anxiety disorder in parents and children is large (Feyer, Mannuzza, & Chapman, 1995; Lieb, Wittchen, Höfler, Stein, & Merikangas, 2000; Stein et al., 1998). Moreover, specific familial transmission for social phobia (rather than anxiety disorders in general) has been found, suggesting that the disorder 'breeds true' (Cooper, Fearn, Willets, Seabrook, & Parkinson, 2006; Feyer et al., 1995; Reich & Yates, 1988). Besides a modest genetic risk for the disorder (Hettema, Prescott, Myers, Neale, & Kendler, 2005; Kendler et al., 1992), factors such as information processing, modelling, rearing, and family functioning may play a role in the intergenerational transmission from parents to offspring (e.g., Bögels & Brechman-Toussaint, 2006).

Surprisingly little is known about the aetiology of social anxiety and social anxiety disorder within the family (Bögels et al., 2010; Rapee & Spence, 2004). An overprotective and rejective parental rearing style has been associated with childhood anxiety and anxiety disorder in general (see the meta-analyses of McLeod,

Wood, & Weisz, 2007; van der Bruggen, Stams, & Bögels, 2008), but there is little evidence that such a rearing style specifically predisposes to social anxiety. Moreover, the effect sizes of differences between rearing styles of parents of anxiety-disordered and normal children are generally modest. For example, Bögels, van der Bruggen, and Bamelis (2008) found that parents of anxiety-disordered children were more controlling in a family discussion with their anxious child, but the effect size was <0.4 . Taken together, the evidence for broader parenting factors that cause childhood anxiety, such as controlling and rejective parenting, is not very convincing, and not specific for social anxiety. Therefore, we need to explore more specific parenting behaviours that may predispose social anxiety in children.

As social anxiety disorder is generally regarded as being caused by information processing biases (e.g., Clark & Wells, 1995; Hartman, 1983; Rapee & Heimberg, 1997), one of the earliest and perhaps most important ways in which parents pass on their own social anxiety, or social confidence, to their children is by the signals they give about social encounters. Signals concern how to evaluate and approach the external social world, whether strangers can be trusted or not, whether social attention should be welcomed or avoided, whether social risks should be taken or not, etc.

Very few studies have used experimental designs to examine whether parental signals of social anxiety or social confidence influence their children's responses to social situations. De Rosnay, Cooper, Tsigaras, and Murray (2006) examined the effect of maternal

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signals using a social referencing paradigm. Infants whose mother was trained to exhibit social anxiety while interacting with a stranger displayed more social anxiety afterwards while they interacted with the stranger than infants whose mother was instructed to show social confidence. Interestingly, this maternal signalling or modelling effect was found only in infants who were classified previously as behaviourally inhibited, and not in infants of the non-inhibited type. In a longitudinal study by the same research group, in which the infants of mothers with and without social anxiety disorder were followed, the level of social anxiety expressed by mothers in interaction with a stranger, as observed by their 11-month-olds, predicted whether these infants behaved socially anxious towards a stranger 3 months later (Murray et al., 2008). Interestingly, infants of mothers diagnosed with social phobia stayed more attentive towards their mother while the stranger was present. This is an indication of either a greater susceptibility to parental examples in infants born from socially anxious mothers, or the greater anxiety these infants observe in their mothers, or both. Taken together, both studies showed that only in children who are somehow particularly susceptible to rearing, for better or for worse (Belsky, Hsieh, & Crnic, 1998), did maternal displayed social anxiety or confidence mediate the association between maternal and child social anxiety. These findings are in line with gene-environment interactions predicting inhibition towards strangers in middle childhood (Fox et al., 2005).

The role of paternal social anxiety in the inter-generational transmission of social anxiety has hardly been studied. However, a broader review on fathers' role in child anxiety in general suggests that their role is important, and different from that of mothers (Bögels & Phares, 2008). Unlike other anxiety disorders, which are much more common in women and thus in mothers, social anxiety disorder is highly prevalent in men too (Grant et al., 2005; Kessler, Chiu, Demler, Merikangas & Walters, 2005). Therefore, the effects of severe social anxiety in fathers on their offspring should be considered as one of the ways in which social anxiety is transmitted through generations.

