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Factors Associated with the Referral of Anxious Children to Mental Health Care: the Influence of Family Functioning, Parenting, Parental Anxiety and Child Impairment

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Abstract

This study aims to identify factors that predict the mental health care referral of anxious children. In total, 249 children and families, aged 8–13 years, participated: 73 children were referred with anxiety disorders to mental health care [mean (*M*) age =10.28, standard deviation (SD) =1.35], 176 non-referred anxious children recruited in primary schools (*M* age =9.94, SD =1.22). Child anxiety and other disorders were assessed with semi-structured interviews. Child anxiety symptoms, behavioural problems, parental anxiety, the parenting styles overprotection, autonomy encouragement, rejection, and the family functioning dimensions control and relational functioning, were assessed with child, father and mother report on questionnaires. The summed interference rating of children's anxiety disorders was a predictor of referral, consistent over child and parent reports, but not comorbidity. Most family and parenting variables did not predict referral, nor differed between the referred and non-referred sample. Contrary to our hypothesis, maternal self-reported anxiety decreased the odds of referral and child reported parental autonomy granting increased, while child reported overprotection decreased the odds of referral. The impairment for the child due to the number and severity of their anxiety disorder(s) is, based on child, mother and father report associated with referral. This indicates that those who need it most, receive clinical treatment. *Copyright © 2014 John Wiley & Sons, Ltd.*

Introduction

Of all children diagnosed with a psychiatric disorder, 40 to 65% do not enter mental health care (Angold *et al.*, 2002; Briggs-Gowan *et al.*, 2000; Canino *et al.*, 2004). As children rarely take the initiative to ask for mental health care (Logan and King, 2001), it implies that their symptoms are not identified or they are not referred to services by parents, school, or health professionals.

Service utilization is even lower among children with internalizing problems (i.e. anxiety and mood disorders), especially in anxiety-disordered children (Angold *et al.*, 2002; Chavira *et al.*, 2004; Merikangas *et al.*, 2011). For example Chavira *et al.* (2004) found a lifetime service utilization rate in children 8–17 years old of 31% with a current anxiety disorder versus 40% with depression and 79% with attention deficit hyperactivity disorder (ADHD).

Children with internalizing behaviours might use less services than children with externalizing behaviours because their behaviours are less disruptive to the environment and therefore less noticed and/or cause less discomfort to adults (Chavira *et al.*, 2004; Heiervang *et al.*, 2007). This is supported by several studies showing that referral is not only influenced by the severity of the psychopathology of the child, but also related to the economic, social and/or psychological effects of the child's symptoms on the family and caregivers (Angold *et al.*, 2002; Brannan *et al.*, 2003; Chavira *et al.*, 2009; Sayal, 2004; Zwaanswijk *et al.*, 2003). Differences in referral rates of children with externalizing versus internalizing problems can thus be explained by the burden of the child's symptoms on the environment. However, it remains unclear why some children with anxiety problems are referred while others with anxiety problems are not. As children are generally not the ones who ask for mental health care, the referral among anxious children might also be related to factors within the family.

Other than general epidemiological studies (e.g. Farmer *et al.*, 2003; Verhulst and Van der Ende, 1997), studies on factors that predict the referral to mental health care of anxious children are scarce. The available studies mainly focus on predicting referral by clinical characteristics (e.g. severity of anxiety disorder, comorbidity) and demographic variables (e.g. gender, family composition) (Chavira *et al.*, 2004; Chavira *et al.*, 2009; Essau, 2005). Only Chavira *et al.* (2009) included one family characteristic, caregiver strain (i.e. parents' perception of the burden of caring for their anxious child), which was a significant predictor of service utilization. Processes within the family as possible referral factors are hardly studied.

The following family processes might be of particular interest in the referral of anxious children. First, parental anxiety might be a unique factor in explaining why some anxiety-disordered children get referred to mental health care. Essau (2005) found that parental anxiety was a predictor of service utilization in adolescents with anxiety disorders, but not for adolescents with depressive disorders. Parental anxiety is also associated with within-family processes like parental rearing behaviours and family functioning (Bögels and Brechman-Toussaint, 2006).

Second, family functioning [i.e. "the way several personalities in a family cohere in an ongoing structure that is both sustained and altered through interaction" (Handel quoted in Bloom, 1985, p. 225)] may be a factor that explains referral. Brannan *et al.* (2003) found that poorer family functioning was related to outpatient service utilization of children, while the internalizing and externalizing problem behaviours of the children were not predictors. Also, anxious children were found to report higher levels of conflict and enmeshment (i.e. controlling, constraining interaction) and lower levels of cohesion (i.e. supportive interaction) (Barber and Buehler, 1996), sociability and democratic family style (Stark *et al.*, 1990).

