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Friends or foes ? : predictors of treatment outcome of cognitive behavioral therapy for childhood anxiety disorders

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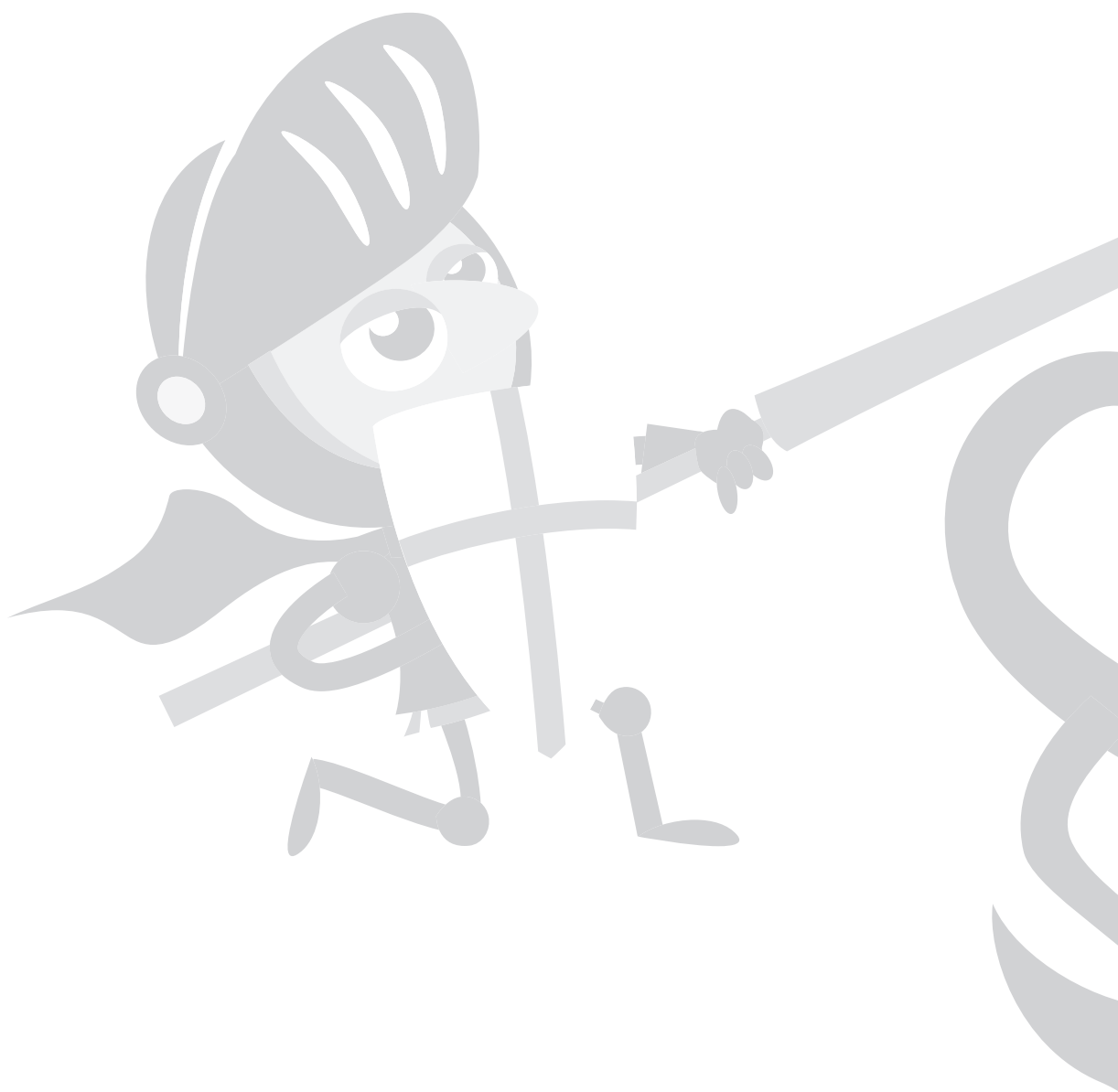
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Friends or Foes? Predictors of Treatment Outcome
of Cognitive Behavioral Therapy for
Childhood Anxiety Disorders



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**FRIENDS OR FOES? PREDICTORS OF TREATMENT OUTCOME OF
COGNITIVE BEHAVIORAL THERAPY FOR CHILDHOOD ANXIETY DISORDERS**

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. P.F. van der Heijden,
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Juliëtte Margo Liber
geboren te Krimpen aan den IJssel
in 1976

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DE RIDDER VAN VOGELENZANG

Er leefde een ridder in Vogelenzang,
Al heel lang geleden, verschrikkelijk lang,
Die draken versloeg voor een roos en een zoen,
Zoals men dat nu nog maar zelden ziet doen.
Die dappere ridder van Vogelenzang!
Maar 's avonds in het donker dan was hij zo bang!

Dan lag hij te beven tot kwart over zeven,
Want altijd in 't donker hoorde hij leven!
En iedere nacht, om zijn angst kwijt te raken,
Probeerde hij vrolijke rijmpjes te maken,
En telkens begon hij van voren af aan:
Wat heb ik vandaag voor heldhaftigs gedaan?
Vijf draken verslagen,
Een jonkvrouw gered!
Waarom lig ik dan zo
Te rillen in bed?

En prompt overdag, als de hemel ging klaren,
Versloeg hij weer draken, of 't kevertjes waren,
Die dappere ridder van Vogelenzang.
Maar 's avonds in 't donker dan werd hij weer bang.
Dan ging hij weer rijmen van voren af aan:
Wat heb ik vandaag voor plezierigs gedaan?
Mijn paard opgetuigd
En mijn helm ingevet,
Mijn vrouw toegeknikt
Toen ze thee heeft gezet.
Waarom lig ik dan zo
te trillen in bed?

Om een uur des nachts werd het meestal te bar!
Dan raakte de ridder totaal in de war!
Dan jankte hij zachtjes, bij ieder geluid
En lang maar te prevelen, stil voor zich uit:
Een jonkvrouw verslagen,
Vijf draken gered...
Maar zeg ik het goed?
Nee, het lijkt wel pet!
Mijn vrouw afgetuigd
En mijn paard ingevet...
Een draak toegeknikt toen hij thee had gezet...
Ik weet het niet meer en ik hoor weer geluid...
'k Ben bang in het donker!
Wie haalt me d'r uit?
Moederrrrr!
(Annie M. G. Schmidt, 1987/ 2007)

THE KNIGHT OF BIRDIES-SONG

A long, long time ago, terribly long,
There once lived a knight at Birdies-song
Who conquered dragons for a rose and a kiss
As one nowadays will rarely witness
He was such a brave knight, our knight of Birdies-song
But in hours of darkness he was terrified
He would lay trembling in his bed till morning light

...

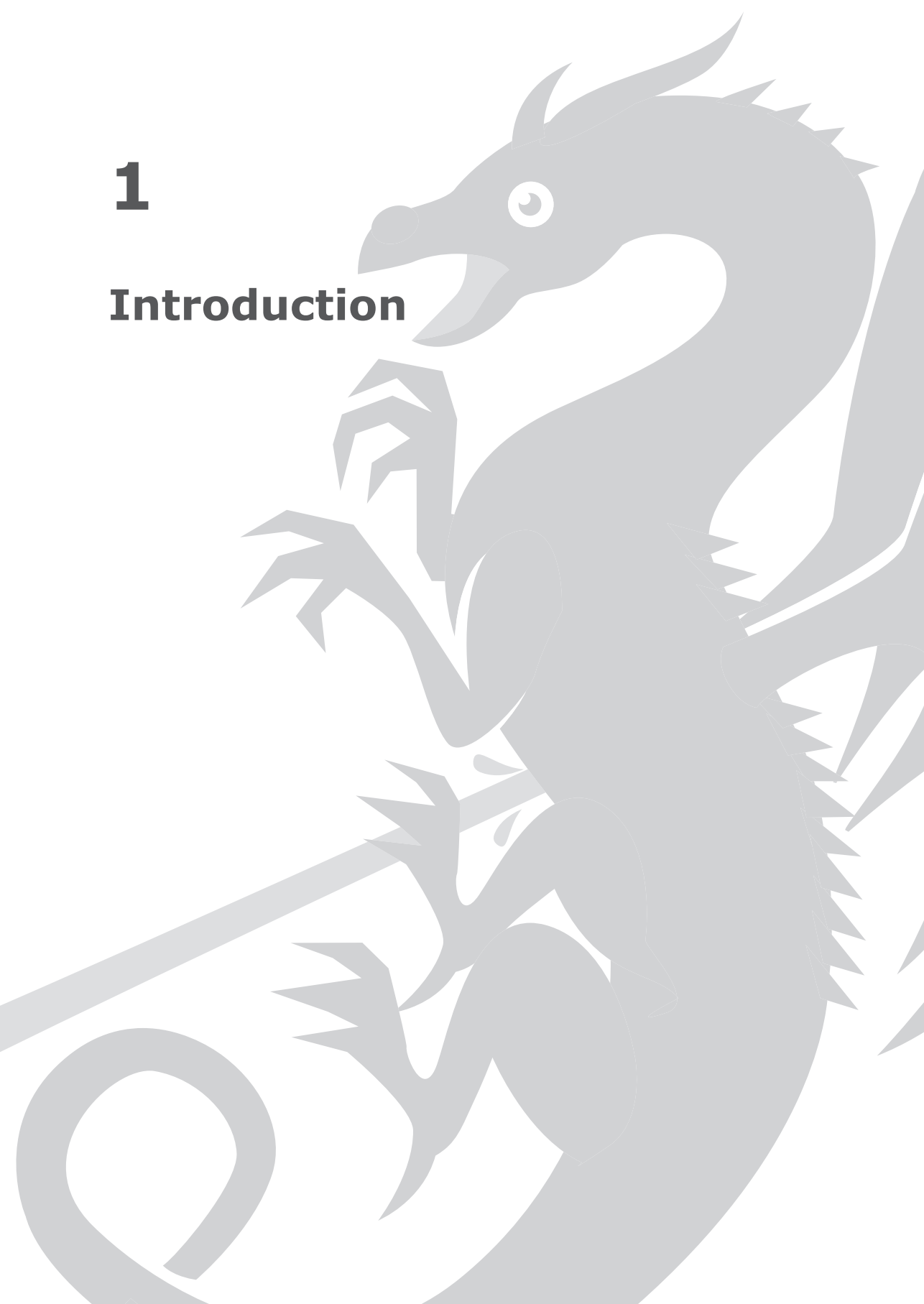
(Annie M. G. Schmidt, 1987/ 2007)

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1

Introduction



INTRODUCTION

The translated lines are part of a children's poem written by a well-known Dutch poet and story-teller (Schmidt, 1987/ 2007). In a humorous way the poem addresses a topic highly relevant for children, namely the experience of 'fear'. It shows fear to be a phenomenon from which even the bravest of knights may suffer. The poem continues with a description of the strategy the heroic knight applied to conquer his fear, but alas, his strategy was ineffective. The hero-by-day knight experienced levels of fear beyond normal which may have reflected the presence of an anxiety disorder. Professional help may have been necessary as his own strategy was insufficient to overcome his intense anxiety. But what are the chances that our knight would have recovered from his anxiety if treated by a professional?

That question brings us to the central theme of this dissertation: assessment of the prognostic value of various variables for cognitive behavioral treatment outcome for childhood anxiety disorders. Childhood anxiety disorders can be defined as a limited ability to recover from anxiety levels that prevent or limit developmentally appropriate behavior in children and a limited ability to remain anxiety-free when the anxiety provoking situation is absent (Klein & Pine, 2002). Although the experience of anxiety appears inherent to human beings and childhood, the study of childhood anxiety has not always been that evident. Studies addressing the question 'what to do' when confronted with childhood anxiety were longtime rare. Fortunately, a steady increase in the number of studies addressing this topic can be seen in the past decades.

A History of Childhood Anxiety

References to childhood anxiety disorders appeared uncommon in psychiatry and psychology literature in the early nineteenth century (Treffers & Silverman, 2001). It is unlikely however, that children before this period were 'fearless'. In 1798 Rush published an article 'On the different species of phobia'. Rush argued that the names of species should have been taken from the names of the objects of the fear (e.g. Rat Phobia, Solo Phobia, Power Phobia, Home Phobia) and said that Blood Phobia and Ghost Phobia are more likely to occur in children. His reference to childhood anxiety is one of the first that can be found in the literature. With regard to the study and implementation of effective and reliable treatments there was still a long way to go, as Rush (1798; in Verhey and Treffers, 2004) explained:

"Blood-letting as a remedy, is defended from being used improperly, by the terror which accompanies its use. This terror rises to such a degree as sometimes to produce paleness and faintness when it is prescribed as a remedy. However unpopular it may be, it is not contrary to nature, ... The objections to it (therefore) appear to be founded less in the judgments than in the fears of sick people." (p. 368)

The scarcity of literature on childhood anxiety disorders in the early nineteenth century can be explained by the then held view that anxiety was mainly a vulnerability factor which could

lead to the development of psychiatric disorders in general (Treffers & Silverman, 2001). In the second half of the nineteenth century anxiety in children acquired the status of a psychiatric symptom and disorder (Treffers & Silverman, 2001, page 2). The first description of an anxiety disorder that is close to our current conception of childhood anxiety can be found in a publication by Crichton-Brown (1860) on 'psychical diseases in early life'. Crichton-Browne described that Pantophobia consists in an excited or diseased state of the instinct of self-preservation, which is often accompanied by delusions. He adds that such intense misery may occasion that suicide is resorted to as a means of relief and explains that night horrors, common among young children, are a transient species of Pantophobia (Crichton-Browne, 1860). It was only a couple of decades after Crichton-Brown's publication that psychologists started to study fear in children and youngsters (more) methodically (Binet, 1896; Hall, 1897). Binet (1896) studied anxiety in school children using a multi-method strategy including teacher questionnaires as well as interviews with acquaintances and observations of children. Approximately 250 teacher questionnaires were distributed of which 110 questionnaires were returned. Interestingly, Binet (1896) reflected on the reliability of his responders observations "... et surtout le caractère moral de l'observateur. Celui-ci n'apprécie le degré de peur d'un enfant que par rapport a ses idées personnelles et a son tempérament. " (p.238). Binet also highlighted reasons given by teachers and school-boards for non-response (e.g. school teacher's response: "Je n'ai jamais remarqué de peur chez mes élèves. Au reste, ils auraient peur de quoi? ... Ce n'est plus de l'époque. ..." (p. 224)). With regard to treatment Binet first posed the question whether it is at all possible to effectively treat all anxious children. Secondly, he differentiated between children with a nervous constitution, children who are anxious due to environmental causes (e.g. accidents, maltreatment) and fears that are normal during childhood and disappear as children grow older. Thirdly, Binet describes that the nature of treatment can either be preventive or curative and makes several suggestions. He suggests that one should not use violence, one should avoid or suppress inadequate role-modeling (peers or parents), one should not over-stimulate children's imagination, one should ensure that confidence is transferred to the children themselves, and most importantly (according to Binet) training of the children in acts of bravery. The last suggestion is accompanied by the advice to familiarize children gradually with the object of their fear. It is surprising to see how many of his suggestions still hold today.