This study aimed to explore the father's and mother's relative role in child social anxiety using an information processing paradigm. That is, children ($n = 144$, aged 8–12) were exposed to ambiguous social situations in which either the mother or the father responded in an either anxious or confident manner. Children then had to indicate their social anxiety in that situation. Effects were assessed on all children, and on high ($n = 38$) and low ($n = 36$) socially anxious children, in order to test whether children with high social anxiety are more susceptible for rearing influences, and whether for high socially anxious children, the mother or the father had the strongest influence.

Method

Participants

Children ($n = 144$) aged 8 to 12 from two primary schools, and their parents, were recruited. The study was approved by a local ethical committee and children and parents had to sign informed consent before taking part in the study. Of the informed consent letters sent to families, 51% were returned, and 91% of the families agreed to participate. There were 62 boys (43%) and 82 (57%) girls, mean age 10.4, SD 1.48. Most (133, 92%) were first-born or single children, 11 (8%) were second-born. Thirty (21%) children came from divorced families, of whom 13 (43%) lived more with their mother, 12 (40%) lived an equal amount of time with their mother and with their father, 4 (3%) lived only with their mother and 1 (1%) with the father, but all children had contact with the other parent. Fathers' mean age was 46.0 (SD 4.32), mothers' 44.1 (4.0), and most were of Dutch origin (92%). Their educational level was fairly high: 49.5% had a university degree, and 30.5% higher education. Mothers of 111 (77%) and fathers of 99 (69%) children returned the questionnaire about their own social anxiety that they were asked to complete.

Assessments

Trait social anxiety of the children was assessed with the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1998, Dutch translation: Utens, Ferdinand, & Bögels, 2000). The SPAI-C consists of 26 items ranging from 0 to 2, and measures the cognitive, somatic and behavioural aspects of social anxiety in children, in social encounters with other known and unknown children and with adults. The SPAI-C has satisfactory discriminative validity (Beidel, Turner, Hamlin, & Morris, 2000). The homogeneity in the present study was very good: $\alpha = 0.92$.

Trait social anxiety of parents was assessed using the Dutch Short Social Phobia and Anxiety Inventory (De Vente, Bögels, & Voncken, 2007; Short SPAI). The Short SPAI was derived from the original Dutch SPAI (Bögels & Reith, 1999), and consists of 18 items rated on 1–7 Likert-type scales. The homogeneity of the Short SPAI (here denoted as SPAI-Parent, SPAI-P) was excellent in the present study: $\alpha = 0.95$.

Perceived trait social anxiety of the parents by their children was measured using a shortened and modified version of the SPAI-P, the Child-perceived SPAI-P. The list consisted of 6 items of the SPAI-P, measuring somatic and behavioural aspects of social anxiety of parents as noticed by the child. We selected those items of the SPAI-P that seemed most representative for parents' social anxiety and that could best be observed by their children. We also added a general shyness rating of the parents by the child. All 7 items were rated on the same 1–7 scale from the SPAI-P. The homogeneity was good: $\alpha = 0.78$ for child-perceived maternal, and 0.81 for paternal social anxiety.

Children's response to parental behaviour in ambiguous social situations was assessed by vignettes with two experimental conditions and two parental conditions. Short stories ($n = 12$) were developed in which a child was confronted with an ambiguous

social situation, and his father or mother reacted in either a socially anxious or socially confident manner. For example: 'You go with [dad/mum] to a birthday party at a friend's home. When you enter the house, the living room is full of family and friends. Everybody looks curiously at you and it becomes silent for a moment. [Dad/mum] [s face turns a little red and he/she hurries into a silent corner of the room/looks at everyone and says cheerfully "hello everybody!"]'. Note that the experimental manipulation of father/mother and anxious/confident response has been put between brackets. Children had to imagine the situation as if they experienced it themselves, and indicated how they would feel on two 1–5 scales, one ranging from very safe to very afraid, and one ranging from very confident to very shy. The developed vignettes and the child-perceived SPAI-P questionnaire were first tested by 6 children from 8 to 12 years for comprehensibility, and adapted according to their feedback.