Third, parenting problems may be associated with referral. Parenting behaviours, particularly overprotection, lack of age-adequate autonomy encouragement, and rejection, have been found to be associated with increased anxiety in children (McLeod *et al.*, 2007; Van der Bruggen *et al.*, 2008). This seems to be a reciprocal influence: parenting behaviours can increase the anxiety levels of children, but the anxiety of the child can also evoke more anxiety-enhancing parenting (Barret *et al.*, 2005; Silverman *et al.*, 2009). Tentatively, when parents notice they express more negative or anxiety-enhancing parenting, and are, despite their parenting efforts, unsuccessful in reducing their child's anxiety, it might cause them to seek professional help. Parenting behaviours are more strongly related to anxiety in children aged 8–12 compared to adolescents aged 13–18 (Verhoeven *et al.*, 2012). Parenting might therefore be of particular influence on the referral of the current primary school-aged children.

Given that service utilization among children with disruptive behaviours is higher than among anxiety-disordered children, a comorbid disruptive disorder next to a primary anxiety disorder might predict service use. So far, studies on comorbidity next to an anxiety disorder yield inconsistent findings and are difficult to compare given the different comorbid disorders included and the different samples used. In some studies comorbid ADHD, oppositional defiant disorder (ODD), conduct disorder (CD), mood disorders or other anxiety disorders in

children aged 6–18 years did not predict service utilization (Chavira *et al.*, 2009; Chavira *et al.*, 2004). While Essau (2005) found that comorbid anxiety or depressive disorders, a somatoform or substance use disorder were predictors of service utilization in anxious adolescents. Also, it has been proposed that the additive effect of multiple comorbid disorders (regardless of type) predict inpatient mental health care (Chavira *et al.*, 2009; Essau, 2005).

Other variables that have been related to service utilization in earlier studies about anxiety in children were child age, gender, comorbidity, ethnicity, family socio-economic status (SES), family composition and stressful life events. The findings on these variables can be summarized as follows. Anxious adolescents above 15 years of age are more likely to use services than anxious children aged 8–14 (Chavira *et al.*, 2004; Essau, 2005), but Chavira *et al.*, (2009) did not find this age difference in a sample in public care. Gender appears not to affect the service utilization of anxiety disordered children and/or adolescents (Chavira *et al.*, 2004; Chavira *et al.*, 2009; Essau, 2005). Lower SES is associated with lower service utilization in children with anxiety disorders in several studies (Angold *et al.*, 2002; Chavira *et al.*, 2004; Giannakopoulos *et al.*, 2010). In the Netherlands, as in many European countries, however, mental health care services are freely accessible and SES appears not to be of influence (Sourander *et al.*, 2001; Zwaanswijk *et al.*, 2003). Living in a single parent family and change in family composition is found to be associated with service utilization (Sourander *et al.*, 2001; Zwaanswijk *et al.*, 2003), but living in a single parent family was not a significant referral predictor in anxiety-disordered children in accessing public care (Chavira *et al.*, 2009). In conclusion, results are mixed with respect to SES and family composition, and SES mixed outcomes may be related to differences in health care systems.

In sum, this study aims to identify family and parenting factors that are associated with the referral of anxious children, over and above the severity of the child's psychopathology. To that end, a sample of highly anxious children who were referred to mental health care and a sample of children who were not referred, but recruited from schools with the 15% highest self-reported anxiety levels on the Screen for Child Anxiety Related Emotional Disorders (SCARED), were studied. We measured child anxiety symptoms, anxiety disorders, comorbid disorders, health related quality of life (QoL), parental anxiety, family functioning (i.e. relational functioning and control), and parenting behaviours (i.e. autonomy granting, overprotection, rejection). We expected that families in the referred sample could be distinguished from families in the non-referred sample by more impairment of the

child's daily life due to the anxiety disorder(s), more comorbid disorders, poorer QoL, higher levels of parental anxiety, more anxiety-enhancing parenting, that is, more overprotection and rejection and less autonomy granting parenting, and finally family functioning characterized by more dysfunctional control and less positive relational functioning.

Methods

Participants

Referred sample

The referred sample was part of a randomized controlled trial (RCT) on the efficacy of child versus family cognitive behavioural therapy (Bodden *et al.*, 2008). The 147 children, aged 8–18, were referred by their general practitioner (GP) to one of eight mental health care centres, with a primary anxiety disorder other than obsessive compulsive disorder or post-traumatic stress disorder. In the Netherlands, children and their parents can access mental health care after the referral of a GP. Children and their parents were approached for participating in the RCT after the regular registration procedure of the centre had taken place. After assessing 147 children for eligibility, 19 children were excluded because they did not meet inclusion criteria, they declined participation or the inclusion date expired.