In the following twentieth century there was a growing attention for, and acceptance of the existence of psychiatric disorders in general. The field of childhood and adolescent psychiatry slowly developed into a professional field in itself. Childhood and adolescent psychiatric disorders were not yet included in the sixth edition of the 1948 version of the International Classification of Diseases, Injuries and Causes of Death (ICD-6; World Health Organization, 1948) nor in the 1952 Diagnostic and Statistical Manual for Mental Disorders (DSM; American Psychiatric Association, 1952). But in the third version of the DSM, published

in 1980, a separate chapter was dedicated to childhood and adolescent disorders (American Psychiatric Association, 1980; Saavedra & Silverman, 2002; Treffers, 2002).

Classification

The first DSM chapter on childhood and adolescent disorders included three separate anxiety disorders (Separation Anxiety Disorder, Avoidant Disorder and Overanxious Disorder) in addition to the anxiety disorders included in the 'adult section'. In the fourth DSM version only one childhood anxiety disorder was included (i.e., Separation Anxiety Disorder), other anxiety disorders that also apply to children were included in the adult section (American Psychiatric Association, 1994). The taxonomy provided on (childhood) anxiety disorders in this fourth DSM edition (see Appendix 1) led to major advances in understanding and treatment of childhood anxiety (Weems & Stickle, 2005). Nevertheless, the validity of the taxonomy of childhood anxiety disorders continued to be questioned (Ferdinand, Van Lang, Ormel, & Verhulst, 2006) and adjustments to the DSM have been proposed (Ferdinand, Van Lang, Ormel, & Verhulst, 2006; Weems & Stickle, 2005). Though the classification of childhood anxiety disorders may be hindered by several problems (i.e., the high comorbidity of anxiety disorders with each other and with mood disorders; Treffers, 2002), researchers and clinicians appear to agree that childhood anxiety disorders *do* exist. The utility of classification systems such as the DSM is paramount for the recognition and identification of problem behavior and for facilitating the selection of appropriate treatments with the target problems of clients. In order to reliably assess and discriminate between disorders the use of evidence based assessment methods such as diagnostic interviews are recommended (Silverman & Ollendick, 2005).

Prevalence

In the past decades epidemiological research revealed that childhood anxiety is one of the most prevalent childhood mental problems (Verhulst, 2001). Prevalence rates for childhood anxiety disorders in a USA sample showed that 2-4% of children aged 9 to 16 met DSM criteria for any anxiety disorder (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Similar results were found in a British survey (age 5-15, 3-4%), a Puerto Rican sample (age 4-17, 2.7-4.6%), a Finnish cohort (age 8-9, 5.2%) and a French sample (age 8-11, emotional disorders 5.9%) (Almqvist et al., 1999; Canino et al., 2004; Fombonne, 1994; Ford, Goodman, & Meltzer, 2003). Prevalence rates vary due to differences in age and gender of the participating youth (Essau, Conradt, & Petermann, 2000). Anxiety disorders tend to be somewhat more prevalent in girls versus boys and more prevalent in older versus younger children (Verhulst, 2001). A recent Dutch study showed that the proportion of children scoring deviant on parent reported internalizing problems increased from 1983 to 2003 (Tick, Van der Ende, & Verhulst, 2007). Unfortunately, media and government attention tends to focus on externalizing problems (e.g. conduct, oppositional behavior) thereby overlooking the negative impact on the well-

being and development of many children with internalizing problems. For instance, between January the 1st 2000 and March the 15th 2008 sixty-three official Dutch government documents were retrieved when searching for 'anxiety disorders' combined with 'children' whereas a threefold ($n = 190$) of documents was retrieved when searching for 'conduct disorders' combined with 'children' (<http://parlando.sdu.nl/cgi/login/anonymous>).

Developmental Risks Associated with Childhood Anxiety

Treatment of childhood anxiety disorders (CAD) is of great importance as CAD seriously interfere with the well being of children. CAD have been associated with a lower quality of life, somatic complaints (in girls mostly), school refusal, poor academic performance, peer relationship problems and fewer or poorer friendships than children without emotional disorders (Bastiaansen, Koot, & Ferdinand, 2005; Egger, Costello, Erkanli, & Angold, 1999; Last & Strauss, 1990; Mancini, Van Ameringen, Szatmari, Fugere, & Boyle, 1996; McShane, Walter, & Rey, 2001). These findings illustrate that childhood anxiety disorders affect developmentally important areas such as social functioning and school or academic functioning. Moreover, CAD might be substituted by another (anxiety) disorder some years later (Öst & Treffers, 2001). Children with anxiety problems reported elevated rates of anxiety disorders and major depression during adolescence, young adulthood and adulthood (Goodwin, Fergusson, & Horwood, 2004; Gus Manfro et al., 2003; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003) and showed an increased risk for developing an avoidant personality disorder or substance use disorder (Compton, Burns, Egger, & Robertson, 2002; Joyce et al., 2003). In general, internalizing problems during childhood or adolescence showed stability over time in both a normal population and a clinically referred population (Heijmens Visser, Van der Ende, Koot, & Verhulst, 2000; Roza, Hofstra, Van der Ende, & Verhulst, 2003). The interference with children's daily lives and the increased risk these children run for a long-term negative outcome indicate that professional help is needed.

Treatment of Childhood Anxiety

Currently, Cognitive Behavioral Therapy (CBT) is one of the most widely used strategies for the treatment of adult anxiety disorders, as behavioral and cognitive behavioral strategies received the label *well-established* (Chambless & Ollendick, 2001) and may be more effective than other treatments (Reisner, 2005). With regard to the treatment of childhood anxiety disorders, the empirical validation of CBT treatments accelerated in 1994 with the publication of a Randomized Clinical Trial (RCT) evaluating the effectiveness of a CBT protocol for children aged 9- 13 years with an anxiety disorder (Kendall, 1994). It was hypothesized that children in the active treatment condition ($n = 27$) would show significant change in outcome measures in contrast to the wait-list control condition ($n = 20$). The results supported Kendall's hypothesis; the post-treatment findings revealed that a significantly higher number of children no longer met criteria for an anxiety disorder in the active treatment condition and

were within normal limits on many outcome measures. Since the publication of this landmark study many RCT's supporting the effectiveness of CBT for CAD have appeared (e.g., Barrett, Dadds, & Rapee, 1996; Kendall et al., 1997; Shortt, Barrett, & Fox, 2001; Silverman, Kurtines, Ginsburg, Weems, Lumpkin et al., 1999). These studies culminated in such a solid empirical base for the effectiveness of CBT for CAD that CBT received the label *probably efficacious* (Chambless & Ollendick, 2001). Treatments are awarded this label if there is at least one RCT in which the treatment proved superior to a control condition or other bona fide treatment. The label *well-established and specific* has not been given due to a lack of studies investigating specificity and superiority to placebo-conditions.

It could be argued that this label might need updating. Several studies showed superiority of CBT over placebo conditions in the treatment of childhood anxiety (Beidel, Turner, & Morris, 2000; Ginsburg & Drake, 2002; Muris, Meesters, & Melick, 2002). Furthermore, a meta-analysis including 24 treatment outcome studies for CAD revealed an overall mean effect of 0.86 (large) based on children's self-report measures (In-Albon & Schneider, 2007). The mean post-treatment recovery rate for the principal diagnosis was 68.9%; the more clinically relevant rate of recovery from all anxiety diagnoses revealed a more modest percentage of 55.4 in the intent-to-treat sample. Though these results are a promising and hopeful accomplishment, it also indicates that almost half of the treated children do not respond sufficiently to the CBT treatment. Interestingly, four CBT treatment outcome studies on child anxiety included an attention placebo-condition with an average effect-size of 0.58 which is considerably below the effect-sizes of the active treatment condition but not significantly different. One of the factors that might lead to variation in findings between studies is the differential approach to the statistical analysis and description of pre- to post-treatment changes.

Clinically Significant and Meaningful Change

An important issue related to the study of treatment outcome is how to effectively evaluate the nature and degree of change that has occurred as a result of therapy. Effect-sizes are often used to reflect pre- to post-treatment changes, but reporting significant effect-sizes solely might not be representative for the amount of clinical pre- to post-treatment change (Kendall, 1999). A second strategy commonly used in treatment outcome studies to describe pre- to post-treatment change is the use of observed difference scores (difference between the pre- and post treatment measurement for individual clients). However, observed difference scores are influenced by regression to the mean due to errors of measurement. Moreover, observed difference scores do not tell how individuals fared in treatment or whether a clinical significant change was obtained (Wise, 2004). Change should not only be statistically significant, but also clinically meaningful, e.g. a treatment that has proven to be statistically significant but yielded effect-sizes of .15 (Cohen's *d*) might not be clinically meaningful for individual patients. Conversely, an effect-size of .80 (Cohen's *d*) which appears considerable is of no value if it is not statistically significant (due for instance to method limitations).

The issue of statistically significant change and clinically meaningful change has been repeatedly discussed (Chambless & Hollon, 1998; Kazdin, 1999; Kendall, 1999) and various sophisticated strategies have been suggested to cope with this issue (Jacobson, Roberts, Berns, & McGlinchey, 1999; Jacobson & Truax, 1991; Kendall, Marrs-Garcia, Nath, & Sheldrick, 1999). The discussion inspired researchers to report on the clinically significant and meaningful change in their research samples (e.g. Shortt, Barrett, & Fox, 2001; Silverman, Kurtines, Ginsburg, Weems, Rabian et al., 1999). Surprisingly, when studying predictors for treatment outcome, researchers tend to fall back on commonly used strategies (e.g. regression analyses with raw scores) (Rapee, 2000; Victor, Bernat, Bernstein, & Layne, 2006) leading to models that account for variance in outcome but not for variance in clinically significant or meaningful change.

A solution is the use of Reliable Change (RC)-scores, the most precise possible estimation of the true pre-post differences (Hageman & Arrindell, 1999). The RC-score is the normal deviate (z-score) of the value 0 within the (conditional) distribution of true difference scores given the observed difference score. For measures with a nearly perfect reliability, the RC-score is nearly a linear function of the observed difference score, as the observed and true differences scores will be almost similar. When the reliability of the measure approaches zero the RC-score will approach a constant, representing the overall mean of the observed difference scores. So, using the RC-score in outcome prediction studies represents a more conservative approach than using the observed difference score, if the outcome measure has a lower than nearly perfect reliability.

The RC-score can be transformed into three categories (RC_{IND} index); improved (RC-score < -1.65), not reliably changed ($-1.65 \leq RC\text{-score} \leq 1.65$) and deteriorated (RC-score > 1.65). Negative RC-scores thus reflect a (reliable) reduction in symptoms. In order to determine which clients have reliably passed the cut-off for 'normal functioning', an index for Clinically Significant Change (CS_{INDIV} -score) can be computed. The CS_{INDIV} -score is, analogous to the RC-score, the normal deviate of the cut-off score within the (conditional) distribution of true post-scores given the observed post-score. A CS_{INDIV} -score < -1.65 can be used to conclude that the individual client has passed the cut-off for 'normal' functioning (a lower score indicates more 'normal' functioning with all outcome measures used in this study) (for a detailed description; see Hageman & Arrindell, 1999 and Jacobson & Truax, 1991). A dichotomous variable can be composed from the combination of the RC-categories and the CS-index, differentiating between 'reliable and clinically significant recovery' versus 'not or partially recovered'.

What Works 'for Whom'?

As already mentioned, not all children have recovered from CAD after CBT. The label 'not or partially recovered' might confront both researchers and clinicians with a disappointing fact: not all children benefit sufficiently from treatment. What's more, the idea that children might deteriorate in the period that they receive treatment is an almost completely ignored

possibility (Mohr et al., 1990). As researchers and therapists we tend to suppress this possibility from our conversations, studies and awareness, or are eager to attribute failure to extra therapeutic conditions such as all too complex family circumstances.

Non-response or partial response evokes (at least) two important questions; (1) what should we offer children who did not benefit (sufficiently) from the treatment and (2) what works for whom? To address issues of non- or partial response researchers have started to develop stepped-care programs, in which more intensive and costly interventions are reserved for those insufficiently helped by an initial intervention (Haaga, 2000). The larger study in which the present dissertation is a part of, offers children who do not respond (sufficiently) to the initial CBT intervention a second treatment 'step' or additional treatment phase. The presented findings in this dissertation are based on a 12 session CBT program. The approach of stepped-care treatment will be reported on in a separate manuscript (Van der Leeden, Van Widenfelt, Utens, Liber, & Treffers, In preparation) and dissertation (Van der Leeden, In preparation).

The present dissertation study addresses the second question 'What works for whom?'. This apparently simple question addresses an intriguing and complex research area. The main focus of this dissertation study will be on these last two words 'for whom?'; addressing issues that may account for variance in treatment outcome. Investigation of relevant subgroups with particularly good (or poor) treatment response and examination of relevant processes and mechanisms that yield clinically significant change could enrich the investigation of outcome research (Hinshaw, 2007). More rigorously Hinshaw adds "Without the knowledge of which subgroups respond best and worst to any particular treatment, [...], research on effective treatments is bound to remain at a relatively primitive, descriptive level." (Hinshaw, 2007, pp 664). Identification of relevant predictors for treatment outcome could therefore be a first step into a further understanding of 'What works for whom?'

Predictors for treatment outcome can be selected based either on their theoretical or empirical association with the development or maintenance of increased levels of anxiety. Alternatively, predictors for treatment outcome can also be selected for their previously shown empirical association with treatment outcome. Lambert and Asay (1999) suggested that, in general, variance in treatment outcome in adults can be accounted for by four sets of variables; (1) specific therapeutic techniques (15%), (2) extra-therapeutic change; (2a) factors that are part of the client and (2b) factors that are part of the environment (40%), (3) therapeutic relationship variables (30%), and (4) expectancy (placebo-effects) (15%) (Asay & Lambert, 1999) (see Figure 1.1). The present dissertation study will address several issues from these areas (e.g., family variables, comorbidity, social performance) and explore their impact on treatment outcome for CAD empirically.