Vignettes were randomised across father versus mother and anxious versus confident parent response, so that each child imagined 3 anxious fathers, 3 anxious mothers, 3 confident fathers and 3 confident mothers. The content of the stories was counterbalanced, so that each different content story was equally often followed by a father or a mother anxious or confident response. Evidence for the validity of the vignette method was reported by Erdley and Asher (1996), who showed that the social strategies that children choose in vignettes are similar to the behavioural responses that children who know them think these children will display.

Procedure

Children filled in the questionnaires and vignettes at school. Children were handed the questionnaires for their parents, including a post-free return envelope. Parents filled in the questionnaire at home, and sent it, each parent using his/her own envelope, to the university.

Results

Children's trait social anxiety (SPAI-C) was uncorrelated with parents' self-reported trait social anxiety (SPAI-P), 0.04 for mothers and 0.03 for fathers. Child trait social anxiety was, however, associated with child-perceived maternal ($r = 0.33$, $p < 0.001$) and paternal (0.23, $p < 0.01$) trait social anxiety. Child-perceived parental social anxiety was, in turn, correlated with parents' report of their own social anxiety, 0.25, $p < 0.01$ for mothers and 0.23, $p < 0.05$ for fathers. Fathers' and mothers' own social anxiety was uncorrelated, 0.14, whereas child-perceived social anxiety of both parents was highly correlated, 0.61, $p < 0.001$. Parents' mean self-reported social anxiety was 2.5 (SD 0.84) for mothers, and 2.3 (SD 0.78) for fathers, paired $t = 1.6$, n.s. Children's perceived social anxiety of their mothers was significantly higher compared to

their fathers, means resp. 1.7 (0.58) and 1.5 (0.57), paired $t = 3.6$, $p < 0.001$.

The dependent variables child-reported level of anxiety (versus safety) and level of shyness (versus confidence) were highly correlated for anxious ($r = 0.73$) and confident (0.70) paternal as well as anxious (0.61) and confident (0.83) maternal responses, all $ps < 0.001$. Therefore, these variables were averaged to one child-reported level of state social anxiety (versus social confidence) in response to the stories.

Means and standard deviations of children's anxious response to fathers versus mothers acting either anxious or confident are depicted in Table 1. A repeated measures ANCOVA was carried out with gender of the parent and type of parental behaviour (anxious versus confident) as within-subject variables, trait social anxiety of the child (SPAI-C) as covariate, and child's socially anxious response as dependent variable. A main effect for type of parental behaviour was found, $F(1, 142) = 27.8$, $p < 0.001$, $d = 0.60$, in the direction that children responded with more social anxiety if parents acted anxious than if parents acted confident. No main effect for parental gender occurred, $F(1, 142) = 0.3$, n.s., implying that children are equally anxious in the presence of father and mother. An interaction between parental gender and type of parental behaviour on child social anxiety response was found, $F(1, 142) = 7.4$, $p < 0.01$. Post-hoc tests showed that children responded with more anxiety to maternal than to paternal anxious behaviour, paired $t(143) = 2.0$, $p < 0.05$, $d = 0.16$, whereas for maternal versus paternal confident behaviour, no differences in child state anxiety were found, paired $t(143) = -0.03$. Thus, for unselected children, mothers' anxious behaviour affected child anxiety more than fathers' anxious behaviour, whereas for mothers' versus fathers' confident behaviour no difference in influence was found. Moreover, a three-way interaction occurred between parent gender, parent behaviour, and child's trait social anxiety (SPAI-C), $F(1, 142) = 5.6$, $p < 0.05$. This effect was unpacked separately for high and low socially anxious children as follows.