Non-referred sample

The non-referred sample was part of a child anxiety prevention study (Simon *et al.*, 2011). In total, 4796 children, aged 8–13 of 50 primary schools were asked to complete an anxiety-screening questionnaire. Of them, 2494 children wanted to complete the anxiety-screening questionnaire. Children scoring in the top 15%, with different cutoffs for girls and boys ($n = 412$), were asked to participate in the study, 184 highly anxious children agreed to participate. For the current study, eight children were removed from the sample because they already used mental health services.

The Medical Ethical Committee of Maastricht University approved both studies. All families signed informed consents.

Current sample

We used the pre-test data from both samples of the children, aged 8–13 years who attended primary school. In the referred sample, 73 from the 128 children belonged to this age group and were still attending primary school. In total, participants were 249 children, 73 referred and

176 non-referred. Table 1 displays demographic features of the two sub-samples. The demographic features in both groups were comparable except for child age and father and mother educational level. This was taken into account in the analyses.

Data from Statistics Netherlands (2012) indicate that the two samples seem to be representative for the Dutch general population with regard to educational level and the percentage of unemployment. The majority (40.3%, Statistics Netherlands, 2012) of the Dutch labour force finished intermediate vocational education. Unemployability was 6.6% among men and 6.3 among women (Statistics Netherlands, 2012). However, in both samples the inclusion of non-Dutch participants was low compared to the percentage of non-Dutch inhabitants in the Netherlands (20.8%, Statistics Netherlands, 2012), which might partially be explained by the areas in which both studies took place. Moreover, both samples contain a relatively lower number of the families with divorced parents compared to the general population (26.3%, Statistics Netherlands, 2012).

Table 1. Demographic features and comparisons of the non-referred and referred anxious children

	Non-referred $N = 176$	Referred $N = 73$
Girls (*n*, %)	100 (57%)	37 (51%)
Child age (*M*, SD)	9.94 (1.22)	10.30 (1.35)*
Parents separated (*n*, %)	35 (20%)	12 (17%)
Father did not participate	23 (13%)	9 (12%)
Parental age		
Father (*M*, SD)	41.75 (4.48)	42.77 (4.58)
Mother (*M*, SD)	39.63 (4.23)	40.19 (4.88)
Ethnicity Dutch		
Father (*n*, %)	174 (98%)	59 (92%)
Mother (*n*, %)	171 (97%)	69 (95%)
Biological parent		
Father (*n*, %)	162 (92%)	61 (95%)
Mother (*n*, %)	175 (99%)	70 (96%)
Parental educational level[1]		
Father (*M*, SD)	4.98 (1.82)	4.31 (2.02)**
Mother (*M*, SD)	4.66 (1.78)	3.97 (1.99)**
Current unemployment		
Father (*n*, %)	12 (7%)	4 (6%)
Mother (*n*, %)	8 (5%)	2 (3%)

[1]On a scale from zero (no education) to eight (university degree).
*$p < 0.05$ (two-tailed), but non-significant after Bonferroni correction. **$p < 0.01$ (two-tailed).

Measurements

Parents and children were interviewed with the child and parent Dutch version of the Anxiety Disorders Interview Schedule for Children (ADIS-C/P, Siebelink and Treffers, 2001; Silverman and Albano, 1996) to measure anxiety disorders and related Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) psychopathology. Parents and children were asked to indicate on a nine-point interference scale (0 = "not at all" to 8 = "very much") the impairment in the child's daily life as a result of the disorder symptoms. Ratings 4–8 indicate the presence of a disorder. The interviewer has, as stated in the manual, the ability to adjust the interference score bases on the presence of more or less (severe) symptoms. The interference ratings were summed, as a measurement of the impairment due to the anxiety and comorbid disorder(s) (Simon *et al.*, 2011). The test–retest reliability of the ADIS-C/P is good [$\kappa = 0.63$–0.80 (child interview); $\kappa = 0.65$–0.88 (parent interview), Silverman *et al.*, 2001]. Interrater agreements with regard to the presence of anxiety disorders were good in both the referred [$\kappa = 0.89$ (ADIS-C), $\kappa = 0.83$ (ADIS-P), Bodden, *et al.*, 2008] and the high-anxious sample [$\kappa = 1.00$ (ADIS-C), $\kappa = 0.73$ (ADIS-P), Simon and Bögels, 2009].

Anxiety symptoms of the child were measured by the 71-items SCARED (Bodden *et al.*, 2009) using the child and parent version. This questionnaire assesses symptoms of all DSM-IV anxiety disorders. Symptoms were rated on a three-point Likert scale (0 = "(almost) never"; 1 = "sometimes"; 2 = "often") and added up to a total scale score. The SCARED-71 can discriminate clinically anxious from control children: pooled effect sizes were 1.6 (child-report) and 2.4 (parent-report) (Bodden *et al.*, 2009). The convergent validity is satisfactory. Correlations between the SCARED-R (the SCARED-71 is highly similar to the SCARED-R, five social anxiety items were added) and the Child Behaviour Checklist (CBCL)-internalizing scores ranged from 0.26 and 0.58 (Muris *et al.*, 2004). The internal consistencies of both the child and parent versions in this study were high ($\alpha = 0.94$ and $\alpha = 0.95$ respectively).

