J. Behav. Ther. & Exp. Psychiat. 44 (2013) 53–60

Contents lists available at SciVerse ScienceDirect

Journal of Behavior Therapy and Experimental Psychiatry

journal homepage: www.elsevier.com/locate/jbtep

Beliefs regarding child anxiety and parenting competence in parents of children with separation anxiety disorder

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ARTICLE INFO

Article history:
Received 9 January 2012
Received in revised form
18 July 2012
Accepted 18 July 2012

Keywords:
Childhood separation anxiety disorder
Parental cognitions
Parenting satisfaction
Parenting self-efficacy

ABSTRACT

Background and objectives: Despite the fact that numerous developmental models have highlighted the role of parental cognitive processes in connection with anxiety disorders in children and adolescents, the role of parents' beliefs about their children and parenting remains largely unexplored. This study investigated the specific association between parental beliefs and child separation anxiety.
Method: Parents of children with a diagnosis of Separation Anxiety Disorder (SAD) reported on beliefs and expectations related to their child's fears and own parenting competence. To study the potential specificity of relationships, a clinical control group of mothers of children with social phobia (SoP) and a group of mothers of children without a mental disorder (healthy controls, HC) were included.
Results: Results indicated that parents of anxious children had significantly higher levels of dysfunctional beliefs than the parents in the HC group. Mothers of children with SAD showed lower levels of parenting self-efficacy than mothers of children with SoP. They also demonstrated lower parenting self-efficacy and satisfaction compared to mothers of healthy children. Parental dysfunctional beliefs about child anxiety and paternal parenting self-efficacy were significantly positively associated with child anxiety. The effects remained significant after controlling for parental anxiety and depression.
Limitations: Due to the cross-sectional design of the study, causality of the found effects cannot be inferred.
Discussion: Data suggest that children's anxiety and parents' beliefs about their child's anxiety, coping skills and parenting are strongly associated. Further research is needed to investigate whether addressing parental cognitions in addition to parents' anxiety may improve prevention and intervention of child anxiety.

1. Introduction

The key feature of Separation Anxiety Disorder (SAD) is the excessive and unrealistic fear of separation from an attachment figure (for an overview see Schneider & Lavallee, in press). SAD is the earliest and one of the most common childhood anxiety disorders, with the mean age of onset at 7 years (Kessler et al., 2005) and prevalence estimates near 4% (Cartwright-Hatton, McNicol, & Doubleday, 2006). Further, several studies indicate that SAD is a strong risk factor for comorbid diagnoses of other anxiety and affective disorders during childhood (Lewinsohn, Holm-Denoma, Small, Seeley, & Joiner, 2008) as well as for the development of mental disorders in adulthood (Brückl et al., 2007; Lewinsohn et al., 2008). Despite the high prevalence of SAD, unfavorable long-term prognosis and impairing symptomatology, possible etiological factors specific to SAD remain under-researched (Suveg, Aschenbrand, & Kendall, 2005). Subsequently, in an attempt to fill this gap in research the present study set a focus on children with SAD.

Broad models of the etiology of childhood anxiety disorders in general have been developed, but few focus on specific disorders. Nevertheless, existing models provide a good foundation for the research on SAD, highlighting the important role of familial and cognitive mechanisms in the development and maintenance of childhood anxiety (Ginsburg & Schlossberg, 2002; Murray, Creswell, & Cooper, 2009; Rapee, 2001). Both top-down (investigating the children of anxious parents) (Micco et al., 2009) and bottom-up (investigating the parents of anxious children) studies (Cooper, Fearn, Willetts, Seabrook, & Parkinson, 2006; Hughes, Furr, Sood, Barmish, & Kendall, 2009; Kearney, Sims, Pursell, & Tillotson, 2003; Last, Hersen, Kazdin, Finkelstein, & Strauss, 1987) have shown that familial transmission plays a role in both anxiety in general as well as SAD specifically. However, it is yet unclear which role the shared familial environment – in contrast to genetics – plays within the context of familial anxiety legacy. Research so far

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http://dx.doi.org/10.1016/j.jbtep.2012.07.005

has indicated that the relative contribution of each of these factors seems to be somewhat disorder-specific (Eley, Rijsdijk, Perrin, O'Connor, & Bolton, 2008). Although the importance of the familial environment is indisputable (for a review see Burt, 2009), findings on its relative impact on SAD tend to be inconsistent across investigations (Bolton et al., 2006; Cronk, Slutske, Madden, Bucholz, & Heath, 2004; Eley et al., 2008; Feigon, Waldman, Levy, & Hay, 2001; Topolski et al., 1997). Since results regarding the role of specific environmental factors, such as childrearing or parenting remain unclear (McLeod, Wood, & Weisz, 2007), the need for more research in this area is evident.