Based on the results of the SPAI-C, a high and low socially anxious child group was created. The 25% children with the highest ($n = 38$) and lowest ($n = 36$) SPAI-C scores formed the high and low trait social

Table 1 Means, standard deviations of children's ($n = 144$) socially anxious response to vignettes in which either mother or father reacted in an either anxious or confident manner

	Father		Mother		Both parents	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Anxious parent behaviour	2.84	0.86	2.97	0.75	2.91	0.72
Confident parent behaviour	2.45	0.84	2.45	0.90	2.45	0.77
Difference anxious-confident	0.39	0.88	0.52	0.82	0.54	0.62

anxiety groups. This was done separately for boys and girls, as boys have somewhat lower trait social anxiety levels. The two groups were highly similar in gender, age, educational level of parents, and whether the parents were divorced. The item mean trait social anxiety level of the low socially anxious group was 0.15 ($SD = 0.11$), and of the high socially anxious group 0.92 ($SD = 0.21$). In high socially anxious children, the difference in child's socially anxious response as a result of father's anxious versus confident behaviour was significant, paired $t(37) = 2.8$, $p < 0.01$, mean = 0.42, $SD = 0.90$, $d = 0.46$, whereas the difference in child state anxiety to mothers' anxious versus confident behaviour was non-significant, paired $t(38) = 0.8$, mean = 0.13, $SD = 0.92$. Thus, for high socially anxious children, whether the father acts confident or anxious influenced children's state confidence or anxiety more than mothers' actions. In the low socially anxious group, the opposite effect was found. That is, the difference in child state anxiety in response to mothers' anxious versus confident behaviour was significant, paired $t(35) = 4.5$, mean = 0.56, $SD = 0.76$, $p < 0.001$, $d = 0.74$, whereas the difference in child state anxiety to fathers' anxious versus confident act was non-significant, $t(35) = 0.9$, mean = 0.12, $SD = 0.80$. In other words, for low socially anxious children mothers' behaviour influenced children's social anxiety more than fathers' behaviour (see Figure 1).

Next, we investigated whether child gender influenced the results, in interaction with the gender of the parent. The repeated measures ANCOVA on the whole group (with gender of the parent and type of behaviour of the parent as within-subject variables) was repeated, now with child gender as a covariate. Child gender did not interact with parent gender and type of parent behaviour.

Also, we investigated whether parent-reported and child-perceived parental trait social anxiety influenced the results. A substantial number of parents (20%) did not send back the completed SPAI-P. There was no difference in response rate between mothers (81%) and fathers (79%), n.s. Also, no difference in response rate occurred across high and low trait socially anxious children; mothers of 30 (81%) high socially anxious and 28 (82%) low socially anxious children returned the questionnaire; for fathers the numbers were 30 (81%) and 26 (76%), respectively, n.s. Parents with missing SPAI-P did not differ from parents who did return the SPAI-P on child-perceived parent and child trait social anxiety. Therefore, we can assume that missing values on the SPAI-P did not influence the analyses. Repeated measures analyses were rerun once with child-perceived and once with self-reported parental trait social anxiety as a covariate. Neither child-perceived nor parent-reported parental social anxiety covaried with the within-subject variables parent gender and parent type of behaviour, and thus did not influence

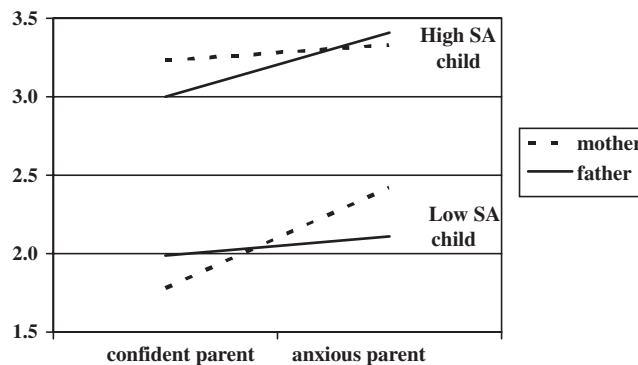


Figure 1 Social anxiety response of high ($n = 38$) and low ($n = 36$) socially anxious children to ambiguous situations in which either the father or the mother figure behaves in socially anxious or confident manner

the main outcomes. Also, no interactions between parental social anxiety (child perceived and parent reported) and parent type of behaviour in the scripts occurred, suggesting that the extent to which parents' anxious or confident response was dissimilar or similar to parents' real life socially anxious behaviour did not influence the results.