Parental anxiety was measured by the SCARED-A, the adult version of the SCARED-C (Bögels and Van Melick, 2004). The SCARED-A is able to discriminate between adults with and without a current anxiety disorder (effect size 1.19), and the convergent validity (correlations between SCARED-A and ADIS-IV-L = 0.58 for males and 0.49 for females) is satisfactory (Van Steensel and Bögels, 2014). Internal consistencies (α) in this study were 0.95 (mothers) and 0.95 (fathers).

Parenting behaviours were measured by the Rearing Behaviour Questionnaire (RBQ, Bögels and Van Melick, 2004) using the child about mother, child about father, father and mother self-reports versions. Items ($n = 28$) are rated on a four-point Likert scale (1 = "not true at all" to 4 = "very true"). We used the rearing dimensions autonomy granting, overprotection, and rejection. Verhoeven *et al.* (2012) examined the construct validity of the parenting constructs by asking six experts to sort the items of the questionnaire to the parenting constructs. The agreement among the experts was high ($\kappa = 0.82$). Confirmatory factor analyses showed that four-factor models fitted the data well [root mean square error of approximation (RMSEA) ranged from 0.05–0.06, CFR ranged from 0.92–0.94]. The internal consistencies (α) of the subscales in this study were: RBQ-child 0.78 (autonomy granting), 0.84 (overprotection) and 0.85 (rejection); RBQ-father 0.73 (autonomy granting), 0.67 (overprotection) and 0.75 (rejection); RBQ-mother 0.59 (autonomy granting), 0.72 (overprotection) and 0.84 (rejection).

Family functioning was measured by the Family Functioning Scale (FFS) (Bloom, 1985). This questionnaire contains 75 items that formed 15 scales of family functioning. For the current study, 12 of 15 scales (60 items) were used. The 12 scales add up to two family functioning dimensions: family control and relational functioning. Children, fathers and mothers rated items about their family on a four-point Likert scale (1 = "not true at all" to 4 = "very true"). The internal consistencies in this study (α) were: FFS-father 0.89 (relational functioning), 0.72 (family control); FFS-mother 0.90 (relational functioning), 0.73 (family control); FFS-child 0.84 (relational functioning) and 0.51 (family control). Distressed families could be discriminated from non-distressed families based on nine of the 12 scales (Bloom, 1985). Limited validity research on the FFS is available.

The CBCL (Achenbach, 1991) measures problem behaviours in children. Parents rated 118 items about emotional and behavioural problems of their children on a three-point Likert scale (0 = "not true (as far as you know)" to 2 = "very true or often true") and were added up an internalizing syndrome scale and an externalizing syndrome scale. The convergent validity is expressed in strong correlations of the internalizing and externalizing scales with several comparable measurements. Both the internalizing and externalizing scales differentiate between referred and non-referred children based on multiple regression analyses, discriminant analyses and logistic regression analyses measurements (see Achenbach and Rescorla, 2001, for an overview). Both scales are able to discriminate between psychometric properties of the Dutch CBCL

satisfactorily (Verhulst *et al.*, 1996). In this study, internal consistencies (α) of the syndrome scales were 0.89 (internalizing problems) and 0.87 (externalizing problems).

The EQ-5D (The EuroQoL Group, 1990) measures health related QoL. It comprises the dimensions mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Children rate each dimension on three levels (no problems, some problems, extreme problems). Parents rate the dimensions about their children on a by proxy version. The five dimensions are summed into health states (Lamers *et al.*, 2006). The convergent validity was shown for the separate dimensions of the EQ-5D with the Child Quality of Life (TACQOL) questionnaire by Spearman Rank correlations ranging from −0.40 to −0.82 for the by proxy version (Stolk *et al.*, 2000) and Spearman Rank correlations ranging from −0.29 to −0.53 for the child version (Willems *et al.*, 2009). Children with mental health problems differed significantly from children without mental health problems on the dimensions "mobility", "usual activities", "pain/discomfort" and "anxiety/depression" (Ravens-Sieberer *et al.*, 2010).

Data preparation and analyses

Missing data on item level were estimated using SPSS' Missing Value Analysis (MVA) Estimation Maximization. MVA was conducted for the categorical and total scale variables in both groups using SPSS 19. Little's (1988) Missing Completely at Random (MCAR) Tests were non-significant in the referred sample [$\chi^2(954) = 864.35$, $p = 0.982$] and in the non-referred sample [$\chi^2(1911) = 673.75$ $p = 1.00$] indicating that the variables are missing completely at random. SPSS' Multiple Imputation (five imputations) was used to impute the missing scores. The pooled imputations were used for the analyses. Analyses were also performed on the observed data and gave similar outcomes.