The role of parental cognitions is of particular interest in the development and maintenance of children's anxieties, although the specific role of parents' beliefs and expectations remains largely unexplored. Only a limited number of studies have investigated parents' cognitions in relation to child anxiety. It remains unclear whether parents' cognitions serve as a precursor to or are a result of parental anxiety, as does whether parents' cognitions are directly associated with children's anxiety symptoms. In one study, Wheatcroft and Creswell (2007) found that in a community sample of parents, parents' perceived control over their children's behavior primarily reflected parental anxiety rather than child anxiety. Top-down studies indicate that anxious mothers hold interpretative biases toward potential threats in their child's environment (Lester, Field, Oliver, & Cartwright-Hatton, 2009). They expect their children to be more anxious and avoidant than less anxious mothers do (Cobham, Dadds, & Spence, 1999). A small number of bottom-up studies have investigated the question whether parents of anxious children themselves hold dysfunctional cognitions. For example, mothers of children with an anxiety disorder expected their children to be significantly more upset and less capable of self-comfort. They also were less confident in their children's abilities to perform task-related behavior than mothers of healthy children (Kortlander, Kendall, & Panichelli-Mindel, 1997). Surprisingly, maternal anxiety was elevated in both groups. Contrary to common hypotheses, Gifford, Reynolds, Bell, and Wilson (2008) conducted an investigation of interpretation biases of children with an anxiety disorder and their mothers by using an ambiguous stimuli task and showed that mothers of anxious children did not choose threatening interpretations more often than the mothers of healthy children. However, they found significant correlations between mother's threat interpretation and child anxiety but no correlations with mother's own anxiety. In another study, Micco and Ehrenreich (2008) found — again consistent with information processing theories of anxiety — that mothers of anxious children held significantly lower expectations for their children's coping abilities than mothers of non-anxious children, independent from mothers' own anxiety levels.

In addition to parents' beliefs and expectations regarding their children, parents' sense of parenting competence (i.e., parents' belief that they can effectively manage parenting tasks) or parenting self-esteem (these two constructs are often used interchangeably) are additional aspects of parental cognition which have become increasingly prominent in developmental research. These constructs encompass both perceived self-efficacy as a parent as well as satisfaction derived from parenting (Johnston & Mash, 1989). Bandura (1982) defined self-efficacy as one's expectation to be able to successfully cope with difficult situations. Within the context of parenting, this refers to the degree to which a parent feels competent and confident in handling child-related problems. According to Johnston and Mash (1989), the quality of affect associated with parenting or the degree of satisfaction derived from the role (i.e., an affective dimension of parenting frustration, anxiety and motivation) is related to the dimension of efficacy.

Several studies have linked parenting self-efficacy and parenting satisfaction to both parenting behaviors and child outcomes (for a review see Coleman & Karraker, 1997; de Haan, Prinzie, & Dekovic, 2009; Jones & Prinz, 2005), especially child behavioral problems (Bogenschneider, Small, & Tsay, 1997; Day, Factor, & Szkiba-Day, 1994; Johnston & Mash, 1989; Mash & Johnston, 1983; Weaver, Shaw, Dishion, & Wilson, 2008). To our knowledge, only two studies so far have examined the link between parenting self-efficacy and satisfaction and child anxiety. Lange and colleagues (Lange et al., 2005) investigated families with boys with ADHD, with an affective or anxiety disorder and normal controls. Mothers and fathers from both clinical groups reported significantly lower levels of parenting satisfaction than parents of normal controls. Hill and Bush (2001) investigated a community sample of kindergarten children and found that both child anxiety and conduct problems were associated with lower levels of parental self-efficacy in mothers. However, parental anxiety and depression were not assessed in either of the studies. We also did not identify any published research, which differentiated between various child anxiety disorders.

In sum, despite the fact that a growing body of literature assumes that parents' cognitive processes regarding their children are crucial for the development and maintenance of anxiety disorders in children and adolescents, there is little existing empirical research addressing this issue. The few existing studies (Gifford et al., 2008; Kortlander et al., 1997; Micco & Ehrenreich, 2008) are considered to be inconsistent in their methods and theory and have left lingering questions unanswered. Firstly, no study has focused specifically on the association between child anxiety and parents' beliefs about the child's anxiety or on parents' sense of parenting competence. Second, few studies examining parental cognitions have assessed both child diagnoses *and* parental anxiety and depression together. This makes it difficult to parse out the differential effects of parental dysfunctional beliefs versus parents' own anxiety and depression on child anxiety. Third, fathers are often excluded from the research in this area, and no study to date has examined the association between paternal dysfunctional beliefs and child anxiety disorders. Finally, the existing studies investigated relationships between child anxiety and parents' cognitions in either normal samples or in mixed anxiety disorder samples, without differentiating among specific disorders. Despite the high comorbidity among anxiety disorders, a full understanding of the etiology and maintenance of childhood anxiety disorders requires systematic investigation of factors specific to individual disorders. Striving to address gaps in prior research and to address factors related to SAD specifically, the present study investigated parental dysfunctional beliefs regarding child anxiety and childrearing as well as parenting self-efficacy and satisfaction in three groups of children: those with SAD, with a comparison anxiety disorder (social phobia, SoP), and children without a mental disorder. Furthermore, we chose to focus on SAD in the present study due to the fact that onset usually occurs during a development phase in which the children spend significantly more time with their parents than they do later on (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996) and the symptomatology of SAD is directly associated with parents. Anxiety and depression symptomatology of parents were assessed as control variables. These analyses are largely exploratory. However, in accordance with theory and existing prior research we hypothesized that: (I) maternal and paternal levels of dysfunctional beliefs related to the anxiety of their child would be positively associated with child SAD and SoP diagnoses, while parenting self-efficacy and satisfaction would be negatively associated; (II) maternal and paternal levels of dysfunctional beliefs related to the anxiety of their child would be positively associated with child avoidance behavior of separations from parents and manifest trait anxiety, while parenting self-efficacy and satisfaction would be negatively