Finally, we checked whether the living arrangement of the children influenced the results, as a substantial number of children came from divorced families, and there was variation in how much time they spent with their fathers. Three groups were analysed: children who lived with both parents (non-divorced), children who lived mostly with their mother after parental divorce ($n = 13$) and children who lived an equal amount of time with their mother and their father after parental divorce ($n = 12$). Children who lived only with their father ($n = 1$) or only with their mother ($n = 4$) were omitted as this happened rarely. No differences between the three groups occurred on child trait social anxiety, on child- and parent-reported parental social anxiety, and on general level of socially anxious response confronted with the ambiguous situations. However, there was an almost borderline significant difference ($p = 0.10$) between the three groups concerning parental influence on children's socially anxious response. Mean differences in socially anxious response between an anxious and confident parental signal were in the non-divorced group, 0.38 ($SD = 0.86$) for father and 0.54 (0.82) for mother signal; in the divorced families where children lived an equal amount of time with father and mother 0.90 (1.0) for father signal and 0.31 (0.63) for mother signal; and in children from divorced families who lived mostly with their mother 0.21 (0.93) for father signal and 0.67 (0.75) for mother signal. Unpacking these results showed that fathers had more influence on children who lived an equal amount of time with father and mother after divorce compared to non-divorced families ($p < 0.05$, $d = 0.56$) and compared to families where children lived mostly with their mother ($p < 0.1$, $d = 0.71$). For mothers the results appear opposite (although non-significant) in that, in divorced

families, mothers have more influence if children live mostly with them than if children live an equal amount of time with father and mother ($d = 0.52$).

Discussion

This study explored the role of paternal versus maternal cues on children's socially anxious or confident response, by manipulating fathers' and mothers' behaviour in hypothetical ambiguous social situations. The main results were: (i) parental cues do influence child social anxiety; (ii) unselected children give more weight to mothers' anxious behaviour compared to fathers' anxious behaviour, whereas for mothers' and fathers' confident behaviour, no differences occurred; (iii) high socially anxious children give more weight to fathers' behaviour, whereas low socially anxious children give more weight to mothers' behaviour; (iv) these results are not influenced by the gender of the child, nor by the parent- or child-perceived social anxiety of both parents.

The role of the mother in unselected as well as in low socially anxious children was found to be more important than the role of the father. That is, mothers' *anxious* signal towards new ambiguous social situations was given somewhat more weight by all children, although the effect size was low ($d = 0.17$). Low socially anxious children strongly gave more weight to mothers' *anxious* signal as compared to fathers' ($d = 0.76$). These results may suggest that mothers 'teach' social wariness to their children if they experience little or perhaps not enough social anxiety. From an evolutionary perspective, social wariness is important for children's survival. Social wariness helps children to adapt to group norms and to obey to the group leader, and prevents them from social mishaps that may lead to exclusion from the group (e.g., Marks & Nesse, 1994). As women tend to be more risk-averse (e.g., Wilke, Hutchinson, Todd, & Kruger, 2006), this could explain why they have the role of teaching their offspring social wariness.

High socially anxious children were found to give more weight to the father's signal. That is, whether the father figure reacted to ambiguous social situations with anxiety or confidence influenced these children's social anxiety more than mother's behaviour. In particular, fathers' *confident* behaviour appeared to affect them more than mothers' confident behaviour. From an evolutionary perspective, men have a comparative advantage over women with respect to social competition and social risk-taking in the external social world. Displaying social confidence is central to social competition and risk-taking. Assuming that the child brain 'knows' that fathers have more expertise in this type of social confidence (Bögels & Perotti, 2010), this may explain why children give more weight to the father's confident signal. An alternative explanation is that as fathers may show less social anxiety than mothers,