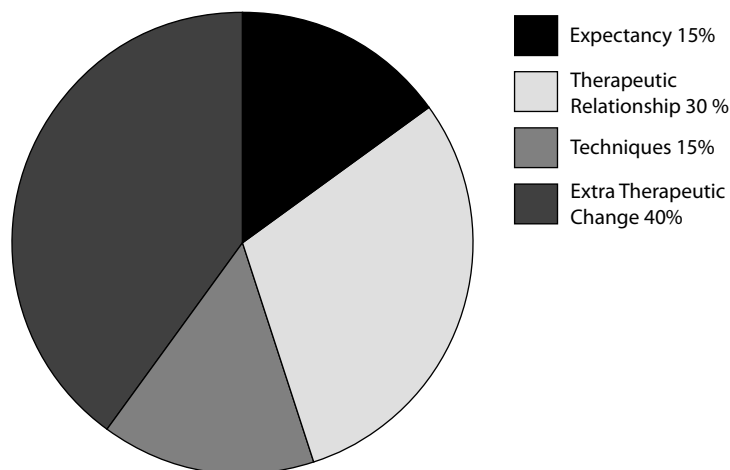


Figure 1.1.

Note. The Handbook of Psychology Integration by M. J. Lambert, 1992, p.97. Copyright 1992 by Basic Books. Reprint with permission (Lambert).

Specific Therapeutic Techniques

For the present dissertation study, the category 'specific therapeutic techniques' is broadened into a category labeled 'specific therapeutic techniques, technical factors and treatment modalities'. Technical factors represent the dosage of techniques delivered in this particular treatment. Treatment modalities refer to differences in treatment formats, e.g. individual or group, family or child-focused treatment.

We still know little about the comparative efficacy of alternative treatments to traditional individual CBT for CAD (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). One of the factors that might influence the treatment outcome is the format in which the treatment is delivered. Chapter 2 reviews the current empirical support for treating children either in Individual or in Group format and sketches the rationales provided in treatment outcome studies for the choice to treat children in Individual or Group format. Chapter 2 furthermore presents a description of the Randomized Clinical Trial conducted in order to compare the effectiveness of Individual CBT and Group CBT. Subsequently, the results of the Randomized Clinical Trial are presented and its implications discussed.

Evidence with regard to research on specific techniques in child treatment is scarce, but some significant relations between specific therapeutic interventions and child outcomes have been found. Greater use of family focused techniques, for instance, predicted post-treatment improvement in drug use, externalizing and internalizing symptoms in both treatment conditions of a randomized trial investigating individual CBT versus multidimensional family therapy (Hogue, Dauber, Samuolis, & Liddle, 2006). The focus and associated therapeutic techniques of treatments are considered the critical change agents in CBT for

child anxiety (Shadish & Sweeney, 1991). If the technical aspects of CBT do represent change agents, then the level of therapist adherence to the treatment protocol reflects the dose of offered change agents and thus should predict youth outcomes. Adherence checks can be used to assess for variability in the treatment variable, thus creating the means to examine intervention-outcome relations (Doss & Atkins, 2006). Chapter 6 explores the relative contribution of adherence to treatment outcome.

Extra-therapeutic Variables

Lambert and Asay define extratherapeutic change as factors that are a part of the client and part of the environment. The present dissertation study has a strong focus on both aspects of these extratherapeutic factors. Environmental factors herein mainly focus on the child's home environment, as children are largely depending upon their parents for emotional and daily care.

Environmental factors.

Children spend the majority of their time in the family environment, it is therefore not surprising that this environment has a substantial impact on children's development (American Academy of Pediatrics, 2003). Chapter 3 includes a short exploration of literature providing empirical support for the impact of parental variables, and more specifically the impact of parental anxiety and depression and parenting styles on the development of childhood anxiety. Consistent relationships between the development of childhood anxiety and especially maternal anxiety, depression and parenting have been reported in reviews and meta-analyses (Chorpita & Barlow, 1998; McLeod, Wood, & Weisz, 2006; Rapee, 1997; Wood, McLeod, Sigman, Hwang, & Chu, 2003). The role of fathers for the development of childhood anxiety and the treatment of childhood anxiety disorders has been largely overlooked. The results of a recent study suggest that the role of fathers with regard to care giving and family involvement may shift over time, adapting to family contexts and life circumstances (Wood & Repetti, 2004). There is some evidence showing differences between fathers and mothers in parenting styles and parental rearing behaviors; these differences suggest that parental rearing of fathers and mothers should not be considered equivalent a priori (Aunola & Nurmi, 2005; Bögels & van Melick, 2004). These new insights underline the importance to explore not only the maternal role but also the paternal role for treatment outcome of CAD, as the role of fathers might shift or change when having an anxious child. So far, researchers tended to focus on the role of mothers for treatment outcome or combined parental data instead of evaluating the differential impact of fathers and mothers. Secondly, chapter 3 includes an exploration of the literature in order to select empirically validated parental predictors for CBT outcome of CAD. The empirical section of chapter 3 carries on with a description of the selection procedure in the present dissertation study of parental predictors for treatment outcome. Furthermore, the discussion on clinically relevant and meaningful change

(Kazdin, 1999) is highlighted, and our solution to determine reliable and clinically significant change is described (Hageman & Arrindell, 1999). Variables that contribute to the prediction of treatment outcome will be described and assessed whether there is consistency in findings across statistical methods and informants. Again, the results on the prognostic value of several parental predictors for treatment outcome will be presented and accompanied by a discussion of the clinical implications and a brief description of the limitations and strengths of the present dissertation study.

Though a previous treatment outcome study did not show a negative effect of social economic status (SES) on treatment outcome (Berman, Weems, Silverman, & Kurtines, 2000) we acknowledge the possibility that the conditions associated with low SES (e.g., adversity and stress) might hinder treatment from being effective. As there is evidence that suggests an impact of SES on the development of emotional disorders in children (Costello, Compton, Keeler, & Angold, 2003) it is assessed whether the SES also impacts upon treatment outcome.

Client characteristics.

In the present dissertation study two categories of client characteristics were selected to guide further investigation of differences in treatment outcome; social functioning and comorbidity. The association between social functioning and anxiety symptoms has been examined in several studies (Cartwright-Hatton, Hodges, & Porter, 2003; Chansky & Kendall, 1997; Segrin & Flora, 2000). It has been suggested that anxious children do not necessarily lack social skills, but suffer from a distorted perception of their skills (Cartwright-Hatton, Tschernitz, & Gomersall, 2005). It has also been suggested that social skills deficits may lead to increased levels of anxiety (Segrin & Flora, 2000). Regardless of the chicken and egg question pertaining to social anxiety and social performance (or social skills) difficulties, chapter 4 explores the level of social performance in anxious children and the relation between social performance difficulties and treatment outcome. Those variables that show to contribute significantly to the prediction of treatment outcome will be presented. As social performance difficulties in particular tend to be studied in children or adults with Social Phobia (SOP) (e.g., Rapee & Lim, 1992; Spence, Donovan, & Brechman-Toussaint, 1999), differences between anxiety disordered children with and without SOP will be explored and any differences that might show will be reported. The results on the prognostic value of social performance will be followed by a discussion in which attention is given to the impact of the various social performance aspects on treatment outcome. Again, clinical implications, strengths and limitations of the present dissertation study are addressed.

Chapter 5 examines the hypothesized impact of comorbid conditions and severity on treatment outcome for children with anxiety disorders as comorbidity is a common phenomenon in anxious children (Angold, Costello, & Erkanli, 1999; Chavira, Stein, Bailey, & Stein, 2004). Children with comorbid conditions (e.g. more than one anxiety disorder, depression, ADHD) appear to suffer from more severe clinical phenomenology (Franco, Saavedra, & Silverman,

2007). Comorbidity is assumed to hinder treatment from being effective due to implementation difficulties or as disorders might be mutually maintaining. For instance, children with Social Phobia tend to avoid social situations whereas participation in social situations might be essential in the treatment of (comorbid) Depression in order to activate the clients. Chapter 5 differentiates between two kinds of comorbidity; each including two groups; one including children with a single anxiety disorder and the other a primary anxiety diagnosis and one or more comorbid disorders (labeled 'total comorbidity'); secondly a differentiation was made between children with one or more anxiety disorders versus children with one or more anxiety disorders and a comorbid disorder other than anxiety (labeled 'other comorbidity'). Comorbidity appears closely related to the concept of severity which reflects increased symptom levels. Disentanglement of these concepts appears crucial for understanding their unique impact on outcome. It will be assessed whether variance in pretreatment scores and variance in outcome can be accounted for by total comorbidity, other comorbidity and severity.

Differences in the occurrence of anxiety disorders appear related to age and/ or gender (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Ford, Goodman, & Meltzer, 2003; Verhulst, 2001). Previous treatment outcome studies did not show an impact of age or gender on treatment outcome (Berman, Weems, Silverman, & Kurtines, 2000; Kendall et al., 1997; Nauta, Scholing, Emmelkamp, & Minderaa, 2003; Shortt, Barrett, & Fox, 2001; Southam-Gerow, Kendall, & Weersing, 2001). Nevertheless, in each of the chapters a differential impact on treatment outcome of these client characteristics is explored for the sake of completeness.

Relationship Variables

A meta-analytic review (Shirk & Karver, 2003) examining relationship variables and treatment outcome in 23 studies on child and adolescent therapy showed a mean correlation between therapist alliance and treatment outcome of .24, with no significant differences between behavioral and non-behavioral treatments, or between research settings and non-research settings. One of these relationship variables concerns therapeutic alliance, which has been defined as the therapist's ability to develop a warm relationship and engage the client(s) in the therapeutic process (McLeod & Weisz, 2005). Despite these findings others commented that the role of alliance has been less consistent when examined explicitly in the context of specific forms of therapy, such as cognitive therapy, and suggested that the relationship between alliance and outcome may play differing roles across treatment modalities (DeRu-beis, Brotman, & Gibbons, 2005). So far, evidence for the contribution of alliance in CBT for childhood anxiety is scarce and indicates a weak relationship between alliance and outcome (Kendall, 1994; Kendall et al., 1997). Chapter 6 will explore the relative contribution of therapeutic alliance for treatment outcome in the present dissertation study.

Expectancy and Placebo Effects

The fourth category of factors that account for variance in treatment outcome as proposed by Asay and Lambert (1999) concerns placebo-effects. Placebo-effect has been defined as a representative of the factors (e.g., expectancy for improvement) that are related to any benefits observed in the context of a theoretically inert treatment (Herbert & Gaudiano, 2005). It has been estimated that approximately 15% of variance in treatment outcome is attributable to placebo effects (Asay & Lambert, 1999). Placebo-interventions in CBT studies on the treatment of adult anxiety (e.g., Social Phobia (SOP), Obsessive Compulsive Disorder (OCD), Generalized Anxiety Disorder (GAD)) showed significantly better effect-sizes compared to no-treatment conditions but appeared less or equally effective compared to active interventions (Norton & Price, 2007). A mean effect-size of 0.58 [95% CI: -1.6 to 1.3] for attention placebo controlled conditions was found for studies evaluating CBT for childhood anxiety disorders (In-Albon & Schneider, 2007).

The present dissertation study will not address whether placebo-effects or expectancy accounted for variance in treatment outcome. It is beyond our possibilities and statistical desirability's to give a complete assessment of all likely predictors for treatment outcome.

The Present Study and the Larger Study

This dissertation study is part of a larger study on a stepped-care model investigating predictors for treatment outcome of childhood and adolescent anxiety disorders and the effect of an additional treatment protocol for non-responders to a traditional CBT program (Treffers, Van Wid-enfelt, Ferdinand, & Utens, 2002). To explain the position of this dissertation study with respect to the larger study, a brief description of the overall study design and procedures will be given.

Participants.

Eligible for participation were children aged 8-12 years attending primary education and adolescents aged 12-15 years attending secondary education. Children were referred to the anxiety and depression outpatient clinic's of the Child and Adolescent Psychiatry Department, Leiden University Medical Center and Erasmus Medical Center, Sophia Children's Hospital in Rotterdam, in the Netherlands and diagnosed with Separation Anxiety Disorder (SAD), GAD, SOP or Specific Phobia (SP)¹. Exclusion criteria were an IQ below 85, poor command of the Dutch language, Pervasive Developmental Disorder, Selective Mutism, Schizophrenia or other psychotic disorder. Children with OCD, Posttraumatic Stress Disorder and Panic Disorder were excluded because at the time the study was designed there was no empirical evidence that children would benefit more from CBT compared to medical or combined treatment. All youngsters and their parents were interviewed with the ADIS-C/P (Silverman & Albano, 1996). Youngsters with comorbid conditions such as Depression, Dysthymia, Attention Deficit Hyperactivity Disorder (AHDH) or Oppositional Defiant Disorder (ODD) were not excluded from the study. Comorbidity is a common problem presented in general practice; exclusion of

youngsters with comorbid conditions would therefore complicate generalization of the findings to the general practice. The Committees for Medical Ethics of Leiden University Medical Center and of Sophia Childrens Hospital/ Erasmus Medical Center approved the conduct of this research.

A total of 142 children and their parents were asked to participate in the present study; 133 subjects gave informed consent to participate, and 132 mothers and 115 fathers participated. The referral rate of adolescents was below that of children; 53 eligible adolescents and their parents were asked to participate. Of these 53 adolescents, 51 adolescents gave informed consent for participation and 51 mothers and 44 fathers participated. Results with regard to the treatment of anxious adolescents were excluded from the analyses in the present study and were therefore not included in this dissertation.

Procedure.

Child participants were randomly assigned in sequences of 6 to either GCBT or ICBT. Six children were excluded from the randomization because they refused assignment to group treatment ($n = 2$) or were absent at the start of the group ($n = 1$). Due to location three children were treated at an affiliated outpatient clinic nearby their home. Sixty-two children participated in the GCBT, and 71 children were given ICBT. The intention was to deliver the adolescent treatment in GCBT and ICBT format as well. The referral rate was below expected; it was deemed unethical to have adolescents wait for over four months before group treatment could start. Therefore, it was decided to treat all adolescents individually.