Independent sample t tests and χ^2 tests were performed to calculate differences on several outcome measures between the referred sample versus non-referred sample. Bonferroni Holm corrections are used to prevent Type I errors. Hierarchical logistic regression analyses were conducted to identify predictors of service utilization.

Results

Comparison of the referred and non-referred groups of anxious children

Parents in the referred group reported, compared to the non-referred group, more child internalizing problem behaviours, more child anxiety symptoms, higher summed

interference ratings of child anxiety disorders, and lower QoL of their child. There were no differences in father- and mother-reported family functioning or rearing behaviours (see Table 2). Children in the referred group reported higher interference ratings of anxiety disorders, but no differences in self-reported anxiety symptoms. They perceived their parents as *more* autonomy granting and *less* overprotective compared to the non-referred

Table 2. Mean (*M*), standard deviation (SD), comparisons and effect sizes (Cohen's *d*) of variables on child's psychopathology, parental anxiety, family functioning and parenting behaviour in the referred and non-referred group of anxious children

Variable	Non-referred N = 176	Referred N = 73	Cohen's *d*
CBCL-internalizing problems (*M*, SD)	56.83 (10.62)	68.70 (8.44)	1.18*
CBCL-externalizing problems (*M*, SD)	53.39 (9.55)	55.54 (10.97)	0.20
EQ-5D: health related quality of life			
Child report (*M*, SD)	0.86 (0.21)	0.81 (0.23)	0.23
Parent report (*M*, SD)	0.94 (0.10)	0.75 (0.23)	1.26*
Sum of interference anxiety disorders[1]			
ADIS-C (*M*, SD)	2.94 (4.70)	11.61 (7.16)	1.57**
ADIS-P (*M*, SD)	2.40 (3.74)	15.43 (7.31)	2.58**
Sum of interference comorbid disorders			
ADIS-C (*M*, SD)	0.23 (1.09)	0.11 (0.67)	–0.12
ADIS-P (*M*, SD)	0.55 (2.15)	0.99 (2.71)	0.19
SCARED-C: Child anxiety symptoms			
Child report (*M*, SD)	51.58 (21.64)	48.51 (22.17)	–0.14
Parent report (*M*, SD)	32.42 (19.23)	47.90 (26.42)	0.72*
SCARED-A: Parental anxiety symptoms			
Father (*M*, SD)	21.99 (16.19)	17.14 (17.42)	–0.29
Mother (*M*, SD)	29.37 (18.28)	26.84 (18.87)	0.14
FFS: family relational functioning			
Child (*M*, SD)	89.59 (11.23)	90.49 (11.53)	–0.08
Father (*M*, SD)	95.99 (11.18)	91.95 (9.89)	0.37
Mother (*M*, SD)	96.34 (11.95)	93.28 (11.90)	0.26
FFS: family control			
Child (*M*, SD)	65.26 (6.90)	62.46 (7.32)	–0.40
Father (*M*, SD)	58.37 (8.50)	59.20 (6.58)	0.10
Mother (*M*, SD)	57.46 (8.00)	58.89 (8.34)	–0.18
RBQ: autonomy granting			
Child (*M*, SD)	17.82 (2.78)	19.89 (4.28)	–0.63*
Father (*M*, SD)	21.10 (3.15)	20.49 (3.46)	0.19
Mother (*M*, SD)	21.52 (3.41)	21.89 (3.12)	–0.11
RBQ: overprotection			
Child (*M*, SD)	15.08 (3.96)	12.74 (3.38)	–0.62**
Father (*M*, SD)	12.75 (3.17)	11.93 (3.54)	–0.25
Mother (*M*, SD)	12.67 (3.35)	12.03 (3.38)	–0.19
RBQ: rejection			
Child (*M*, SD)	13.85 (3.62)	12.94 (3.86)	–0.25
Father (*M*, SD)	12.39 (2.74)	12.23 (2.60)	–0.06
Mother (*M*, SD)	12.15 (3.09)	11.89 (2.84)	–0.24

Note: CBCL, Child Behaviour Checklist; EQ-5D, The EuroQoL Group Quality of Life; ADIS-C, Anxiety Disorders Interview Schedule for Children – child version; ADIS-P, Anxiety Disorders Interview Schedule for Children – parent version; SCARED-C, Screen for Child Anxiety Related Emotional Disorders – child version; SCARED-A, Screen for Child Anxiety Related Emotional Disorders – adult version; FFS, Family Functioning Scale; RBQ, Rearing Behaviour Questionnaire.
[1]Interference ratings of specific phobias were averaged.
*$p < 0.01$; **$p < 0.001$; (two-tailed).

children. No differences were found on children's externalizing problem behaviours, child comorbid disorders, self-reported QoL, parental anxiety and family functioning (see Table 2).