associated. Additionally, we examined whether these relationships would persist while controlling for parents' own anxiety and depression. Furthermore, since we included two different diagnostic groups, we were able to examine the specificity of parental beliefs.

2. Method

2.1. Participants

Participants included 94 German-speaking children with a current primary DSM-IV-TR (APA, 2000) diagnosis of SAD, 33 children with a primary diagnosis of SoP and 44 nonanxious control children. Mean clinician-rated severity on a scale ranging from 1 (no impairment) to 8 (very severe impairment) – with a rating of ≥ 4 judged as clinically relevant – was 5.82 (SD = 1.02) for the SAD group and 5.94 (SD = 0.76) for the SoP group, without significant between-group differences. Participating parents included 171 (100%) mothers and 145 (85%) fathers (86 in the SAD, 27 in SoP, 32 in the HC group). Ninety-one (53%) children were female. Mean age was 9.04 years ($SD = 2.37$; Range = 5–14) for children, 40.50 years ($SD = 5.20$; Range = 29–52) for mothers and 43.26 years ($SD = 6.67$; Range = 27–79) for fathers. One hundred and sixty-three (97%) mothers and 136 (99%) fathers for whom information was available had completed obligatory schooling (U.S. 10th grade equivalent) or higher. The median income range was between the equivalent of 4500 and 6000 Euros per month, indicating a primarily middle to upper-middle-class sample. Two-tailed between-subjects analyses of variance (ANOVA) and chi-square analyses did not reveal significant group differences regarding gender, child and parent age, obligatory schooling and income. An analysis of parent participation rates indicated that fathers of the SAD group were more likely to participate than of the HC group (χ^2 $(1, N = 138) = 8.51$, $p < .01$).

In the two clinical groups, 55 (47%) children had at least one current comorbid disorder (another anxiety disorder, sleeping disorder, expansive disorder, tic disorder, elimination disorder or affective disorder). Children with SAD meeting criteria for lifetime comorbidity of SoP and children with SoP with a lifetime comorbidity of SAD were excluded. Between-group comorbidity differences were non-significant. None of the children in the healthy control group had a current DSM-IV-TR axis I diagnoses, nor did they have a lifetime SAD or SoP diagnoses.

2.2. Procedure

The families participated as part of a broader study on Separation Anxiety Disorder and provided written consent to participate in the research project. Families in the two clinical groups were recruited by referral from child health professionals and by parents who self-referred their children in response to announcements on the internet, in local newspapers and magazines, and in schools and family centers. Families in the HC group were recruited through the same media as indicated above. All participating children and parents received identical diagnostic assessments.

2.3. Measures

2.3.1. Child psychopathology

The *Diagnostic Interview for Mental Disorders in Children and Adolescents: Child and Parent version* (Kinder-DIPS; Schneider, Unnewehr, & Margraf, 2009) are structured interviews designed to assess mental disorders in children according to DSM-IV-TR criteria. Clinician-based diagnoses were based on composite information from two separate interviews. In case a child was younger than 8 years of age, the Kinder-DIPS was conducted only with the parents. The Kinder-DIPS has demonstrated good validity and moderate to very good inter-rater reliability for SAD (child version: $\kappa = 0.64$; parent version: $\kappa = 0.85$), SoP (child version: $\kappa = 0.52$ parent version: $\kappa = 0.74$) and other axis I disorders (child version: $\kappa = 0.48$–0.90; parent version: $\kappa = 0.70$–0.94) (Adornetto, In Albon, & Schneider, 2008; Schneider et al., 2009).