All youngsters and their parents underwent the same procedure, which included 7 assessments spread over a one-year period. Assessments varied in the number of informants and the variety of measurements included (see Table 1.1 for a complete overview). The first assessment (time 0) included the Anxiety Disorders Interview Schedule for Children and Parents interview (ADIS-C/P; Silverman & Albano, 1996) with the youngster and their parents and completion of the Multidimensional Anxiety Scale for Children (MASC; March, 1997) and the Children's Depression Inventory (CDI; Kovacs, 1992). Additionally, time 0 assessment also included assessment of teacher information on youngster's behavior problems and youngsters social functioning, as well as information of clinicians on youngsters global functioning (C-GAS; Shaffer et al., 1983). Time 0 took place at least two weeks prior to the start of the treatment. Directly prior to the start of the treatment time 1 assessment was conducted. After time 1 children and adolescents started the first phase of the treatment-protocol; children were treated with the child-version of the FRIENDS treatment (Barrett & Turner, 2000) and adolescents were treated with the adolescent version of the FRIENDS treatment (Barrett, Lowry-Webster, & Turner, 2000). FRIENDS is a manualized short-term 10-session cognitive behavioral therapy protocol including four additional parent sessions and two additional booster sessions (relapse prevention). One week after the first two parent sessions and five child-sessions (mid-treatment; time 2) children completed the MASC and CDI. Post-treatment

Table 1.1.*Assessment Information*

Time	0	1	2	3
	Pre >2 wk	Pre	Mid	Post FRIENDS
ADIS-C/P	c/p			c/p
MASC	c	c	c	c
CDI	c	c	c	c
CASI		c		c
NASSQ		c		c
YSR ¹		c		c
EMBU		c/p		c/p
Social Validity				c/p
CBCL ²		p		p
C-GAS		p/d		p/d
DASS		p		p
SSRS	t	p		p
TRF	t			

Note. ADIS-C/P; Anxiety Disorders Interview Schedule for Children and Parents interview (Silverman & Albano, 1996), MASC; the Multidimensional Anxiety Scale for Children (March, 1997), CDI; the Children's Depression Inventory (Kovacs, 1992), CASI; Children's Anxiety Sensitivity Index (Silverman, Fleisig, Rabian, & Peterson, 1991), EMBU-C; Egna Minnen Beträffande Uppfostran Child version (Markus, Lindhout, Boer, Hoogendijk, & Arrindell, 2003), NASSQ; Negative Affectivity Self-Statements Questionnaire (Ronan, Kendall, & Rowe, 1994), YSR; Youth Self-Report (Achenbach & Rescorla, 2001; Verhulst, 2002a), Social Validity; Social Validity Questionnaire: Parent and Child versions (Barrett, 1999), TRF; Teacher Report Form (Achenbach & Rescorla, 2001; Verhulst, 2002b), SSRS; Social Skills Rating System: Parent and Teacher Versions (Gresham & Elliott, 1990), global functioning scale C-GAS (Shaffer et al., 1983); parent and clinician versions, CBCL; Child Behavior Checklist (Achenbach & Rescorla, 2001; Verhulst, 2002c), EMBU-P; Egna Minnen Beträffande Uppfostran Parent version (Markus, Hoogendijk, & Treffers, 2006), DASS; Depression, Anxiety and Stress Scales (De Beurs, Van Dyck, Marquenie, Lange, & Blonk, 2001). C= child/adolescent, p= mother and/or father, d= diagnostician or therapist, t= teacher. Superscript¹= adolescents only, superscript²= was often received either on time 0 or on time 1.

assessment (time 3) was conducted one-week after the tenth FRIENDS session. Interview (ADIS-C/P) and questionnaire (MASC) information obtained at time 3 was used to determine the short-term treatment outcome. Depending on the outcome of the interview and questionnaire information youngsters were advised either to end the treatment (early responders; remission of all anxiety diagnoses and a self-reported MASC score below the cut-off) and attend booster sessions or to start the second treatment phase (early non-responders; insufficient reduction of anxiety diagnoses and/or MASC score above the cut-off).

The second treatment phase has a strong focus on parent participation in the child treatment (Van Widenfelt, Franswa, Utens, Van der Toorn, & Liber, 2002) and included three more assessments (time 4, time 5 and time 6). The early responders were offered two booster sessions, and non-responders were given five treatment sessions of the second treatment phase. After these five sessions interview and questionnaire information was again obtained and used to advise the youngsters and their parents to either continue the second half of the

second treatment phase (phase 2 early non-responders) or end the treatment (phase 2 early responders) in case children no longer met the diagnostic criteria for any anxiety disorder and reported anxiety levels below the cut-off. Children who did not respond (sufficiently) to the first half of phase 2 treatment were again offered 5 treatment sessions. As some children participated in a second treatment after the FRIENDS treatment whereas others did not, we were not able to address follow-up issues with regard to the effectiveness of the first treatment, or with regard to ICBT versus GCBT.

Treatment.

Children were treated with the Dutch translation of the FRIENDS program (Barrett & Turner, 2000; Utens, de Nijs, & Ferdinand, 2001). The FRIENDS program is based on the Coping Cat workbook from Philip Kendall (Kendall, Kane, Howard, & Siqueland, 1990). Results from previous research indicated that FRIENDS is an effective treatment for childhood anxiety disorders (Shortt, Barrett, & Fox, 2001). It is a manualized treatment and based on a theoretical framework with three main target areas for change: physical symptoms, cognitive processes and coping skills. Therapeutic techniques comprise psychoeducation, relaxation and breathing exercises, exposure, problem solving skills training, social support training and cognitive restructuring exercises. Parent sessions comprised mainly psychoeducation. Children are taught coping techniques such as relaxation and breathing exercises to learn to cope with physical symptoms of anxiety. Children are also taught to challenge negative cognitions, irrational beliefs and negative self-talk by changing them into helpful cognitions, realistic beliefs and positive self-talk. Increased awareness of avoidant strategies is stimulated, as well as the development of problem solving skills and coping skills. In the second half of the therapy, gradual exposure to the feared stimulus and underlying fears is more prominent. Attempts to cope are positively rewarded. The FRIENDS treatment is delivered individually and in group format in 10 weekly child sessions and 4 parent sessions. Parent sessions focus mainly on psychoeducation. The treatments of the individual and group format corresponded as much as possible. Differences between formats are inherently related to the formats; the presence or absence of peers and the presence of either one or two therapists.

Sample described in the present dissertation.

The presented findings in this dissertation result from analyses of the sample of children who were invited to participate in the first phase, the FRIENDS treatment. The intent-to-treat sample included 133 children; the sample of treatment completers included 124 children as nine children dropped out of treatment prior to the time 3 assessment. Six children could not be randomized, therefore chapter 1 reports on an intent-to-treat sample of 127 children, eight out of the 127 children dropped out of treatment resulting in a sample of 119 treatment-completers. The majority of children that dropped out of treatment prior to time 3 completed assessment data at time 3.

2

No differences between group versus individual treatment of childhood anxiety disorders in a randomized clinical trial

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ABSTRACT

Background; The present study compares an individual versus a group format in the delivery of manualized cognitive-behavioural therapy (FRIENDS) for children with anxiety disorders. Clinically referred children (aged 8 to 12) diagnosed with Separation Anxiety Disorder, ($n = 52$) Generalized Anxiety Disorder ($n = 37$), Social Phobia ($n = 22$) or Specific Phobia ($n = 16$) were randomly assigned to individual ($n = 65$) or group ($n = 62$) treatment. **Method;** Analyses were conducted separately for the intent-to-treat sample and the sample of children who completed treatment. Analyses included chi-square comparisons and regression analyses with treatment format as a predictor. **Results;** Forty-eight percent of the children in the individual versus 41% in the group treatment were free of any anxiety disorder at post-treatment; 62% versus 54% was free of their primary anxiety disorder. Regression analyses showed no significant difference in outcome between individual and group treatment. **Conclusions;** Children improved in both conditions. Choice between treatments could be based on pragmatic considerations such as therapeutic resources, referral rates, and the preference of the parents and the child.

Keywords: Childhood Anxiety Disorders, Cognitive-Behaviour Therapy, randomized clinical trial.

GROUP VERSUS INDIVIDUAL TREATMENT OF CHILDHOOD ANXIETY DISORDERS

Since the first randomized clinical trial (RCT) evaluating cognitive behavioural therapy (CBT) for Childhood Anxiety Disorders (CAD) in 1994 was conducted over twenty RCT's have been carried out (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; Kendall, 1994). These RCT's accord CBT the status of an empirically supported treatment. Nonetheless still 20 to 60 percent of the children in research trials for CAD do not show an adequate response. Furthermore, we still know little about the comparative efficacy of alternative treatments to traditional individual CBT for CAD (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). One of the factors that might influence the treatment outcome is the format in which the treatment is delivered.

Competing Rationales for Group versus Individual Treatment

There are various arguments for evaluating the efficacy of providing treatment in a group or an individual format. On a conceptual level, group treatment (GCBT) could function as a source of reinforcement, normalization, (peer) modelling and helping behaviour. Arguments to offer treatment in a group setting concern a closer representation of daily life experience in the group format, exposure to social situations (Manassis et al., 2002) or practical reasoning, i.e. cost-effectiveness (Flannery-Schroeder, Choudhury, & Kendall, 2005; Silverman et al., 1999). In contrast, individual treatment (ICBT) is considered time-consuming and costly. Empirical support for this assumption to date is lacking however. Though the findings of a recent meta-analysis suggested that GCBT is less cost-effective in the treatment of adult anxiety, the authors emphasized that the evidence is not solid yet (Tucker & Oei, 2007). It can also be argued that ICBT may be more efficacious than GCBT. For example, the presence of other children may interfere with the development of the therapist-child relationship or create a context for negative peer modelling to occur (Silverman et al., 1999). Furthermore, children may actually have more opportunity for avoidance in a group. A disadvantage of GCBT is the need for enough referrals before treatment can start; this might lead to a longer wait between assessment and treatment than for ICBT. Both individual and group therapy seem to offer advantages and disadvantages. Empirical evidence for the choice between individual and group format is scarce and subject to several limitations.

Research on Group versus Individual Therapy

Though several researchers tested individual CBT and group CBT separately (Kendall, 1994; Silverman et al., 1999), there is scarce evidence for the supremacy of ICBT over GCBT or vice versa. To date, three randomized controlled trials for CAD compared ICBT with GCBT. Flannery-Schroeder and Kendall (2000) assigned a clinically referred sample of 8-14 year old children to one of three treatment conditions; GCBT ($n = 12$), ICBT ($n = 13$) and wait-list (WL,

$n = 12$). This study did not reveal significant differences in treatment outcome (diagnostic status, self-reported anxiety and parent-reported internalizing problems) between ICBT and GCBT, though both conditions were superior to the WL control condition. The results showed that 43% of the children in the ICBT and 46% of the children in the GCBT no longer met criteria for any of the three primary anxiety disorders (Generalized Anxiety Disorder (GAD), Separation Anxiety Disorder (SAD), Social Phobia (SOP)). A serious limitation of this study was the restricted number of participants per group.

Muris et al. (2001) studied ICBT ($n = 17$) versus GCBT ($n = 19$) with 36 children aged 8-13 years from a school based sample who scored in the top 10% on the Dutch SCARED-R (Screen for Anxiety Related Emotional Disorders; Birmaher et al., 1997; Muris, Mayer, Bartelds, Tierney, & Bogie, 2001) and met DSM criteria for an anxiety disorder. No significant interaction of the intervention and the treatment format was found. This study also had a small sample size and no data were available on post-treatment diagnostic status.

Manassis and colleagues (2002) conducted a similar study with a larger sample size of children aged 8-12 years ($N = 78$, 41 ICBT; 37 GCBT). Again, the results revealed no main effects for treatment modality, with exception of the C-GAS, which revealed greater change with ICBT in post hoc analysis. The authors explored their data further by dichotomizing the sample in groups with high and low social anxiety and hypothesized that children with high social anxiety would respond preferentially to GCBT since this format may offer additional exposure. The authors report a significant reduction in social anxiety in both conditions and conclude from their study that children with higher rates of social anxiety benefited more from ICBT. However, they did not report the time by treatment interaction that would be directly relevant to this question. Furthermore, only five of the 78 participants (6.4%) were actually diagnosed with SOP as a primary diagnosis, post-treatment diagnostic status was not assessed. Thus, the analyses provided on this study do not provide convincing support as to whether children with SOP benefit more from ICBT than GCBT.

In conclusion; though all three studies comparing ICBT and GCBT are laudable for addressing an issue with clinical and public policy implications, they suffer from various methodological limitations that preclude resolution of the question whether GCBT is more effective than ICBT. Two studies were underpowered to detect differences between groups and a third with a larger sample did not report a main effect for treatment format or the required treatment x time interaction. Two studies did not report on post-treatment diagnostic status limiting thereby the clinical interpretation, one study used a school based sample instead of a clinically referred sample.

The Present Study

The present study compared ICBT and GCBT with a large, clinically referred sample of children with anxiety disorders. Children with a primary diagnosis of SAD, GAD, SP or SOP were randomly selected and assigned to standardized ICBT or GCBT. First, post-treatment diagnostic

status and effect-sizes were calculated for both ICBT and GCBT. Second, treatment format was studied as a predictor of outcome by means of regression analyses. The absence or presence of SOP, age, and gender were included in the regression analyses to study if these variables add to the prediction of treatment outcome. Significant improvement was expected for both treatment formats. The present study is part of a larger study on a stepped-care model investigating the effect of an additional treatment protocol for nonresponders to a traditional CBT program. Follow-up data would be biased by this additional treatment and are therefore not available.

METHOD

Participants

Eligible for participation were children aged 8-12 years referred to the anxiety and depression outpatient clinic for Child and Adolescent Psychiatry Department, Leiden University Medical Center and Erasmus Medical Center, Sophia Children's Hospital in Rotterdam, in the Netherlands and diagnosed with SAD, GAD, SOP or SP. Exclusion criteria were an IQ below 85, poor command of the Dutch language, Pervasive Developmental Disorder, Selective Mutism, Schizophrenia or other psychotic disorder. Children with Obsessive Compulsive Disorder, Posttraumatic Stress Disorder and Panic Disorder were excluded because at that time there was no empirical evidence that children would benefit more from CBT compared to medical or combined treatment. All children and their parents were interviewed with the ADIS-C/P (Silverman & Albano, 1996). Children with comorbid conditions such as Depression ($n = 2$), Dysthymia ($n = 7$), ADHD ($n = 13$) or ODD ($n = 7$) were not excluded from the study. Comorbidity is a common problem presented in general practice, exclusion of children with comorbid conditions would therefore complicate generalization of the findings to the general practice. The Committees for Medical Ethics of Leiden University Medical Center and of Sophia Childrens Hospital/ Erasmus Medical Center approved the conduct of this research.

A total of 142 children and their parents were asked to participate in the present study and 133 subjects gave informed consent to participate. Children on medication for an Anxiety Disorder were withdrawn from medication, if possible, or otherwise excluded. For five children with ADHD, the dosage of medication was kept constant during the study as a constant dosage of medication for ADHD was considered unlikely to confound treatment effects.

Participants were randomly assigned in sequences of 6 to either GCBT or ICBT. Six children were excluded from the randomization because they refused assignment to group treatment ($n = 2$) or were absent at the start of the group ($n = 1$). Due to location three children were treated at an affiliated outpatient clinic nearby their home. This resulted in a sample of 127 children, the intent-to-treat (ITT) sample. Sixty-five children participated in the GCBT, and 62 children were given ICBT. Demographic data are presented in table 2.1.