fathers' socially anxious response was more 'salient' or 'out of character' to children, and therefore they responded more strongly. In line with this explanation, the results of this study showed that children actually perceived their fathers as less socially anxious than their mothers. Note, however, that the effects remained after controlling for actual parental anxiety, which does not support the 'out-of-character' hypothesis. Moreover, the 'out-of-character' hypothesis does not explain why only socially anxious children were more influenced by the fathers' signal, and that this was the case mainly concerning fathers' confident and not their anxious behaviour. Related to the 'salience' or 'out-of-character' explanation, results could also be understood by social role modelling. Also, in modern society, men are socialised more towards risk-taking and competition in the external social world (e.g., initiate a date, apply for a job, ask for a salary raise) than women, and in fact, take more risks in most domains (Byrnes, Miller, & Schafer, 1999). As a result, low socially anxious children (who need to learn social wariness) may take their mother as a predominant example, whereas high socially anxious children (who need to learn social confidence in order to be able to compete in the external social world) may take their father as a predominant example. It should be noted that these two explanations of the dominant father effect (evolution and social role modelling) in high socially anxious children are highly speculative and require testing.

Interestingly, results were not influenced by the gender of the child. That is, no evidence was found that children give more weight to the signal of the same-sex or the opposite-sex parent. The anxiety literature is inconsistent as to whether children are more influenced by the same-sex or opposite-sex parent (Bögels & Phares, 2008), and this may also be dependent on the learning area studied (e.g., domains of social functioning) and on the age of the child. Clearly, if we are to be interested in the differential influence of the gender of the parent, we also have to take the gender of the child into account in further research. To illustrate, van der Bruggen, Bögels, and Zeilst (2010), using a Tangram puzzle task in which fathers' and mothers' control behaviour was measured while the child was performing a Tangram, found a significantly stronger relationship between higher child trait anxiety and more parental control for boys than for girls.

The question of whether parents should be involved in the treatment of children with anxiety disorders, particularly if they are anxious themselves, has been studied by several research groups and results have been mixed. While some found that treatment results are better if anxious parents are involved (Cobham, Dadds, & Spence, 1998), others found that, especially if parents suffer from anxiety disorders themselves, treatment of the child alone is more effective (Bodden et al., 2008). Overall,

including parents has not proven superior to treating the child alone (In-Albon & Schneider, 2006). Therefore, some researchers, including an anonymous reviewer of this study, have come to the conclusion that involving parents, although remaining an area of great interest to many in this field, will have little impact on treatment. However, studies so far have examined parent involvement in general, and not investigated father involvement in particular. Note that in most of these studies, father involvement was not optimal, as far fewer fathers than mothers were included in treatment. Also, the focus of study was anxious parents, and not confident parents. Speculating from the present study's results, involving confident fathers in the treatment of anxious children could be an effective procedure. Or, from a somewhat different and maybe more pragmatic perspective, teaching fathers to role-model social confidence to their socially anxious children in novel and ambiguous social situations, and to encourage children to approach such situations, may be the most optimal parent involvement strategy. Note, however, that the present study's result of a dominant paternal role in socially anxious children's interpretation of ambiguous social events was restricted to social anxiety as opposed to all types of anxiety, and was restricted to non-clinical children as opposed to children referred to a clinic because of anxiety disorders. Therefore, results can be generalised only with great caution and should be replicated for other anxieties and for clinical groups.

Does the amount of time of that fathers are present affect the possible impact they may have on boosting their children's social confidence? Although father involvement in raising children has increased (Pleck, 1997), mothers spend far more time with their children than fathers (Lamb, 2000). Moreover, about 40% of children are confronted with the divorce of their parents, and the majority are raised predominantly by their mother afterwards. Several issues can be considered here. First, there is no evidence linking the amount of parental involvement with desirable child outcome, suggesting that the quality rather than the quantity of involvement is most influential (Amato & Rezac, 1994). Also, fathers, precisely by being less present in the environment of the child because of being busy in the outside social world (travelling, working, interacting with strangers), may be important role models in coping with fears and signalling that the outside social world is full of opportunities rather than threats. After parents divorce, most children do see their father regularly (in the present study all children from split families had regular contact with their father). In those cases fathers can still boost their children's social confidence by the models and signals they give. The present study's explorative results on children living mostly with the mother versus living with both parents after divorce do, however, tentatively suggest that fathers' signal may have more