The *Separation Anxiety Inventory – Parent Version (SAI-P;* In-Albon & Schneider, 2011) is a self-report measure consisting of 12 items assessing the degree of avoidance of separations from primary caregivers in a variety of settings, using a 5-point scale ranging from 0 (never) to 4 (always). Past research indicates internal consistency of $\alpha = .84$ in a normal and 0.71 in a clinical sample, a test-retest reliability of $r = 0.92$ and good construct-validity (In-Albon & Schneider, in press; Scalbert, 2006). Cronbach's alpha in the current sample was 0.90 for both mothers and fathers.

The *Revised Children's Manifest Anxiety Scale-Parent version (RCMAS-P*, Pina, Silverman, Saavedra, & Weems, 2001; German Version, Schneider, 2004a), consists of items identical to those of the child rating version except that each item's stem was changed from "I…" to "My child…". Prior research indicates good validity and internal consistency ($\alpha = .80$) and satisfactory test-retest-reliability (0.58) in German-speaking samples (Graf, 2008). Internal consistency in the current sample was $\alpha = .79$ for mothers and 0.81 for fathers.

2.3.2. Parental psychopathology

The *Beck Anxiety Inventory* (BAI; Beck, Epstein, Brown, & Steer, 1988; German Version; Margraf & Ehlers, 2007) is a self-report measure assessing manifestations of adult general anxiety. BAI has shown good validity, internal consistency ($\alpha = .88$–0.92) and test-retest reliability ($r = 0.68$–0.78) in various German speaking-samples (Margraf & Ehlers, 2007). Cronbach's alpha in the current sample was 0.89 for mothers and 0.87 for fathers.

The *Beck Depression Inventory* (BDI; Beck & Steer, 1987; German Version; Hautzinger, Bailer, Worrall, & Keller, 2000) is a self-report measure assessing adult depressive symptoms. Prior research indicates good validity, internal consistency ($\alpha = .90$) and reliability (0.95) in German speaking-samples (Schmitt & Maes, 2000). Cronbach's alpha in the current sample was 0.85 for mothers and 0.83 for fathers.

2.3.3. Parental beliefs

The *Parent Beliefs Questionnaire on Anxiety in Children* (PBQ-AC; Nauta, Bögels, & Siqueland, 2002; German Version; Schneider, 2004b) is a self-report measure assessing dysfunctional parental cognitions related to the anxiety of their child across several domains. Each of the 45 items is rated on a scale ranging from 0 (very untrue) to 10 (very true). High scores indicate high levels of dysfunctional beliefs. Authors of the scale hypothesized nine different factors: Outside world full of danger (e.g.: "The world is very unsafe for my child"); Child manipulates/is lazy (e.g. "My child manipulates me with his/her fears"); My child is weak (e.g. "My child is oversensitive"); Catastrophizing (e.g. "My child will grow lonely"); Conflict/anger (e.g. "Disagreement can damage the relationship between my child and me"); My partner/others (e.g. "My partner does not understand the needs of our child"); I must solve everything (e.g. "If my child cannot do something, it is better if I take over"); Powerlessness (e.g. " Nothing will help my child overcome his/her anxiety"); Over-identification/personification (e.g. "If my child is unhappy I have failed as a parent"). However, a factor analysis with the present sample indicated a one-factor-solution. Further, as reliabilities for the separate factors for mothers and fathers in the present sample were not high (between

0.46 and 0.79), the scale was not divided into subscales. Thus, the total score was calculated from an average of the 45 items. Internal consistency was high in the present sample (Cronbach's alpha = 0.90 for mothers, 0.89 for fathers).

The *Parenting Sense of Competence Scale* (PSOC; Gibaud-Wallston & Wandersman, 1978; German version; Miller, 2001) is a self-report measure of parenting self-esteem across two different aspects of parenting competence: satisfaction and efficacy. The satisfaction items assess an affective dimension of parenting, including frustration, anxiety and motivation. The efficacy items assess an instrumental dimension of parenting, including competence, problem-solving ability and capability in the parenting role. Higher scores reflect higher self-esteem. Prior research indicates satisfactory internal consistency, with alpha coefficients ranging from 0.75 to 0.82 for the Satisfaction subscale, from 0.70 to 0.76 for the Efficacy subscale (Gibaud-Wallston & Wandersmann, 1978; Johnston & Mash, 1989), and 0.79 for the total scale (Johnston & Mash, 1989). The present sample yielded similar reliability estimates (Cronbach's alpha = 0.79 for mothers and fathers for the Satisfaction subscale, 0.69 for mothers and 0.68 for fathers for the Efficacy subscale and 0.81 for mothers and fathers for the total scale).

2.4. Statistical analysis

In a first step, one-way ANOVAs were performed to compare scores on parental beliefs in the three diagnostic categories. A Bonferroni correction suggested a p-value of $0.05/4 = 0.0125$. Then, post-hoc tests were performed until significance was reached in an ANOVA. In a second step, multinomial logistic regression analyses were conducted on parental beliefs to predict membership in one of the three outcome categories with the SAD sample as the reference category. To control for parental anxiety and depression levels, BAI and BDI were entered as covariates into the model. In a third step, standard multiple regression models were used to assess the power of the measures of parental beliefs – again controlling for BAI and BDI – to predict levels of separation anxiety of the children (SAI-P) and levels of the children's manifest trait anxiety (RCMAS).