Table 2.1*Demographic Data on Participants (n) for ICBT and GCBT*

Variable	Individual (n = 65)		Group (n = 62)		ICBT vs GCBT t/ χ^2_{a} (df)
	Boys	Girls	Boys	Girls	
Child gender	35	30	36	26	0.23 (1)
age (years)	10.13	10.08	9.88	10.13	-0.44
SD	1.22	1.40	1.09	1.47	
Site: Leiden	14	10	9	8	1.31 (1)
Rotterdam	21	20	27	18	
SES: Low	7	1	6	4	0.89 (2)
Middle	15	14	20	10	
High	13	15	10	12	
Diagnosis					1.11 (3)
SAD	17	10	16	9	
GAD	11	10	8	8	
SP	3	4	5	4	
SOP	4	6	7	5	
Comorbidity					
No comorbid disorders	13	15	14	13	
One anxiety disorder	10	9	14	7	0.40 ^b
Two or more anxiety disorders	6	3	7	3	
Depression	1	0	1	0	– ^c
Dysthymia	2	4	0	1	– ^c
AD(H)D	7	1	3	2	0.53
ODD	2	2	2	1	– ^c

Note. Superscript^a= all t-tests and chi-square tests were nonsignificant ($p > .05$). Superscript^b= the number of diagnoses used, defined as 1, 2, or 3 or more (anxiety) disorders. Superscript^c= 25% or more of cells had an expected count of 5 or less. AD= anxiety disorder(s).

All children had the Dutch nationality, six children had a double nationality (5%), which is somewhat less to the general population (expected 11%). The social economic status (SES) was low for 19 children, medium for 59 children and high for 49 children (Central Bureau of Statistics Netherlands, 2001). There were no significant pretreatment differences between ICBT and GCBT or between the two sites with regard to SES, age, gender or diagnosis. To control for pre-treatment differences, children participating in the ICBT and GCBT conditions were compared with respect to the CBCL-Int of mother and father, the MASC and the CDI.

Thirteen children were living in a single-parent household, 108 children were living in a two-parent (biological) household, five children were living in a two-parent household with one biological and one step-parent and one child was raised by adoptive parents. For children living in a two-parent household, both parents were asked to participate. This resulted in a participation of 126 mothers and 108 fathers. Two fathers and one mother died; of the remaining 17 fathers that did not participate, 13 did not maintain contact with their children or the fathers were unknown, three fathers refused to participate in the research project and

one father lacked proficiency in Dutch. The primary diagnoses of the children were SAD ($n = 52$), GAD ($n = 37$), SOP ($n = 22$) or SP ($n = 16$). Comorbidity-rates in the samples are presented in Table 2.1.

Eight children dropped out of treatment (ICBT: $n = 5$, GCBT: $n = 3$), which resulted in a sample of 119 treatment completers (TC). All results are based on the sample of children who started treatment (intent-to-treat; ITT) unless otherwise specified.

PROCEDURE

Children and parents were interviewed with the ADIS-C/P and further assessed with the routine assessment procedure to confirm clinical diagnosis of the child. The routine procedure included at both sites at least one psychiatric consult, intelligence testing, and assessment of school and family functioning. Symptoms of anxiety and depression were assessed with the Multidimensional Anxiety Scale for Children (MASC; March, 1997) and the Children's Depression Inventory (CDI; Kovacs, 1992).

After the initial routine assessment verbal and written consent were obtained from the parents as well as children above age 12. After verbal and written consent was obtained, children were randomly assigned to ICBT or GCBT. Families that were willing to participate were told which format they would receive. Groups started preferably with six children (eight groups), however three groups had less than six children due to a long period with few referrals in which it was decided to begin with five children, due to absence during the first sessions of the group and due to withdrawal of participation. All children participating received a manual-based 10 session weekly CBT program and their parents received 4 sessions of CBT parent training (FRIENDS; Barrett & Turner, 2000). One-week post-treatment children and parents were interviewed with the ADIS-C/P and post-treatment measures were administered to both children and parents.

An a priori power analysis showed that the needed sample size was 52 to detect large effects and 128 to detect medium effects. Estimation of the necessary sample size was based on two-tailed t-test for means with expected effect-sizes of 0.50 (medium) and 0.80 (large), an alpha of .05, and power of .80.

MEASURES

Diagnostic interview.

The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-C/P) is a semi-structured interview schedule and was administered to both parents and children pre- and post-treatment to obtain clinical information and derive DSM-IV diagnoses. The ADIS is a reliable instrument

organized according to DSM-IV criteria and yields kappa coefficients for SAD, SOP, SP and GAD ranging from .62 to .92 for both the child and the parent interview (Silverman & Ollendick, 2005; Silverman, Saavedra, & Pina, 2001). The Dutch translation of the ADIS (Siebelink & Treffers, 2001) was made in close consultation with Silverman. Reliability research into the Dutch version of the ADIS is not available, interviewers were instructed according to the standard procedure; we thus relied on the psychometric properties reported in the literature.

Experienced clinicians or master level students administered the ADIS-C/P pretreatment. Clinicians of both institutions met several times to ensure that the procedures and decision-making were alike. The first and fifth author and master level students conducted the post-treatment assessments. Interviewers were not blind to treatment assignment (individual or group treatment), but had no interest in the supremacy of one condition over the other. Master level students were trained by observing live and videotaped interviews and completed an exam to prove acceptable administration of the interview. The authors reviewed, supervised and discussed the interview reports of the students during the conduct of the research project to ensure that administration, scoring and reporting would not drift.

Self-report measures.

Information on self-reported child anxiety and depressive symptoms were obtained by administering the Dutch versions of the MASC and CDI. The MASC is a general measure of anxiety and includes 39 items. The psychometric properties of the American version are good (March, Parker, Sullivan, Stallings, & Conners, 1997). The MASC was translated into Dutch by Utens & Ferdinand (2000); preliminary analyses revealed an excellent Cronbach's alpha of .93 for the total score ($N = 299$, age 8-12) and a test-retest correlation of .81 ($n = 196$, age 8-12).

The CDI is a 27-item scale suited for monitoring changes in a child's mood (Kovacs, 1992). A Dutch version of the CDI was used as a continuous measure of depressed mood (Koot & van Widenfelt, 2000) in the present study. The original English CDI has good internal consistency (alphas ranging from .71 to .89) and acceptable test-retest reliability (correlation of .75). The Dutch translation showed good psychometric properties, the Cronbach's alpha was .82 for the total score ($N = 649$, age 8-12).

Parent-report measures.

The Child Behavior Checklist (CBCL) is a well-known and researched 113-item scale that assesses child behaviour problems by parents and has shown good reliability and validity (Achenbach & Rescorla, 2001). Cronbach's alpha of the internalizing scale for the clinical population in the present study ranged from .84 for mothers to .85 for fathers.

Treatment

Children were treated with the Dutch translation of the FRIENDS program (Barrett & Turner, 2000; Utens, de Nijs, & Ferdinand, 2001). Results from previous research indicated that FRIENDS

is an effective treatment for childhood anxiety disorders (Shortt, Barrett, & Fox, 2001). The FRIENDS program is based on the Coping Cat workbook from Philip Kendall (Kendall, Kane, Howard, & Siqueland, 1990). Therapeutic techniques comprise psychoeducation, relaxation and breathing exercises, exposure, problem solving skills training, social support training and cognitive restructuring exercises. Parent sessions comprised mainly psychoeducation. Time from start to the end of treatment covered approximately 17 weeks ($M = 16.81$, $SD = 3.35$).

Treatment Integrity

Adherence was checked as part of the treatment integrity measures. All therapy sessions were videotaped; a random selection of 30% of the tapes of individual sessions and all tapes of the group sessions were checked for adherence. ICBT sessions were 60 minutes and GCBT sessions were 90 minutes. Master level students were trained and had to obtain satisfactory interrater-reliability before independent scoring could be conducted. Yule's Y was used as a measure for calculating interrater-concordance, as Yule's Y is less sensitive to skewed distributions. The interpretation of Y is similar to kappa; values above .55 were considered acceptable and had to be obtained before independent scoring could commence. The Y scores at the start of independent scoring ranged from .55 to .73 ($n = 5$, $M = .68$, $SD = .08$). Weekly meetings were held to discuss scoring and prevent observer drift. Results indicated that therapists adhered sufficiently to the treatment protocol (94% of the child sessions and 85% of the parent sessions were provided as intended). There were no differences in adherence in the child sessions between children who did and who did not meet diagnostic criteria at post-treatment (free of any anxiety disorder at post-treatment ($t(121) = 1.03$, $p = ns$). Adherence of the child-sessions was not different between ICBT and GCBT ($t(121) = 0.97$, $p = ns$). Adherence in the parent sessions was not different for children who did and did not meet diagnostic criteria at post-treatment ($t(119) = 0.84$, $p = ns$), but did show a difference between ICBT and GCBT ($t(120) = -2.37$, $p < .05$) with higher rates of adherence in the group setting. Comparison of four groups representing treatment success and failure, and post-treatment diagnostic status did not reveal any differences ($F(3, 117) = 2.41$, $p = ns$).

Twenty-two therapists conducted the therapy sessions; five were doctoral students and 17 were licensed psychologists. Forty-one children were treated at Curium/LUMC by nine therapists; 86 children were treated at the Sophia/ErasmusMC by 13 therapists. Therapists at each institute met weekly to discuss the treatment and were supervised by two experienced licensed cognitive-behavioural therapists. Every three to four months the therapists of the two institutions met to prevent therapist drift between institutions. There were no differences in treatment outcome between the two sites (primary diagnosis absent: $\chi^2(1, n = 124) = 1.58$, $p = ns$), free of any anxiety disorder at post-treatment; $\chi^2(1, n = 124) = 2.09$, $p = ns$).

Statistical Analyses

To investigate if treatment format contributes to variation in the treatment outcome, regression analyses were conducted with the post-treatment level of anxiety (MASC), depression (CDI) and internalizing problem behaviour (CBCL-Int) as dependent variables. To correct for pretreatment levels of the MASC, CDI and CBCL-Int, pretreatment scores on these variables were entered as predictor variables. Data were imputed to obtain multiple imputed datasets ($m = 5$) since missing values pose a challenge to the interpretation of intent-to-treat analysis (Nich & Carroll, 2002). There are several methods to cope with missing values in clinical trials, multiple imputation methods are advised to obtain results closest to the 'true' model (Mazumdar, Liu, Houck, & Reynolds, 1999). Missing values did not exceed 5% with the exception of the CBCL for fathers for which 8% of the values were missing.

RESULTS

Primary Analyses

In the GCBT, 41% of the participants no longer met criteria for any anxiety disorder (responders); 54% no longer met the criteria for their primary disorder. In the ICBT, 48% of the participants no longer met criteria for any anxiety disorder (responders); 62% no longer met the criteria for their primary disorder. The treatment response was not significantly different between the two treatment conditions for the absence of the primary diagnosis ($\chi^2 (1, = 124) = 0.78, p = .38$) and for the absence of any anxiety disorder ($\chi^2 (1, = 124) = 0.55, p = .46$) at post-treatment. The results for the treatment completers were not significantly different between the two treatment conditions (absence of the primary disorder ICBT 63% vs GCBT 53%; $\chi^2 (1, = 119) = 1.42, p = .23$, and free of any anxiety disorder ICBT 48% vs GCBT 40%; $\chi^2 (1, = 119) = 1.06, p = .30$).

Effect-sizes were calculated separate for the individual and group formats based on intent-to-treat, the confidence intervals indicate that there is no significant difference for ICBT and GCBT on the MASC (ICBT: $d = 0.73$, 95% CI 0.65- 1.43; GCBT: $d = 0.81$, 95% CI 0.74- 1.55) and the CDI (ICBT: $d = 0.68$, 95% CI 0.59- 1.35; GCBT: $d = 0.78$, 95% CI 0.69- 1.49). Effect-sizes based on the CBCL-Int appeared similar in both conditions (mothers: ICBT: $d = 0.53$, 95% CI 0.38- 1.12; GCBT: $d = 0.56$, 95% CI 0.42- 1.18; fathers: ICBT: $d = 0.32$, 95% CI 0.08- 0.85, GCBT: $d = 0.42$, 95% CI 0.20- 1.00). The means and standard deviations for the main outcome measures (MASC, CDI and CBCL) are presented in Table 2.2 for the ITT-sample and the TC-sample.

Secondary Analyses

Pretreatment anxiety accounted for 31% of the variance in post-treatment self-reported anxiety ($p < .01$). Treatment format (ICBT versus GCBT) did not account for any variation in the treatment outcome (see Table 2.3). The pre-treatment levels of the CDI and the CBCL-Int ac-

Table 2.2*Means (Standard Deviations) for Time x Treatment condition (GCBT versus ICBT)*

Measure	Pretreatment		Post-treatment	
Intent-to-treat	(GCBT)	(ICBT)	(GCBT)	(ICBT)
Child (N = 127)				
MASC	51.43 (18.36)	50.85 (18.51)	37.00 (17.37)	36.94 (19.45)
CDI	8.73 (6.38)	10.28 (7.69)	4.68 (4.20)	5.65 (5.85)
Mother (N = 126)				
CBCL-Int	21.21 (8.69)	19.40 (9.26)	16.01 (9.80)	14.66 (8.62)
Father (N = 108)				
CBCL-Int	16.02 (7.44)	16.38 (8.56)	12.63 (8.64)	13.64 (8.34)
Treatment Completers				
	(GCBT)	(ICBT)	(GCBT)	(ICBT)
Child				
MASC (115 ≤ n ≤ 119)	52.24 (18.06)	50.93 (18.78)	36.70 (17.29)	37.16 (19.26)
CDI (111 ≤ n ≤ 118)	8.87 (6.40)	10.33 (7.81)	4.76 (4.29)	5.50 (5.84)
Mother				
CBCL-Int (114 ≤ n ≤ 117)	21.45 (8.80)	19.13 (9.48)	16.16 (10.20)	14.68 (8.50)
Father				
CBCL-Int (n = 98)	15.80 (7.93)	16.26 (8.67)	13.24 (8.74)	14.04 (8.27)

Note. CDI= Childrens Depression Inventory, MASC = Multidimensional Anxiety Scale for Children, CBCL-Int = internalizing scale of the Child Behavior Checklist.

counted for 30% of the variance in outcome of self-reported depression, 39% of mother and 45% of father reported internalizing problem behaviour. Treatment format did not predict treatment outcome in any of the analyses.

Interaction effects for the presence or absence of SOP and treatment format revealed an interaction effect for internalizing symptoms as reported by fathers ($\beta = .25, p < .05$, R-Squared change = .03, $p < .05$) suggesting that children with SOP benefit more in the GCBT condition whereas in the ICBT children without SOP tend to benefit more. However, the R-Squared change was very modest and this result was only found in the TC-sample and not in the ITT-sample (mean $\beta = .20$, ns). Moreover, there was no interaction effect for the absence or presence of SOP on the MASC, CDI and CBCL-Int of mothers.