Prediction of service utilization among anxious children

A hierarchical logistic regression analysis was performed with SPSS LOGISTIC REGRESSION to assess the impact of variables on the likelihood that children would be referred or not. The assumption for multicollinearity was not violated. Some outliers were detected in both samples, but did not influence the goodness-of-fit of the regression models. Therefore, outliers were not transformed.

In previous research, parental anxiety was a consistent factor associated with referred samples and was, therefore, entered in the first block.[1] Because we hypothesized that family and parent factors would be an important factor beside the child's psychopathology, we entered family functioning (relational functioning and control) and parental rearing behaviours (autonomy granting, overprotection and rejection) in the second block. The third block contained the child's psychopathology: the summed interference ratings of the anxiety disorders and summed interference ratings of comorbid (non-anxiety) diagnoses. In order to limit the number of predictors, given the smaller sample size of the referred sample, we did not include all variables in the models. We did not include the SCARED-71 child self-report and parent about child report in the models because the summed interference ratings also incorporate that symptoms of an anxiety disorder are present. Correlations between SCARED-71 and ADIS summed interference ratings are moderate (child report $r = 0.32$, $p < 0.001$; parent report $r = 0.49$, $p < 0.001$). The parent-rated QoL and CBCL internalizing behaviours overlapped considerably ($r = -0.51$; $r = 0.53$, $p < 0.001$) with the parent-reported interference rating of the anxiety disorders (ADIS-P) and were excluded from the models. Despite a modest correlation ($r = 0.20$, $p < 0.004$) between parent-rated CBCL externalizing behaviours and parent-reported interference ratings of comorbid diagnoses (ADIS-P), we excluded externalizing behaviours from the regression models. However, we re-ran analyses exchanging comorbid diagnoses for externalizing behaviours, and study outcomes remained similar.

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[1] To prevent overfitting of the models, we controlled *post hoc* for child age and parental educational level by including those predictors in a model with only the significant predictors. Results did not change.

The full models containing all predictors were statistically significant. Child model: $\chi^2(8) = 115.30$, $p < 0.001$, R^2 ranging from 0.42 (Cox & Sell) to 0.61 (Nagelkerke); father model: $\chi^2(8) = 134.46$, $p < 0.001$; R^2 ranging from 0.52 (Cox & Sell) to 0.74 (Nagelkerke); mother model: $\chi^2(8)$ 159.72, $p < 0.001$, R^2 ranging from 0.54 (Cox & Sell) to 0.76 (Nagelkerke).

Table 3 displays the contribution (after the addition of block 3) of the individual predictors to the three separate regression models based on child, father and mother reports. The summed interference of the anxiety disorders was the strongest, significant predictor in all three models [odds ratios 1.37 (child); 1.54 (father); 1.66 (mother)]. Higher interference due to the anxiety disorders of the child increased the likelihood of being referred. In the father model, this was the only significant predictor. In the mother model, maternal anxiety was a significant predictor, recording an odds ratio of 0.97. Children who had mothers that self-reported less anxiety, were more likely to be referred. In the child model, *higher* levels of child-reported parental autonomy granting and *lower* levels of child-reported parental overprotection increased the likelihood (odds ratios 1.27; 0.69) of being referred.

Discussion

As hypothesized, the interference due to the anxiety disorder(s) is associated with the referral of anxious children to mental health care. This corresponds with previous research showing that impairment ratings are more indicative for service utilization than the presence of the symptoms of a disorder (Angold *et al.*, 1999). In addition to the interference ratings, parents in the referred sample reported lower child QoL than parents in the non-referred sample. Since the summed interference ratings of the anxiety disorders are higher when multiple anxiety disorders are present (because they are summed), this study outcome supports the idea that the additive effect of anxiety disorders influences service utilization (Chavira *et al.*, 2009; Essau, 2005). *Post hoc* analyses show that when the number of anxiety disorders and the mean interference rating are included as separate predictors, both were significant predictors of referral.

In contrast to our hypothesis, child reported overprotective parenting *decreased* the odds of being referred. Child-reported autonomy granting parenting *increased* the odds of being referred. We consider overprotection and autonomy granting as two separate parenting behaviours (Verhoeven *et al.*, 2012), but similar explanations might apply to this outcome. First, children who perceive their parents as more overprotective and less autonomy

Table 3. Logistic regression analysis predicting mental health service utilization among clinically anxious children based on child, father and mother report