3. Results

3.1. Group characteristics

Table 1 presents means for measures/subscales, standard deviations, F-values and Cohen's d effect sizes of differences on child and parent symptomatology.

Children with anxiety disorders scored significantly higher on the parent version of the RCMAS questionnaire compared to non-anxious children. Children with SAD scored highest on the disorder-specific SAD questionnaire. Mothers in the SAD group reported higher levels of their own depression than mothers in the HC group.

3.2. ANOVAs comparing diagnostic groups on parental beliefs variables

Results indicated that mothers in the HC group had significantly lower values on PBQ-AC than mothers in the SAD and SoP groups. For fathers, only the SAD and HC groups differed significantly with respect to PBQ-AC. Further significant effects were found only for mothers. The HC group had significantly higher levels on the total scale and also on the satisfaction subscale of PSOC than the SAD group. Furthermore, efficacy subscale levels were significantly lower in the SAD than in the HC and the SoP groups (see Table 2).

3.3. Multinomial logistic regression analyses predicting diagnostic group by parental beliefs variables

Due to missing values on at least one predictor variable, we deleted 16 cases for mother report and 20 cases for father report, resulting in 155 cases for mother and 125 cases for father report. Results from likelihood ratio tests (Peng, Lee, & Ingersoll, 2002) indicated reliable differentiation between diagnostic groups by the model as a whole, for mothers ($\chi^2(10, N = 155) = 55.57$, $p < .001$) but not for fathers ($\chi^2(10, N = 125) = 17.81$, $p = .06$). With reference to the first hypothesis, results indicated that PBQ-AC made a statistically significant contribution to the model in order to predict the inclusion in the SAD versus HC group for both parents. The odds of being in the HC group compared to having a child with SAD decreased with each one-unit increment on PBQ-AC, controlling for all other factors in the model. Furthermore, among mothers but not among fathers, the efficacy subscale of PSOC made a statistically significant contribution to the discrimination between children with SAD and children with SoP but not between the SAD group and the HC group. The odds ratio indicated that the odds of having a child with SAD than a child with SoP increased with every decreased report on the satisfaction subscale of PSOC. When comparing the SoP and the healthy control groups, PBQ-AC was the only significant predictor for both parents. The odds ratio showed again, that the odds of both parents having a child in the HC compared to the SoP group decreased with each unit increment on PBQ-AC, controlling for all other factors in the model. Neither other

Table 1
Means, (standard deviations) and group differences (Cohen's d effect sizes) on parent report of SAI-P, RCMAS-P, BAI and BDI.

	SAD ($n = 94$)	SoPh ($n = 33$)	HC ($n = 44$)			SAD vs. HC		SAD vs. SoPh		SoPh vs. HC	
	M (SD)	M (SD)	M (SD)	F	p	d	p	d	p	d	
Levels of child anxiety											
SAI-P mother report	2.53 (0.73)	1.37 (0.83)	0.52 (0.49)	120.23	0.000	3.23[b]	0.000	1.48[b]	0.000	1.25[b]	0.000
SAI-P father report	2.38 (0.77)	1.10 (0.87)	0.62 (0.51)	73.00	0.000	2.69[b]	0.000	1.56[b]	0.000	0.67[b]	0.037
RCMAS mother report	0.47 (0.20)	0.43 (0.19)	0.19 (0.16)	26.94	0.000	1.55[b]	0.000	0.21[b]	0.572	1.37[b]	0.000
RCMAS father report	0.41 (0.19)	0.40 (0.18)	0.14 (0.11)	22.49	0.000	1.74[b]	0.000	0.05[b]	0.945	1.74[b]	0.000
Levels of parental anxiety and depression											
BAI mother	0.37 (0.37)	0.33 (0.41)	0.26 (0.32)	1.45	0.238	0.32		0.10		0.20	
BAI father	0.24 (0.27)	0.20 (0.26)	0.19 (0.25)	0.44	0.644	0.19		0.15		0.04	
BDI mother	0.30 (0.22)	0.31 (0.30)	0.18 (0.17)	4.11	0.018	0.61[a]	0.024	0.04[a]	1.000	0.53[a]	0.065
BDI father	0.20 (0.19)	0.19 (0.17)	0.16 (0.18)	0.68	0.508	0.22[a]		0.06[a]		0.17[a]	

Notes. SAI-P = Separation Anxiety Inventory Parent version, RCMAS-P= Revised Children's Manifest Anxiety Scale Parent version, BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory.
[a] Post-hoc Bonferroni test.
[b] Post-hoc Games–Howell test.