Table 2.3*Regression Analysis*

	B	(SD B)	SE B	(SD SE B)	β	(SD β)
Child (N = 127)						
Step 1 ^a						
Constant	8.57	(1.90)	4.09	(0.16)		
MASC-Pre	0.56	(0.04)	0.07	(0.00)	.55**	(0.02)
Step 2						
Constant	8.69	(1.89)	4.26	(0.09)		
MASC-Pre	0.56	(0.04)	0.07	(0.00)	.55**	(0.02)
ICBT x GCBT	-0.26	(0.23)	2.74	(0.04)	-.01	(0.01)
Step 1 ^b						
Constant	1.43	(0.24)	0.64	(0.01)		
CDI-Pre	0.39	(0.02)	0.05	(0.00)	.54**	(0.03)
Step 2						
Constant	1.64	(0.26)	0.78	(0.02)		
CDI-Pre	0.39	(0.02)	0.05	(0.00)	.54**	(0.03)
ICBT x GCBT	-0.37	(0.10)	0.77	(0.02)	-.04	(0.01)
Mother (N = 126)						
Step 1 ^c						
Constant	2.30	(0.50)	1.58	(0.04)		
CBCL-Int	0.64	(0.02)	0.07	(0.00)	0.63**	(0.02)
Step 2						
Constant	2.23	(0.50)	1.66	(0.04)		
CBCL-Int	0.64	(0.02)	0.07	(0.00)	0.63**	(0.02)
ICBT x GCBT	0.18	(0.15)	1.29	(0.04)	0.01	(0.01)
Father (N = 108)						
Step 1 ^d						
Constant	1.66	(0.25)	1.36	(0.06)		
CBCL-Int	0.71	(0.01)	0.08	(0.00)	0.67**	(0.02)
Step 2						
Constant	1.98	(0.23)	1.51	(0.08)		
CBCL-Int	0.71	(0.01)	0.08	(0.00)	0.67**	(0.02)
ICBT x GCBT	-0.61	(0.36)	1.21	(0.04)	-0.04	(0.02)

Note. Superscript^a $R^2 = .31$ (SD = .03) for Step 1; $\Delta R^2 = .00$ (SD = .00) for Step 2 ($p = ns$), ** $p < .001$), superscript^b $R^2 = .30$ (SD = .03) for Step 1; $\Delta R^2 = .00$ (SD = .00) for Step 2 ($p = ns$), ** $p < .001$), superscript^c $R^2 = .39$ (SD = .03) for Step 1; $\Delta R^2 = .00$ (SD = .00) for Step 2 ($p = ns$), ** $p < .001$), superscript^d $R^2 = .45$ (SD = .03) for Step 1; $\Delta R^2 = .00$ (SD = .00) for Step 2 ($p = ns$), ** $p < .001$).

DISCUSSION

The main purpose of this study was to investigate CBT outcome for individual versus group format for CAD. In the present study no significant difference was found between ICBT and GCBT. For GCBT 41% of the participants no longer met criteria for any anxiety disorder whereas for ICBT 48% no longer met criteria for any anxiety disorder. Fifty-four percent of the children in the GBCT no longer met the criteria for their primary disorder, whereas in ICBT 62% no

longer met the criteria for their primary disorder. Effect-sizes for the ICBT ranged from .32 to .73 and in the GCBT from .42 to .81, which is not different from the effect-sizes as reported in a recent meta-analysis (ICBT: $d = .52$ (95% CI 0.04- 0.99), GCBT: $d = .61$ (95% CI 0.44- 0.79); In-Albon & Schneider, 2007). Furthermore, regression analyses revealed that the absence or presence of SOP in interaction with treatment format did not add to the prediction of treatment outcome. With our larger sample size, we find no significant difference between ICBT and GCBT. Our results are consistent with the three previous studies investigating ICBT versus GCBT despite the fact that the sample sizes in these studies were smaller (Flannery-Schroeder & Kendall, 2000; Manassis et al., 2002; Muris, Mayer, Bartelds, Tierney, & Bogie, 2001).

So far, treatment outcome and treatment gains were usually investigated in the literature including our own study in terms of anxiety and depressive symptoms, child behaviour problems and diagnostic status. Treatment of CAD in general could also lead to secondary gains such as improved social skills or improved parental understanding of avoidant strategies. These secondary gains might contribute to generalization and the long-term maintenance of treatment gains, and could be examined in future research.

Group treatment is repeatedly argued in the literature to offer opportunities to reduce social anxiety and improve social skills in children with SOP. Support for improvement in social skills and reduction of SOP was shown in a social skills CBT-based group training for childhood SOP (Spence, Donovan, & Brechman-Toussaint, 2000). There is some empirical evidence that social skills and social performance improve more with a social effectiveness group therapy for children (SET-C) compared to an active but non-specific group treatment (testbusters) (Beidel, Turner, & Morris, 2000), however children in both situations showed improvement in social skills and social skill performance. The improvement for the testbuster situation cannot be attributed to the treatment, but it could be a consequence of the group setting. The present study showed an interaction effect for children who completed treatment as reported by fathers on the CBCL and the absence or presence of SOP, suggesting that children with SOP benefit more compared to children without SOP in the GCBT, and children without SOP benefit more in the ICBT compared to children with SOP. However this effect did not show for the other informants (mothers and children) or for the ITT-sample.

Strengths and Limitations

The present study is the first study in the literature that is adequately powered to be able to detect differences between individual and group treatment. The considerable sample size offered the opportunity to look at interactions between child characteristics and treatment format thereby exploring the possibility that clients with SOP may benefit more from individual therapy, whereas others sharing another characteristic may benefit more from group therapy. The results suggest that the absence or presence of SOP may interact with treatment format. Though the sample size in the present study is quite large, it was designed to investigate main effects and not designed for interaction effects. An adequate test of an

interaction requires an even larger sample size than for detecting a simple main effect for treatment. These considerations point at the need for an adequately powered trial testing whether SOP interacts with treatment format. Such a trial would also benefit from inclusion of a wider range of outcome variables tailored to the hypothesized advantages of group versus individual treatment (e.g., secondary treatment gains such as increase in social skills). Furthermore, we cannot rule out that the similarities in results have been achieved through different processes.

In conducting the present study we had some practical difficulties with the randomization of children to the individual or group condition. These practical difficulties are similar to clinical cases that would normally present themselves in routine care setting. Our study was limited as contrary to several other studies (e.g. Kendall, 1994; Silverman et al., 1999) interrater-reliabilities between ADIS-interviewers were not calculated. Insufficient interrater-reliability could have led to type II errors, leading to a belief that there is no effect when in reality there is. However, to ensure that administration, scoring and reporting was conducted in a reliable manner considerable effort was put into training and supervision of ADIS-interviewers. Furthermore, though ADIS-interviewers were not informed about the treatment format to which children were allocated we cannot guarantee that they were blind to the treatment condition.

It should be noted that this study by design did not include a wait-list control group. Such a group would have allowed us to examine whether only one of the formats (group or individual) was superior to a control condition, even if they did not differ from each other. Our overriding argument not to include a wait-list control group was that there had been sufficient demonstration that individual CBT was superior to wait-list control (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004) so that we could no longer assume equipoise and therefore could not ethically offer a wait list control in a randomized design (Lilford & Jackson, 1995). Furthermore, our main aim in conducting the study was addressing the practical clinical question of whether any superiority could be observed for individual CBT over the assumed more economical group CBT. For this purpose, we did not need the wait list control.

We conclude that children with anxiety disorders benefit equally from individual and group treatment. We suggest that there is a need for an adequately powered trial testing interaction effects. In such a trial secondary treatment gains should be considered besides the primary treatment gains (i.e. reduction in anxiety symptoms, depressive symptoms). Secondary treatment gains such as improvement in social skills might contribute to the maintenance and generalization of treatment success.

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3

Parenting and parental anxiety and depression as predictors of treatment outcome for childhood anxiety disorders: Has the role of fathers been underestimated?



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ABSTRACT

A substantial percentage of children with anxiety disorders do not respond adequately to Cognitive Behavioral Therapy (CBT). Examination of parental factors related to treatment outcome could contribute to a further understanding of treatment outcome responses. The present study investigated the predictive value of paternal and maternal emotional warmth, rejection, overprotection, anxiety and depression for CBT outcome in anxious children. Predictors were entered in logistic regression analyses to classify treatment success and failure. Outcome was assessed from the parent's, child's and clinician's perspective. The levels of maternal emotional warmth, paternal rejection and anxiety and depressive symptoms predicted treatment success and failure. A higher level of maternal emotional warmth was associated with a less favorable treatment outcome. Higher levels of paternal rejection, anxiety and depressive symptoms were consistently associated with a less favorable treatment outcome.

PARENTING AND PARENTAL ANXIETY AND DEPRESSION AS PREDICTORS OF TREATMENT OUTCOME FOR CHILDHOOD ANXIETY DISORDERS

Having an anxiety disorder (AD) in childhood puts children at risk for anxiety disorders and Major Depression during adolescence, young adulthood and adulthood (Goodwin, Fergusson, & Horwood, 2004; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003). Even though the empirical support is the strongest for a Cognitive Behavioral Therapy (CBT) approach (Chambless & Ollendick, 2001; Reisner, 2005; Weisz, Weiss, Han, Granger, & Morton, 1995) still 20 to 50 percent of the children in research trials for childhood anxiety disorders do not show an adequate treatment response (see review Compton, Burns, Egger, & Robertson, 2002). Subsequently, there is a need to identify factors associated with success and failure. The few studies that have examined potential predictors of treatment outcome for children with AD, found partial support for the predictive value of parental psychopathology and family functioning (e.g. Berman, Weems, Silverman, & Kurtines, 2000; Crawford & Manassis, 2001). In particular, parental affective symptoms and parental rearing style are important to study, because previous research has shown that these variables are related to an increase or maintenance of anxious responding and anxious cognitions in children with AD (e.g. Beidel & Turner, 1997; McLeod, Wood, & Weisz, 2006).

Parental Anxiety and Depression

Both top-down (Beidel & Turner, 1997; Weissman et al., 2005) and bottom-up research (Lieb et al., 2000; Messer & Beidel, 1994) has suggested a relation between elevated levels of parental anxiety and depressive symptoms and elevated levels of childhood anxiety symptoms. The results from previous studies on the predictive role of parental anxiety and depression for the outcome of CBT for children with AD appear mixed (Berman, Weems, Silverman, & Kurtines, 2000; Rapee, 2000). The majority of studies that used parental self-report measures did not find a relationship between parental anxiety and treatment outcome (Crawford & Manassis, 2001; Nauta, 2005), with the exception of two studies that reported a relation between parental (Cobham, Dadds, & Spence, 1998) and paternal (Rapee, 2000) anxiety and a less favorable treatment outcome. Results from studies that included diagnostic interviews of the parents were contradictory, with one large randomized clinical trial of individual versus family treatment suggesting that children with at least one parent with a current anxiety disorder benefited less from CBT in both treatment conditions than children of parents without an anxiety disorder (Bodden, 2007). The results from two smaller studies that included mothers only, showed greater improvement for children of mothers with an anxiety disorder during the child's lifetime (Thienemann, Moore, & Tompkins, 2006) or a current anxiety disorder (Toren et al., 2000) than children of mothers without an anxiety disorder.

Some studies also investigated if parental self-reports of depressive symptoms were related to treatment outcome of CBT for children with an AD. The majority of these studies did

not find an association (Crawford & Manassis, 2001; Rapee, 2000; Victor, Bernat, Bernstein, & Layne, 2006) with the exception of one study (Berman, Weems, Silverman, & Kurtines, 2000). Parental depressive symptoms (of which 90% of the parents in the study were mothers) significantly predicted treatment failure in the latter study. In sum, the results suggest a weak negative correlation between the presence of an anxiety or depressive disorder in one of the parents and treatment success of CBT for children with an AD.

Parental Rearing

Parental rearing style (warmth, rejection, (over) protection and anxious behavior) has been linked to the transmission of anxiety from parents to their children (Lieb et al., 2000; Moore, Whaley, & Sigman, 2004). Empirical evidence illustrated for instance that parents might enhance anxious responding in their children, as children who discussed ambiguous situations with family-members showed an increased tendency for avoidant strategies (Barrett, Rapee, Dadds, & Ryan, 1996). In a theoretical analysis of environmental influences on the development of anxiety, Chorpita and Barlow (1998) noted that the combination of the parenting styles overprotection (a pattern of intrusive governance and associated constraint imposed on the child's actions) and low warmth (responsiveness) by the parent has a relatively strong influence on the development of anxiety in children. The authors suggest that when parents are highly controlling the experience of diminished control in children might lead to an increased tendency to interpret events as out of one's control. Similarly, by a lack of warmth or responsiveness children are taught that their actions may not control or influence important reinforcers in the environment (Chorpita & Barlow, 1998). A recent meta-analysis (McLeod, Wood, & Weisz, 2006) and two reviews consistently identified higher rates of parental control as a substantial parenting factor related to anxiety in children (Bögels & Brechman-Toussaint, 2006; Wood, McLeod, Sigman, Hwang, & Chu, 2003). There is accumulating evidence that emotional warmth in families is also related to childhood AD. Two observational studies supported a relation between lower rates of emotional warmth or care (emotional climate) and higher levels of anxiety symptoms in their children (Barrett, Fox, & Farrell, 2006; Whaley, Pinto, & Sigman, 1999). The meta-analysis by McLeod et al. (2006) also identified a relationship between parental rejection and child anxiety.

Researchers have started to investigate a variety of family factors as predictors of treatment outcome in children with AD and some of the results support the relation between familial predictors and treatment outcome. Family dysfunction has been found to predict improvement as based on information from clinicians, children and both mothers and fathers (Crawford & Manassis, 2001). Higher pre-treatment levels of family cohesion (emotional bonding of family members) were associated with a greater decrease in child anxiety at post-treatment for children treated with group CBT (Victor, Bernat, Bernstein, & Layne, 2006).

Fathers and Mothers or Parents?

The results from several studies showed differences between fathers and mothers in parenting styles and parental rearing behaviors; these differences suggest that parental rearing of fathers and mothers should not be considered equivalent a priori (Aunola & Nurmi, 2005; Bögels & van Melick, 2004). Moreover, the findings of studies investigating maternal and paternal treatment outcome predictors separately showed differential results for mothers and fathers (Crawford & Manassis, 2001; Rapee, 2000). These findings underline the importance to investigate the impact of parental predictors for treatment outcome separately for mothers and fathers.

Studies tend to report parenting from either the parental or the child perspective and seldom from both perspectives. The use of a multi-informant perspective appears important, as it has been shown that parents and children tend to perceive parenting differently (Caster, Inderbitzen, & Hope, 1999). A useful approach to cope with discrepancies in perception of informants is the use of corresponding questionnaires for children and parents.

The Present Study

The present study will investigate if maternal and paternal anxiety and depression, and maternal and paternal rearing style are predictive for the outcome of CBT for children with an AD. We examined both single and combined variables as predictors of outcome.