Predictors	Child model		Father model		Mother model	
	OR	95% CI	OR	95% CI	OR	95% CI
Block 1						
Parental anxiety[1]	0.98	[0.95–1.01]	0.98	[0.95–1.01]	0.97*	[0.93–1.00]
Block 2						
Family relational functioning[2]	0.97	[0.93–1.02]	0.99	[0.93–1.07]	0.98	[0.93–1.04]
Family control[2]	0.95	[0.88–1.02]	1.03	[0.94–1.14]	0.97	[0.90–1.06]
Parental autonomy granting[3]	1.27**	[1.09–1.49]	0.85	[0.70–1.04]	0.88	[0.74–1.04]
Parental overprotection[3]	0.69**	[0.57–0.85]	0.84	[0.69–1.01]	0.90	[0.74–1.09]
Parental rejection[3]	1.12	[0.94–1.33]	1.13	[0.91–1.41]	1.16	[0.93–1.46]
Block 3						
Sum of interference anxiety[4]	1.37***	[1.25–1.51]	1.54***	[1.35–1.75]	1.66***	[1.44–1.92]
Sum of interference comorbid non-anxiety disorders[4]	0.64	[0.36–1. 13]	0.84	[0.65–1.09]	0.83	[0.66–1.04]

Note: OR, Odds Ratio; CI, confidence interval.
[1]SCARED-A father and mother combined in the child model; SCARED-A father in the father model; SCARED-A mother in the mother model.
[2]FFS child report in the child model; FFS father report in father model; FFS mother in the mother model.
[3]RBQ child report about father and mother combined in the child model; RBQ father self-report in the father model; RBQ mother self-report in the mother model.
[4]ADIS-C in the child model; ADIS-P in the father and mother model. Abbreviated scale names in Table 2.
*$p < 0.05$ (two-tailed); **$p < 0.01$ (two-tailed); ***$p < 0.001$ (two-tailed).

granting might have parents that will not refer their child to services, because they tend to keep their children close. Second, researchers (see McLeod *et al.*, 2007, for an overview) consider overprotective parenting and a lack of encouragement of the child's autonomy to be anxiety-enhancing parenting styles. However, children who report overprotection and little autonomy encouragement might experience their parents as safely protective. This, in the short term, may reduce their uncertainties and anxieties. Parents might respond to the anxious child with overprotective parenting, as a way of dealing with the child's problem (Barret *et al.*, 2005). Tentatively, as long as parents are willing to exhibit this parenting, the anxiety problems may be less visible and referral not needed. This outcome only accounts for child reports and note that it is usually the parents who decide their child needs help rather than the child.

As a third explanation, the unexpected (reversed) effect of child reported autonomy granting and overprotective parenting might be due to a selection bias of the non-referred sample. The sample consists of children who self-reported the 15% highest anxiety scores. Children who tend to over report anxiety might be overrepresented in the sample. Consequently, the non-referred children more often have a general negative reporting style (Aronson *et al.*, 2006; Johnson *et al.*, 1995), which may

be reflected in their negative ratings on their parent's autonomy granting and overprotective parenting.

Mothers' self-reported lower levels of anxiety symptoms were associated with the referral of the child, but in the opposite direction than expected: *lower* maternal anxiety was associated with *more* referral. An explanation for this finding is that when mothers experience similar anxiety feelings as their child, they may not consider it to be something to seek help for. The anxiety of the mother in itself might also hinder parents going to a child mental health centre. Even, anxious mothers may not be taken seriously when they seek referral for their child's anxiety problem. Verhulst and Van der Ende (1997) found similar results: the (general) psychopathology of the parents lowered the threshold for reporting problems in their child, but it did not enhance service utilization. Our findings on this matter are not consistent over father and mother report, as we found fathers' anxiety to be unrelated to referral. Note however that it might generally be the mother seeking help for her child. Findings in any case do underline that heightened parental anxiety does not increase referral, which is in contrast to Essau's (2005) finding of parental anxiety predicting service utilization of anxious adolescents. There are however differences between our and Essau's (2005) study. First, Essau (2005)

included only adolescents and not children, and it can be expected that the older children are, the more they self-refer for treatment. Second, parental anxiety was based in Essau' (2005) study on adolescent-reported anxiety *disorders* rather than child-reported and parents' self-reported anxiety *symptoms*. The presence of an anxiety disorder in parents might be a better predictor for child referral than the presence of parental anxiety symptoms. In addition, in Essau's (2005) study no distinction was made between paternal and maternal anxiety. Our study suggests this distinction is relevant, as lower maternal anxiety and not paternal anxiety symptoms were associated with referral.

In contrast with expectations based on previous findings (Chavira *et al.*, 2004; Heiervang *et al.*, 2007), the presence of comorbid non-anxiety disorders was not a predictor of service utilization, but the number and severity of comorbid anxiety disorders was. Of all children, nearly 13% had at least one comorbid non-anxiety disorder (ADIS-C/P combined). ADHD was the most common (6%) followed by depressive disorders (4.4%) and ODD and CD (2.4%). Clearly, our study showed that the number and impact of anxiety disorders themselves, and not comorbid depressive and disruptive disorders were associated with referral.