Table 2
Means, (standard deviations) and group differences (Cohen's *d* effect sizes) of parental beliefs on child anxiety and parenting (satisfaction and efficacy).

	SAD ($n = 94$)	SoPh ($n = 33$)	HC ($n = 44$)			SAD vs. HC		SAD vs. SoPh		SoPh vs. HC	
	M (SD)	M (SD)	M (SD)	*F*	*p*	*d*	*p*	*d*	*p*	*d*	*p*
Maternal beliefs											
Beliefs on child anxiety (PBQ-AC)	3.23 (0.79)	3.02 (1.07)	1.92 (0.93)	25.99	0.000	1.46[a]	0.000	0.20[a]	0.965	1.13[a]	0.000
Parenting self-esteem (PSOC)											
Total scale	3.23 (0.57)	3.50 (0.72)	3.63 (0.44)	7.48	0.001	1.45[b]	0.000	0.62[b]	0.150	0.32[b]	0.659
1. Subscale: Satisfaction	3.41 (0.70)	3.59 (0.99)	3.83 (0.50)	4.94	0.008	1.09[b]	0.000	0.24[b]	0.593	0.33[b]	0.438
2. Subscale: Efficacy	3.01 (0.59)	3.38 (0.54)	3.36 (0.54)	8.00	0.000	1.08[a]	0.004	1.15[a]	0.006	0.06[a]	1.000
Paternal beliefs											
Beliefs on child anxiety (PBQ-AC)	2.97 (0.97)	2.89 (1.04)	2.23 (1.30)	5.28	0.006	0.54[a]	0.005	0.12[a]	1.000	0.44[a]	0.097
Parenting self-esteem (PSOC)											
Total scale	3.36 (0.48)	3.42 (0.46)	3.50 (0.53)	0.96	0.387	0.53		0.36		0.22	
1. Subscale: satisfaction	3.64 (0.62)	3.60 (0.52)	3.72 (0.63)	0.24	0.786	0.21		0.04		0.28	
2. Subscale: efficacy	3.00 (0.54)	3.20 (0.45)	3.21 (0.61)	2.52	0.084	0.61		0.83		0.02	

[a] Post-hoc Bonferroni test.
[b] Post-hoc Games–Howell test.

predictors nor the covariates made a statistically significant contribution to the model (see Tables 3 and 4).

3.4. Standard multiple regression analyses predicting clinical measures by parental beliefs variables

Due to missing values on at least one predictor variable, we deleted 24 cases for mother report and 27 cases for father report, leaving 147 cases for mother and 118 cases for father report. The full model with all predictors, explained 19% of the total variance in levels of mother-reported SAI-P scores ($F(5, 147) = 6.57$, $p < .001$) and 9% of the variance in levels of father-rated child separation anxiety ($F(5, 118) = 2.27$, $p = .05$). Again PBQ-AC was a significant predictor ($\beta = 0.42$, $p < .001$ for mothers and $\beta = 0.25$, $p < .05$ for fathers), indicating that higher scores on PBQ-AC are related to higher scores on SAI-P, controlling for all other variables. Furthermore, lower scores on the PSOC efficacy scale significantly predicted higher SAI-P scores for fathers ($\beta = -0.22$, $p < .05$). With reference to RCMAS-P, PBQ-AC, the two subscales of PSOC and BAI and BDI explained 23% ($F(5, 131) = 7.58$, $p < .001$) of the variance for mothers and 11% ($F(5, 108) = 2.52$, $p < .05$) for fathers. PBQ-AC was the only significant predictor, indicating that higher scores are related to higher scores on RCMAS-P for mother ($\beta = 0.35$, $p < .001$) and father reports ($\beta = 0.28$, $p < .01$), controlling for all other variables.

Table 3
Multinomial logistic regression predicting likelihood of SAD, SoPh or no diagnosis in childhood due to *maternal* beliefs, controlling for maternal anxiety and depression levels.

Primary diagnosis		B	S. E.	Odds ratio	95% C.I. for odds ratio	
					Lower	Upper
No Diagnosis	Intercept	−0.83	1.97			
	PBQ-AC	−1.32***	0.28	0.27	0.15	0.46
	PSOC – Satisfaction	0.12	0.43	1.12	0.48	2.60
	PSOC – Efficacy	0.75	0.48	2.12	0.83	5.39
	BAI	0.83	0.78	2.30	0.50	10.57
	BDI	−1.59	1.49	0.20	0.01	3.78
Social Phobia	Intercept	−4.23	1.93			
	PBQ-AC	−1.12	0.25	0.89	0.55	1.44
	PSOC – Satisfaction	−0.06	0.41	0.95	0.42	2.13
	PSOC – Efficacy	1.13*	0.48	3.10	1.22	7.88
	BAI	−0.20	0.76	0.82	0.18	3.65
	BDI	0.80	1.11	2.22	0.30	19.62

Note. The reference category is SAD.
*$p < .05$, ***$p < .001$.