METHOD

Participants

The sample was selected from all consecutive referrals of 8-12 year old children to the Anxiety and Depression Unit of the outpatient university clinic for Child and Adolescent Psychiatry of Leiden University Medical Center (LUMC)/ Curium and Erasmus Medical Center Rotterdam/Sophia. The present study is part of a larger study on a stepped care model investigating the effect of an additional treatment protocol for nonsponders to the CBT program. As part of the routine clinic procedure, all children and their parents were interviewed with the child version of the Anxiety Disorders Interview Schedule (ADIS-C/P; Silverman & Albano, 1996). Children who received a primary diagnosis of Separation Anxiety Disorder, (SAD), Generalized Anxiety Disorder (GAD), Social Phobia (SOP) or Specific Phobia (SP) were included in the target sample. Exclusion criteria were an IQ below 85, poor command of the Dutch language, serious physical disease, Substance Abuse Disorder, Pervasive Developmental Disorder, Selective Mutism, Schizophrenia or another psychotic disorder. Children with Obsessive Compulsive Disorder, Posttraumatic Stress Disorder and Panic Disorder were excluded because at that time there was no empirical evidence that children would benefit more from CBT compared to medical or combined treatment. Children who received medication for anxiety

disorders were withdrawn from medication, if possible, or excluded. Children who received methylphenidate for ADHD problems ($n = 5$) were not excluded from the study.

In total, 142 children (aged 8-12) diagnosed with an anxiety disorder and their parents were invited to participate. Parents of 133 subjects signed informed consent and both parents and children started treatment. Since nine children did not complete the treatment protocol the resulting sample of treatment completers consisted of 124 children. Sixty-five children were individually treated and fifty-nine were treated in group format. Seventy-five boys and 58 girls participated. The primary diagnoses of the children ($n = 124$) were SAD ($n = 50$), GAD ($n = 36$), SOP ($n = 20$) or SP ($n = 18$). Seventy children (56%) had at least one comorbid disorder: 42 children (32%) were comorbid with another anxiety disorder and 19 children (15%) had two or more comorbid anxiety disorders. Eight children (6%) had either comorbid depression or dysthymia. The socioeconomic status (SES) of 19 children was low, the SES of 57 children was medium and the SES of 48 children was high at baseline (Central Bureau of Statistics Netherlands, 2001).

One hundred and twenty-three mothers and 108 fathers participated. Seven children did not maintain contact with their fathers or the fathers were unknown, one father and one mother died and two fathers lacked sufficient proficiency in Dutch. Six fathers refused to participate. One-hundred-and-one children (81%) lived in a two-parent household. Demographic variables are presented in Table 3.1.

Treatment

Children were treated with a Dutch translation of the FRIENDS program (Barrett & Turner, 2000; Utens, de Nijs, & Ferdinand, 2001). The FRIENDS program is an adaptation of the Coping Cat workbook (Kendall, Kane, Howard, & Siqueland, 1990). FRIENDS is a manualized treatment and based on a theoretical framework with three main target areas for change: physical symptoms, cognitive processes and coping skills. Children are taught coping techniques such as relaxation and breathing exercises to learn to cope with physical symptoms of anxiety. Children are also taught to challenge negative cognitions, irrational beliefs and negative self-talk by changing them into helpful cognitions, realistic beliefs and positive self-talk. Increased awareness of avoidant strategies is stimulated, as well as the development of problem solving skills and coping skills. In the second half of the therapy, gradual exposure to the feared stimulus and underlying fears is more prominent. Attempts to cope are positively rewarded. The FRIENDS treatment is delivered individually and in group format in 10 weekly child sessions and 4 parent sessions. Parent sessions focus mainly on psychoeducation. The treatments of the individual and group format corresponded as much as possible. Differences were inherently related to the formats; the presence or absence of peers and the presence of either one or two therapists.

Table 3.1
Demographic Data on Participants, Treatment Completers (n)

Variable		Boys	Girls
Child	Gender	68	56
Age ¹	Child	9.96 (1.16)	10.19 (1.41)
	Mother	40.15 (4.43)	39.78 (4.20)
	Father	43.34 (5.34)	42.87 (5.55)
SES	Low	14	5
	Middle	33	24
	High	21	27
Diag	SAD	32	18
	GAD	19	17
	SP	7	11
	SOP	10	10
Comorbidity ¹		2.00 (1.08)	1.75 (0.92)
Treatment Success ²			
	Clinician (ADIS-C/P)	30 (44%)	26 (46%)
	Child (MASC)	27 (40%)	20 (36%)
	Parents (CBCL-Int)	13 (19%)	9 (16%)

Note. Superscript¹= mean of the total number of disorders, SD in parentheses, superscript²= *n* with percentages in parentheses, CBCL-Int = CBCL internalizing scale.

MEASURES

Diagnostic Status

The Anxiety Disorders Interview Schedule for DSM-IV child and parent version (ADIS-C/P; Silverman & Albano, 1996) is a semi-structured interview schedule for children aged 6-18. In the present study the interview was administered to both parents and children at pre- and post treatment in order to obtain clinical information and to derive DSM-IV diagnoses for the children (Silverman & Albano, 1996). The interview is organized according to DSM-IV criteria and yielded kappa coefficients of agreement for SAD, SOP, SP and GAD ranging from .62 to .92 for both the child and the parent interview in an American sample (Silverman, Saavedra, & Pina, 2001). A Dutch translation of the ADIS-C/P (Siebelink & Treffers, 2001) was made in close consultation with the first author (Silverman).

Child Completed Measure of Anxiety

Children's self-reported anxiety symptoms were assessed with the Multidimensional Anxiety Scale for Children (MASC; March, 1997; March, Sullivan, & Parker, 1999). The MASC is a 39-item general measure of pediatric anxiety. A translation of the MASC by Utens and Ferdinand (2002) was used to generate Dutch normative data (*N* = 299, age 8-12). Reliability analyses revealed an excellent Cronbachs' alpha ($\alpha = .93$) and good test-retest reliability ($r = .81$, *n* = 196, age 8-12). The total score of the MASC was used to determine the child completed anxiety outcome score.

Parent Completed Measure of Child Functioning

The Child Behavior Checklist (CBCL) is a well-known and researched 113-item scale that assesses child behaviour problems by parents and has shown good reliability and validity (Achenbach & Rescorla, 2001). The internalizing scale of the CBCL (CBCL-Int) will be used for the present study. Cronbachs alpha of the CBCL-Int for the clinical population in the present study ranged from .84 for mothers to .85 for fathers.

Child and Parent Completed Measures of Parenting Styles

Two versions of the EMBU (Egna Minnen Beträffande Uppfostran; Swedish acronym for My memories of upbringing, child and parent versions) have been developed for the measurement of parental rearing from both the child's and parent's perspective (Markus, Hoogendijk, & Treffers, 2006; Markus, Lindhout, Boer, Hoogendijk, & Arrindell, 2003). The items of the EMBU-C and EMBU-P reflect children's and parents' current thoughts on parenting practices and experiences of parenting behavior with regard to emotional warmth, rejection and overprotection. Higher amounts of emotional warmth correspond with parents who are emotionally warm and responsive towards their children, by showing affection and interest and by being supportive, comforting and rewarding. Higher levels of rejection correspond with more harsh and unfriendly attitudes of the parents such as unnecessarily punishment or rudeness towards their children. Overprotection resembles parental control and higher levels correspond with being more (overly) protective and frequently interfering with the activities of the children.

In an exploration of the underlying dimensional framework of the Dutch child version of the EMBU (EMBU-C) the full range of 81 items was grouped into four reliable factors: Emotional Warmth (19 items), Rejection (17 items), Overprotection (12 items) and Favoring Subject (4 items) (Markus, Lindhout, Boer, Hoogendijk, & Arrindell, 2003). Data were collected from a school-based sample of 824 children aged 7-13. Alpha coefficients for the child reported scales on mothers and fathers ranged from .64 for Overprotection to .89. The scale Favoring Subject resulted in lower reliability scores (.54 and .58 respectively) in the original sample as well as in the present clinical sample and was therefore excluded from further analyses. Grüner, Muris and Van Brakel (2003) developed an additional EMBU scale for the Dutch child version with satisfactory psychometric properties ($\alpha = .79$, 9 items) assessing children's perceptions of parents' anxious rearing practices as parental modeling of anxious behavior is possibly related to children's fears.

The results of explorative factor analyses showed that a total of 81 items for the Dutch parent version of the EMBU (EMBU-P) could be reduced to 57 items covering Emotional Warmth (16 items), Rejection (22 items), Protection (11 items) and Favoring (8 items). Data were collected from 439 mothers and 373 fathers. Alpha coefficients ranged from .65 for the scale Favoring to .89 for the scale Emotional Warmth (Markus, Hoogendijk, & Treffers, 2007). Conceptually, the four scales are very similar to the EMBU-C.

Parent Completed Measure of Parental Anxiety and Depressive Symptoms

The Depression, Anxiety and Stress Scales (DASS) provides a self-report assessment of depression, anxiety and stress symptoms in adults (De Beurs, Van Dyck, Marquenie, Lange, & Blonk, 2001; Lovibond & Lovibond, 1995). The DASS includes 42 items, each loading on one of the following three factors: depression, anxiety and stress. The psychometric properties of the Dutch translation were studied in a clinical ($n = 173$) and a non-clinical adult sample ($n = 289$). The structure of the original instrument was replicated in both samples with exploratory and confirmatory factor analyses. Alpha coefficients for the three scales ranged from .94 to .97 for the non-clinical population, and from .75 to .89 for the clinical population. Since the focus of the present study is on anxiety and depressive symptoms, the stress-scale will be left out of the analyses. The depression and anxiety scales of fathers and mothers in the present study showed a skewed distribution and were recoded into ordinal variables (0 = no symptoms, 1 = one or more symptoms), this distinction was supported by ROC-analysis.

PROCEDURE

Experienced psychologists using a translated version of the Anxiety Disorders Interview Schedule for DSM-IV interviewed children and parents separately (Siebelink & Treffers, 2001). After the initial routine clinical assessment verbal and written consent were obtained from the parents as well as children aged 12. Children were assigned to either individual or group CBT by sequential randomization. Previous analyses showed that there are no significant differences in outcome (free of any anxiety disorders at post treatment) between individual and group treatment ($\chi^2(1, 124) = 0.55, p = .46$) (Liber et al., 2008). Pre-treatment measures were administered to both parents and children. A waiting list (WL) condition was not used, since there is strong evidence that CBT for children with an AD is more effective than a WL condition (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004).

Sample Size and Missing Data

The results are based on the sample of children ($N = 133$) who started treatment minus nine children (6.8%) who dropped out of treatment ($n = 124$). To examine the predictive value of parental factors for treatment outcome in children and their parents the treatment completers sample was used in all analyses. Treatment completers and non-completers did not differ significantly on social economic status, age, gender or primary diagnosis. Neither did the treatment completers and non-completers differ significantly on the predictors (EMBU-C, EMBU-P or DASS), on the outcome measures (MASC or father and mother completed CBCL internalizing scale) or with regard to individual reliable change (RC_{IND} , see data analysis) or clinically significant change (CS, see data analysis). Means and standard deviations of predictors and outcome measures are presented in Table 3.2.

Table 3.2*Means and SD's for Parental Rearing Styles and Parental Anxiety & Depressive Symptoms*

	Mother	Father
Child report		
Rejection	24.22 (5.52)	24.78 (5.88)
Protection	21.50 (5.33)	20.23 (4.83)
Emotional warmth	63.64 (9.37)	60.10 (11.10)
Anxious Rearing	18.76 (4.62)	17.38 (4.64)
Parent report		
Rejection	33.47 (4.77)	33.65 (4.66)
Protection	22.73 (3.56)	20.98 (3.56)
Emotional Warmth	57.38 (4.77)	53.31 (6.50)
Parental		
Anxiety	2.52 (4.59)	1.55 (3.45)
Depression	3.41 (4.48)	2.66 (4.67)
Parental Outcome Measure		
CBCL-Int pre treatment	20.05 (9.20)	15.94 (8.10)
CBCL-Int post treatment	15.23 (9.28)	13.31 (8.28)
	Child	
Child Reported Outcome		
MASC pre treatment	51.41 (18.33)	
MASC post treatment	36.93 (18.27)	

Note. Means with SD in parentheses.

Data Analysis

To assess the predictive value of parental rearing and parental affective symptoms a stepwise data-analytic strategy was used. First the large number of potential predictors was reduced. Therefore, associations between the predictors and treatment outcome were explored by calculating partial correlations. In addition, the means of the predictors were compared for the treatment success and treatment failure groups. Bonferroni correction was additionally reported to correct for Type 1 errors; as a criterion of significance the α -level was divided by the number of scales per test. Variables that showed a significant association with outcome or were significantly different between the treatment success and failure groups were selected as predictors, variables that showed a trend after Bonferroni correction were also included as predictors. The thus obtained predictors were subsequently entered into a logistic regression analysis to confirm and verify the predictive value. Regression analyses offer the possibility to test a model including and testing more than one predictor simultaneously.

Treatment success and failure were determined by post-treatment diagnostic status and symptom reduction. Post treatment diagnostic status (presence (1) or absence (0) of any anxiety disorder) as assessed with the ADIS-C/P was used to reflect the clinical point of view on treatment success. The CBCL-Int for fathers and mothers were used to reflect the parental point of view on symptom reduction and the MASC was used to reflect the child's point of view on symptom reduction.

Individual reliable change and clinically significant change are the methods of choice to describe pre to post treatment change based on questionnaire information (Wise, 2004) as comparison of pre and post-treatment scores do not tell how individuals fared in treatment or whether a clinical significant change was obtained. The child's and parental point of view on treatment success was expressed by the Reliable Change scores (RC-scores) and Clinically Significant Change indices (CS-index) that were computed from the pre and post-treatment self-reports (MASC) and parent-reports (CBCL-Int), using the computation methods developed by Hageman and Arrindell (1999). Treatment outcome studies tend to use observed difference scores (difference between the pre- and post measurement for individual clients). However, observed difference scores are influenced by regression to the mean due to errors of measurement. Therefore, RC-scores, the most precise possible estimation of the true pre-post differences, were used. The RC-score is the normal deviate (z-score) of the value 0 within the (conditional) distribution of true difference scores given the observed difference score. For measures with a nearly perfect reliability, the RC-score is nearly a linear function of the observed difference score, as the observed and true differences scores will be almost similar. When the reliability of the measure approaches zero the RC-score will approach a constant, representing the overall mean of the observed difference scores. So, using the RC-score in outcome prediction studies represents a more conservative approach than using the observed difference score, if the outcome measure has a lower than nearly perfect reliability.