impact when fathers are more involved in the daily life of their children after divorce. Note that differences in exposure to father and mother involvement after divorce are not random and therefore hidden variables such as personality traits of both parents may explain the results. Finally, how can the present findings be applied to situations in which children are raised by one parent only? In the case of a single father, he might need to learn how to teach social wariness to his non-socially anxious child, if mothers do indeed have a comparative advantage in teaching social wariness, as our results suggest. In the case of a single mother, she might need to focus on role modelling social confidence to her socially anxious child, maybe by expressing more confidence than she actually feels (overconfident behaviour). Further research could shed more light on this important issue of the relative influence of fathers and mothers in families of different composition.

This study examined the role of paternal versus maternal social signals in the context of child social anxiety, using descriptions of hypothetical ambiguous events. The strength of this design is the control of the variables under study, allowing for a pure test of father versus mother effects. Limitations are, however, that it is unclear whether the results can be generalised to real social life, for at least two reasons. First, the stories are described verbally, whereas much social signalling may be of a non-verbal nature. For example, the description 'your father blushes' or 'your mother's hand feels wet' might have a less strong impact than actually seeing him blush or feeling her sweaty hand. The second reason why generalisation may be limited is that it is unknown whether, if children's *real* parents would react that way, their responses would be similar. We asked them to imagine the story as if it happened to them and if these were their real parents. We found that the actual social anxiety of their parents did not influence the outcomes, suggesting that children did respond to the imaginary parental reaction rather than to what their own parents would do and to whether their own parents' reactions would be similar or dissimilar to the imaginary parental reaction. However, we still do not know whether results would be similar if it concerned their real parents and their real parents' reactions.

Many directions for further research can be taken from here. First, experiments can be designed to test paternal versus maternal effects using paradigms in which parental behaviours and children's responses are manipulated in ways that are closer to real-life experiences, such as video scenarios (e.g., Dodge & Cole, 1987), virtual reality designs (e.g., Slater, Pertaub, Barker, & Clark, 2006), or role plays (e.g., Rosnay et al., 2006). Such paradigms also have the advantage that younger children can be tested, at an age where parents are likely to have more influence than in the age that we used, 8–12 years, constrained by the need for children to be able to read and write.

Second, by using social-referencing-like paradigms (e.g., Murray et al., 2008), in which parents can be selected on their actual current or lifetime social anxiety, more ecologically valid tests can be done. Third, the comparative role of the father and mother in preventing and treating excessive child social anxiety should be further explored. Fourth, it would be interesting to test the role of the father in other anxiety domains, such as fear of animals, heights, and new environments. It might be that fathers' comparative advantage in anxious children is also, or even more, present in childhood fears that are related to non-social areas in which men have specialised during evolution, such as confronting dangerous animals, and exploring new territory.

The main findings of the present study are that fathers are more influential than mothers in boosting the social confidence of their socially anxious children, whereas mothers teach social wariness to their low socially anxious children. The clinical implication of a dominant role of the father in socially anxious children is that fathers should be (more) involved in

the prevention and treatment of childhood social anxiety disorders. These results could even have implications on a societal level in which, at present, children are predominantly or exclusively raised by mothers and by female teachers and caregivers. A further understanding of the comparative advantages that fathers and mothers may have in certain domains of teaching wariness versus confidence to their offspring is therefore much needed.

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Key points

- It is known that children use the signals of their parents to decide whether ambiguous situations represent an opportunity or a threat, a process called 'social referencing'.
- New findings of the present study are that fathers are more influential than mothers in boosting the social confidence of their socially anxious children, whereas mothers teach social wariness to their low socially anxious children.
- The clinical implication of a dominant role of the father in socially anxious children is that fathers should be (more) involved in the prevention and treatment of childhood social anxiety disorders.
- These results could even have implications on a societal level in which, at present, children are predominantly raised by mothers and by female teachers and caregivers.
- A further understanding of the comparative advantages of fathers and mothers in certain domains of teaching wariness versus confidence is much needed.

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