4. Discussion

The current study investigated whether parents of anxious children experience more dysfunctional beliefs related to the anxiety of their child and feel less parenting satisfaction and self-efficacy than parents of children without mental disorders. A further aim was to examine whether the investigated parent variables account for additional variance distribution – independent of parental anxiety and depression – and if these parent variables are disorder-specific and thus only associated with a specific anxiety disorder of the child. The main results are: (I) mothers and fathers of children with SAD and SoP have more dysfunctional beliefs related to child anxiety than parents of control children; (II) parents of children who are generally anxious and avoidant in separation situations have more dysfunctional beliefs related to child anxiety than parents of less anxious and avoidant children; (III) mothers of children with SAD have lower parenting self-efficacy than mothers of children with SoP and control children; (IV) fathers of children who are avoidant in separation situations have lower parenting self-efficacy than fathers of less avoidant children.

Consistent with our hypotheses, the findings show that maternal and paternal dysfunctional beliefs related to their child's anxiety are positively associated with child SAD and SoP diagnoses as well as with levels of child avoidance of separation situations and manifest trait anxiety. These results are to some extent consistent

Table 4
Multinomial logistic regression predicting likelihood of SAD, SoPh or no diagnosis in childhood due to *paternal* beliefs, controlling for paternal anxiety and depression levels.

Primary diagnosis		B	S. E.	Odds ratio	95% C.I. for odds ratio	
					Lower	Upper
No Diagnosis	Intercept	−0.36	2.13			
	PBQ-AC	−0.89**	0.29	0.41	0.24	0.72
	PSOC – Satisfaction	−0.29	0.47	0.75	0.29	1.89
	PSOC – Efficacy	0.87	0.50	2.38	0.89	6.34
	BAI	0.56	1.13	1.76	0.19	16.14
	BDI	−0.11	1.61	0.90	0.04	21.24
Social Phobia	Intercept	−1.35	2.02			
	PBQ-AC	−0.18	0.23	0.84	0.53	1.32
	PSOC – Satisfaction	−0.48	0.45	0.62	0.26	1.50
	PSOC – Efficacy	0.86	0.49	2.35	0.990	6.13
	BAI	−0.58	1.13	0.56	0.06	5.19
	BDI	0.34	1.56	1.40	0.07	30.02

Note. The reference category is SAD.
**$p < .01$.

with previous research demonstrating that parents of anxious children have lower expectations about their child's coping ability (Kortlander et al., 1997; Micco & Ehrenreich, 2008) and predict their child to be more avoidant (Barrett, Rapee, Dadds, & Ryan, 1996). In addition to existing research, our study included parents' anxiety and depression as variables. The results showed, however, that the effects remained stable even when we controlled for parental anxiety and depression. To our knowledge ours is the first study to show that there is no significant difference between the two diagnostic groups and that there is an association for SAI-P, which is a SAD-specific measure as well as for RCMAS-P, a global measure for child anxiety. It appears that the tendency of parents to have more dysfunctional beliefs seems to be strongly related to clinical child anxiety in general but not to be disorder specific.

With reference to our first hypothesis we found it very interesting that in the full model – where all predictor variables were entered together and controlled for maternal anxiety and depression levels – only *maternal* parenting self-efficacy remained significantly different between the SAD and SoP groups. This result is inconsistent with previous research, as Hill and Bush (2001) showed that parenting self-efficacy in mothers is negatively associated with child anxiety in general. However, Hill and Bush (2001) investigated a community sample of children and therefore did not discriminate between specific anxiety diagnoses. Since the group differences found in the present study are not caused by the severity of the primary diagnoses, the levels of the general manifest anxiety or parental anxiety and depression, our finding suggests that maternal self-efficacy may be associated specifically with childhood SAD. SAD is the earliest childhood anxiety disorder (Kessler et al., 2005) and thus the influence of the parents on the child maybe stronger than with other childhood anxiety disorders starting later on (Larson et al., 1996; Thompson, 2001). Evidence for this hypothesis has been shown with twin data indicating the strongest influence of parental factors ("shared environmental factors") on SAD symptoms in young childhood (Feigon et al., 2001). Obviously, further studies should investigate the specific association between parental factors and the different child anxiety disorders.

The same association for fathers was insignificant, although the effect size indicates a large difference between the SAD and SoP groups. A possible explanation for the phenomena that paternal self-efficacy is not associated with child's internalizing symptoms in the same degree as the mother's, could be that fathers often play a secondary role in childrearing and spend less time with their children than mothers (Pleck, 1997). In contrast to this, a significant association between parenting self-efficacy and child avoidance of separation situations was found only for fathers. Whereas this is in line with the conclusion that parenting self-efficacy is associated specifically with separation anxiety rather than with child anxiety in general, the question of the discrepancy between fathers and mothers remains unanswered. Child avoidant behavior demonstrates a clinical feature of SAD, which is very prominent in daily life. It is thinkable, that avoidant behavior affects paternal parenting self-efficacy or vice versa, whereas mothers tend to come to terms with their child's behavior in contrast to their child's internalizing symptoms.