Except for the unexpected finding that lower self-reported maternal anxiety and less child-reported autonomy granting and more child-reported overprotection are related to more referral, family functioning (relational functioning and control), father and mother self-reported parenting (autonomy granting, overprotection, rejection), child-reported parental rejection and father and child reported parental anxiety, were no predictors of being referred, nor differed between the referred and non-referred sample. This suggests that those variables play their role in the etiology and maintenance of childhood anxiety (Bögels and Brechman-Toussaint, 2006; McLeod *et al.*, 2007), but based on this study, not in the referral of those children. The impairment in daily life the child experiences due to anxiety disorder(s) is indicative for the parents' decision to seek help rather than the negative effects of the anxiety symptoms on their parenting or family functioning.

Strengths of this study are the inclusion of family and parenting measures, the use of multiple informants and the comparison of a referred versus a non-referred high anxious sample, making it possible to identify referral factors specifically for anxious children.

This study had also limitations. Results from this study are, given the differences between countries with regard to their health care systems, only generalizable to countries that have a similar system to the Netherlands, that is, a health care system that is accessible without major financial constraints. The smaller referred sample size limited the number of predictors that could be included in the regression models. This made the models less extensive, but still very informative on our hypotheses. The sample consisted predominantly of Caucasian families, recruited in areas in the Netherlands with relatively few ethnic minorities, making results less generalizable to ethnic minority groups. It might however also reflect the fact that service utilization is lower in ethnic minorities compared to Caucasian children (Merikangas *et al.*, 2011). Compared to the Dutch population, a relatively small number of the parents were divorced. Previous research did not find an association between marital status and the service utilization of anxious children (Chavira *et al.*, 2009), therefore results might not have been influenced by the relatively low number of divorced families. The study relied on self-report of family members for measuring parenting and family functioning, and it is unclear whether objective measures of parenting and family functioning such as observations, would give similar results. As mentioned earlier, the non-referred sample consisted of children ($N = 412$) who self-reported the top 15% highest anxiety problems. Of them, 184 children agreed to participate in a study in which they may be assigned to a preventive intervention (or waitlist). The sample might therefore be biased for two reasons: children who tend to over-report anxiety might be over-represented, while anxious children who do not self-report anxiety might be under-represented. Second, although they did not seek help for themselves, participants might be different from the high-anxious non-participants, given their willingness to participate in the prevention study.

Implications for research and practice

Our findings suggest that the impairment due to the anxiety disorders, regardless of the informant (parent or child) and regardless of comorbid disorders, is associated with the referral of anxious children to mental health care. These robust findings suggest that the child's impaired daily functioning is indicative for parents to seek help. This is an encouraging result. However, still 60% of the high-anxious non-referred children suffered from at least one anxiety disorder (ADIS-C/P combined), which indicates that those children might, despite their non-referral state, be "in need" of services (Zwaanswijk *et al.*, 2003). Despite our findings that the child's impaired daily functioning is indicative for parents to seek help, previous

research also show that emotional problems of children are associated with a delay in using mental health services (Sayal, 2004). The impairment due to anxiety disorders might have to reach a higher level of severity before children are referred. Increasing knowledge among parents and teachers about anxiety disorders and the possibilities for treatment might increase the referral rate of anxiety disordered children to services. Also, Simon *et al.* (2012) showed that offering children and their parents an anxiety-prevention programme, is more cost-effective than offering no intervention. This suggests that children, families and society benefit from early detection and treatment of anxiety problems.

It is often hypothesized that parents should be involved in childhood anxiety treatment, although little support was found for this idea (e.g. Jongerden and Bögels, 2014; In-Albon and Schneider, 2007; Reynolds *et al.*, 2012). In this study it was hypothesized that parents' own heightened anxiety, anxiety-enhancing parenting and family dysfunction, that may or may not be caused by the child's anxiety problems, would be indicative for referral beside the impairment due to the child's anxiety disorder, but no evidence whatsoever was found for this hypothesis. Only child-reported parental autonomy granting and overprotection and mother's self-reported anxiety symptoms were associated with referral of the child, however,

in the opposite direction as was expected. We discussed that the current unexpected findings on autonomy granting, overprotection and maternal anxiety might be due to who was the informant on parenting, (i.e. the child), and on maternal anxiety (i.e. mother's self-report). Therefore, future research should use independent observational measurements of parenting beside the questionnaires. In addition to the diagnostic interview s about child anxiety disorders, a diagnostic interview can be taken from the parents as well, for the purpose of having a more independent measurement of parental anxiety disorders. Given the scarce research available, replication of the current findings is necessary.

Results further suggest that the suffering of the child as a result of their anxiety disorders is strongly related to referral to mental health care, indicating that those who need it most receive clinical treatment.

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Declaration of interest statement

The authors have no competing interests.

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