Consistent with the results of the study of Lange et al. (2005), we found that mothers of children with SAD expressed significantly lower levels of parenting satisfaction than mothers in the HC group. However, since this association diminished in the full model, the association does not seem to be independent from maternal anxiety and depression.

It was to be expected that the strongest effects would be found for PBQ-AC since the questionnaire items are in line with the child's symptomatology. It is evident that the findings do not necessarily imply a causal link or resolve the question whether these parental variables are cause or effect of child anxiety and how they are transmitted. Longitudinal data as well as a detailed analysis of potential transmission processes are required for future research. Previous studies have shown that parental and child anxious cognitions are correlated (e.g. Creswell, O'Connor, & Brewin, 2006; Creswell, Schniering, & Rapee, 2005) and that child cognitions might be influenced by parental cognitions (e.g. Barrett, Rapee, & Dadds, 1996; Chorpita, Albano, & Barlow, 1996; Schneider, Unnewehr, Florin, & Margraf, 2002). One proposed mechanism that requires further investigation is the phenomena that parents with high levels of dysfunctional cognitions engage in an over-involved pattern of parenting, which itself maintains the child's anxious cognitions and leads to anxiety (e.g. Kortlander et al., 1997).

Similar mechanisms are also possible with respect to the association between child separation anxiety and parental self-efficacy. The rapidly expanding literature on parental cognitions has revealed that self-efficacy beliefs – specific to the domain of parenting – represent a potent variable explaining a significant proportion of the variance observed in parental skills (for a review see Jones & Prinz, 2005). Furthermore, the fact that SAD is characterized by children's anxiety directly associated to their closest attachment figure, could possibly explain why parents of children with SAD would have a lower level of parenting self-efficacy than parents of children with other anxiety disorders. Several explanations are offered for the question why a significant link was not found between child anxiety and parental satisfaction in the full model. For mothers one explanation could be the fact, that the satisfaction subscale contains not only a cognitive aspect but reflects also an affective dimension. Since we controlled for anxiety and negative affect in the full model, it is likely that the remaining effect of the satisfaction variable was too small. It is possible that diminished parenting satisfaction is associated more with elevated parent internalizing symptoms than with child symptoms (Hughes & Gullone, 2010). Since the instant hypothesis was quite exploratory, results have to be replicated in future studies.

Findings of the current study should be interpreted with several limitations in mind. First, children in the present sample were primarily from middle class families with well-educated parents. Thus, findings may not be representative of the community at large. Furthermore, significantly fewer fathers participated in the HC than in the SAD group, which questions the representativeness of the father–reported data. Second, this cross-sectional study is limited and cannot elucidate the causality of the located effects. Replication of the present study should be undertaken in a representative sample using a prospective longitudinal approach. Furthermore, even though parents in the clinical groups had more current anxiety and/or affective diagnoses and higher anxiety and depression levels than the HC group, contrary to previous findings (Cooper et al., 2006; Hughes et al., 2009; Kearney et al., 2003) these differences were insignificant with the exception of BDI for mothers. One possible explanation could be that we assessed anxiety with BAI, which is a physiologically focused measure of anxiety. Since BAI measures somatic symptoms of anxiety, it is possible that it did not fully reflect the experienced anxiety. Furthermore, it is possible that both BAI and BDI lack sensitivity in non-clinical samples, since mean scores were low in all diagnostic groups. Future research could select other measures of anxiety, which focus on the cognitive domain and are more appropriate for a non-clinical sample.

In summary, the data suggest that children's anxiety and parents' beliefs about their child's anxiety and coping skills as well as their own parenting skills are strongly associated. Current findings enhance cognitive behavioral theories of childhood anxiety by highlighting the fact that even after controlling for parental anxiety and depression, parental dysfunctional cognitions may be potent.

From a clinical perspective, these data support theories, which include parental cognitions as an important element in the child's environment (Gifford et al., 2008). In addition, the association between parenting self-efficacy and child SAD symptomatology confirms the need to further investigate specific etiological and maintaining factors for specific disorders. Replication of these findings in cross-sectional and longitudinal studies as well as detailed analysis of transmission processes of parental cognitions to their children warrant further research attention.

Declaration of interest

There is no interest to be declared.

Acknowledgments

This study was supported by Grant PP001-68701; 105314-116517/1, "Etiology and Psychological Treatment of Separation Anxiety Disorder in Childhood," awarded to Prof. Dr. Silvia Schneider by the Swiss National Science Foundation. We thank the participants of this study, as well as the research assistants and graduate students of the TAFF project at the University of Basel for their assistance. We also thank Dr. Andrea Meyer for his statistical assistance.

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