The RC-score can be transformed into three categories (RC_{IND} index); improved ($RC\text{-score} < -1.65$), not reliably changed ($-1.65 \leq RC\text{-score} \leq 1.65$) and deteriorated ($RC\text{-score} > 1.65$). A client whose RC-score indicates improvement and whose post-score on the outcome measure is passing the cutoff for 'normal' functioning in the correct direction, is considered to have 'recovered' or to show a clinically significant change. The CS-index as used in this study, is a dichotomy of 'recovered' versus 'not/ partially recovered'. In order to determine which clients have reliably passed the cutoff for 'normal functioning', the CS_{INDIV} -score was computed (using cutoff type c). The CS_{INDIV} -score is, analogous to the RC-score, the normal deviate of the cutoff score within the (conditional) distribution of true post-scores given the observed post-score. A CS_{INDIV} -score < -1.65 is used to conclude that the individual client has passed the cutoff for 'normal' functioning (a lower score indicates more 'normal' functioning with all outcome measures used in this study).

The CS indexes from fathers and mothers were combined: if the pre- and post-treatment CBCL-internalizing scores of either parent resulted in a CS index of 'recovered', the outcome was considered successful unless the RC-score of the other parent was > 1.65 ('deteriorated'). The CS of the CBCL internalizing scores for mothers and fathers showed a correlation of .67 ($p < .001$).

Finally, logistic regression analyses were conducted to confirm the validity of the selected predictors. Variables were used if they were associated with outcome or had shown a signifi-

cant difference between the treatment success and failure groups for the ADIS-C/P, the MASC or CBCL-Int.

RESULTS

Preliminary Analysis

Demographic variables.

The recovered and not/ partially recovered groups (ADIS-C/P, MASC and CBCL-Int) were compared with regard to age, gender and SES. Results did not show any significant differences between the two groups. Therefore these variables were left out of subsequent analyses.

Treatment Outcome.

The CS index revealed that 37.9% ($n = 47$) of the children were recovered when assessed with the MASC. The combined CBCL-Int results of the parents revealed that 17.7% ($n = 22$) of the children fell into the recovered group and 80.6% ($n = 100$) fell into the not/ partially recovered group. With regard to diagnostic status, the results showed that 45.2% ($n = 56$) was free of any anxiety disorder at post treatment (*recovered*), and 58.9% ($n = 73$) was free of their primary disorder at post treatment.

Interinformant agreement.

The agreement between the MASC-based grouping and the combined CBCL-Int results of the parents ($\kappa = .06$, $p = ns$) was nonsignificant. The agreement between the MASC-based grouping and diagnostic status was slight ($\kappa = -.31$, $p < .001$). The agreement between the grouping based on the CBCL-Int and diagnostic status was also slight ($\kappa = -.25$, $p < .001$).

Selection of Predictors for Treatment Outcome

Partial Correlations with Child-reported and Parent-reported Outcome.

Potential predictors of child and parent reported outcome (MASC, CBCL-Int) were identified by calculating the partial correlations that express the relationships between each of the potential predictor variables (measuring parental affective symptoms or parental rearing styles) and the post-treatment levels of anxiety symptoms (MASC) and internalizing symptoms (CBCL-Int) with the pretreatment levels of anxiety respectively internalizing symptoms entirely controlled. The CBCL-Int scales for fathers and mothers were highly correlated both pre and post-treatment (pre: $r = .56$, $p < .001$, post: $r = .67$, $p < .001$) and therefore combined. Partial correlations for the CBCL internalizing symptoms were calculated for the combined scores of fathers and mothers.

Paternal anxiety ($r = .21, p < .05$) and depressive symptoms ($r = .25, p < .05$) showed a significant partial correlation with internalizing symptoms on the combined CBCL-Int, indicating less reduction of parent reported internalizing symptoms with higher levels of paternal anxiety and depressive symptoms. The results regarding paternal depressive symptoms remained significant after Bonferroni correction ($p < .017$), whereas the results regarding paternal anxiety revealed a trend ($.017 < p < .050$). No predictors were found for symptom-change as measured by the MASC.

Differences Between Treatment Success and Treatment Failure Groups.

Predictor variables for treatment recovery were selected by testing differences (in predictors) between the recovered and not/ partially recovered groups based on diagnostic status, the MASC and the CBCL-Int scales using T-tests or Chi-square tests. Comparison of the treatment success and the treatment failure groups based on diagnostic status (free of anxiety disorder or not) revealed a significant difference for paternal self-reported rejection and paternal depressive symptoms. Fathers of children who did not respond sufficiently to the treatment (treatment failure) reported more often depressive symptoms and higher levels of rejection (see Table 3.3). After Bonferroni correction the results for paternal rejection (α -level = .017) revealed a trend ($.017 < p < .050$) whereas the results for paternal depressive symptoms remained significant ($p = .012$).

The recovered and not/ partially recovered groups as reported by parents (CBCL-Int) showed significant differences for paternal self-reported rejection, overprotection, depressive symptoms and anxiety symptoms and child reported paternal anxious rearing. The results indicated that fathers of children in the not/ partially recovered group reported more often anxiety and depressive symptoms and higher levels of rejection, overprotection and anxious rearing. After Bonferroni correction only the results regarding paternal anxiety remain significant, the α -levels for paternal rejection ($p = .03$), overprotection ($p = .04$), depressive symptoms ($p = .02$) and anxious rearing ($p = .05$) revealed trends. Additionally, child reported maternal warmth and child reported maternal anxious rearing were significantly different for the parent reported recovered and not/ partially recovered groups. Children in the not/ partially recovered group reported significant higher levels of maternal anxious rearing. The results for maternal emotional warmth are contrary to what was expected: children in the recovered group described their mothers as significantly less emotional warm (see Table 3.3). After Bonferroni correction the results for child reported emotional warmth remained significant ($p = .01$), but the results for child reported anxious rearing revealed a trend ($p = .02$). The recovered and not/ partially recovered groups as reported by the children (MASC) did not show any differences with regard to parenting styles or parental anxiety and depression.

Table 3.3*Predictors of Treatment Recovery and Failure*

Predictor Variables	Clinical outcome		Parental outcome		Child reported outcome	
	recovered	not recovered	recovered	not recovered	recovered	not recovered
I. Rearing Styles						
EMBU-C scales						
Rejection M	24.12 (5.14)	24.30 (5.84)	23.97 (4.75)	24.28 (5.69)	24.46 (5.62)	24.15 (5.48)
E Warmth M	62.62 (9.25)	64.45 (9.45)	59.11 (12.64)	64.60 (8.27) [*]	63.20 (10.23)	63.80 (9.06)
Protection M	21.39 (5.61)	21.60 (5.21)	20.10 (5.05)	21.81 (5.36)	21.20 (6.49)	21.40 (4.72)
Anx R M	18.79 (4.77)	18.82 (4.51)	16.65 (4.80)	19.27 (4.47) [†]	17.91 (4.91)	19.28 (4.08)
Rejection F	24.48 (5.16)	25.03 (6.46)	23.98 (5.19)	24.96 (6.04)	24.62 (5.65)	24.80 (6.12)
E Warmth F	60.11 (9.79)	60.10 (12.14)	56.60 (13.42)	60.85 (10.47)	61.20 (10.84)	59.74 (4.68)
Protection F	20.22 (5.07)	20.24 (4.66)	19.26 (4.15)	20.52 (4.94)	20.03 (5.48)	20.35 (4.52)
Anx R F	17.51 (4.61)	17.38 (4.67)	15.55 (4.26)	17.86 (4.62) [†]	16.71 (4.93)	18.02 (4.46)
EMBU-P scales mother						
Rejection	33.01 (4.35)	33.85 (5.10)	33.45 (5.03)	33.47 (4.74)	33.16 (4.65)	33.77 (4.94)
E Warmth	57.37 (4.14)	57.38 (5.27)	58.20 (3.83)	57.20 (4.94)	57.35 (5.05)	57.19 (4.59)
Protection	22.56 (3.20)	22.87 (3.85)	22.35 (2.86)	22.91 (3.70)	22.77 (3.68)	22.71 (3.58)
EMBU-P scales father						
Rejection	32.59 (4.28)	34.58 (4.82) [†]	31.76 (3.91)	34.12 (4.74) [†]	33.63 (4.05)	33.72 (5.08)
E Warmth	53.64 (6.56)	53.04 (6.49)	52.18 (5.69)	53.59 (6.69)	53.94 (6.38)	52.86 (6.69)
Protection	20.82 (3.93)	21.12 (3.25)	19.62 (2.64)	21.32 (3.69) [†]	20.76 (3.92)	21.34 (3.36)
II. Affective problems^a						
DASS Mother						
Depression	46.4%	50.7%	45.5%	49.5%	66.0%	66.2%
Anxiety	66.1%	61.2%	77.3%	60.4%	46.8%	56.9%
DASS Father						
Depression	44.6%	59.7% [*]	22.7%	41.6% ^{†/†}	65.1%	64.3%
Anxiety	39.3%	37.3%	40.9%	55.4% ^{†/†}	48.8%	44.6%

Note. Means, SD's of child and parent-reported predictors of success and failure for clinical, parental and child reported outcome. Superscript ^a: % children per group with a mother/ father with depressive or anxious symptoms. E Warmth= emotional warmth, Anx R= anxious rearing, M= mother, F= father, significance based on Bonferroni: ^{*} = $p < .017$, [†] $p < .05$; significant correlation: [†] = $p < .017$, ^{††} $p < .05$

Logistic Regression Analyses

The variables that showed a (partial) correlation with outcome or showed a difference between the recovered and not/ partially recovered groups were included as predictor variables in the regression analyses (backward) to confirm their predictive value. Variables that showed a trend after Bonferroni correction were also included. The resulting model showed that paternal rejection, child reported maternal warmth and paternal anxiety predicted parent reported treatment outcome. Paternal depressive symptoms predicted post treatment diagnostic status (see Table 3.4). There were no indications for multicollinearity, though paternal depressive symptoms and paternal rejection correlated significantly ($r = .24$, $p < .05$). It was hypothesized that the contribution of the predictors might be different for boys and girls, therefore the analyses were repeated with gender as an interaction variable, the results did not support interaction effects with any of the selected predictors.

Table 3.4
Logistic Regression Analyses

	B	SE(B)	Wald	df	Exp(B) (95% CI)
Parental Outcome ¹					
Constant	9.40	3.55	7.01**	1	12,102.25
Rejection F	-0.19	0.08	6.00*	1	0.82 (0.71-0.96)
ChildWarmth M	-0.09	0.04	6.61*	1	0.91 (0.85-0.98)
Anxiety F	1.80	0.73	6.01	1	6.04 (1.44-25.39)
Clinical Outcome ²					
Constant	0.45	0.26	3.01	1	1.56
Depression F	-1.02	0.43	5.54*	1	0.36 (0.16- 0.84)

Note. M= mother, F= Father, Child= Child-reported, $p < .05 = *$, $p < .01 = **$, superscript¹: Nagelkerke $R^2 = .30$, Cox and Snell $R^2 = .20$, Hosmer and Lemeshow = 4.13, $p > .05$, superscript²: Nagelkerke $R^2 = .07$, Cox and Snell $R^2 = .05$, Hosmer and Lemeshow = 0.00, $p > .05$

DISCUSSION

The present study investigated the predictive value of parental anxiety, depression and parental rearing styles in treatment outcome for children with AD. It was assumed that potentially anxiety enhancing or anxiety maintaining parental characteristics could hinder generalization of newly learned adaptive behavior from the therapy setting to daily life. The main results of our study indicate a negative role for paternal rejection, paternal depressive and anxiety symptoms and surprisingly child reported maternal warmth in the prediction of treatment success.

In this study, 124 clinically referred children were diagnosed, and treated with FRIENDS, a structured and brief CBT program. Percentages of children who improved significantly as assessed with the ADIS-C/P were in line with previous treatment outcome studies including clinically referred children with AD (e.g. Kendall, 1994). The percentage of parent reported recovered children was not as high as other studies in the literature, likely due to the data-analytic strategy used which has been described as the most conservative in the estimation of treatment success (Bauer, Lambert, & Nielsen, 2004). A considerable number of children obtained significant improvement according to mothers ($n = 61$, 49.2%) and fathers ($n = 24$, 19.4%) but only a limited number of these children met criteria for the label 'recovered'. Exploratory analyses were carried out to reduce the number of potential predictors. The thus selected paternal predictors were father reported rejection, anxiety and depressive symptoms and child reported paternal anxious rearing. Selected maternal predictors were child reported emotional warmth and anxious rearing. Predictors that remained significant after Bonferroni correction were self-reported paternal depressive and anxiety symptoms and child-reported maternal emotional warmth. Predictors that were identified across informants (also including Bonferroni trends) were paternal self-reported rejection and depressive symptoms.

Regression analyses were conducted to confirm the validity of the selected predictors and showed that less paternal rejection, higher levels of child-reported maternal emotional warmth and paternal anxiety symptoms significantly predicted parental defined recovery. Paternal depressive symptoms significantly contributed to the prediction of an anxiety disorder post-treatment. In sum, the variables that consistently showed a significant contribution to the prediction of a less successful outcome were paternal anxiety and depressive symptoms, paternal rejection and maternal emotional warmth.

It is an intriguing finding that studies including mothers and fathers separately found differential findings for mothers and fathers, with a significant contribution for fathers. The identified predictors vary from paternal anxiety (Rapee, 2000) and paternal somatization (Crawford & Manassis, 2001) to paternal anxiety and depressive symptoms and rejection in our study. In the present study the level of anxiety, depression and rejection was not significantly different for mothers and fathers, but only for fathers these variables contributed to the prediction of treatment outcome. Fathers who reported depressive symptoms might act more rejecting due to a depressed mood. The significant correlation between paternal depressive symptoms and paternal self-reported rejection supports this hypothesis. The findings suggest that the impact on treatment outcome of parental anxiety and depressive symptoms and parental rejection is stronger for fathers than mothers.

The results with regard to maternal emotional warmth are surprising, especially since no other studies have found similar results. High levels of child reported maternal emotional warmth could result from mothers who are extremely reassuring which could be perceived by the child as emotionally warm. As mentioned before, the results of the various studies are inconsistent and often involved mothers; several studies showed a negative effect of maternal or parental anxiety on treatment outcome (Berman, Weems, Silverman, & Kurtines, 2000; Bodden, 2007; Cobham, Dadds, & Spence, 1998) whereas others showed that children from anxious mothers benefited more from treatment compared to children from nonanxious mothers (Thienemann, Moore, & Tompkins, 2006; Toren et al., 2000). The finding that anxiety levels of the fathers are related to treatment failure group membership of the child is similar to the results of Rapee (2000).

Implications for Treatment

Identification of predictors of treatment outcome might give direction to the individual tailoring of treatments and guide improvement of current treatments and subsequently treatment response. The results of the current study suggest an important role for fathers, especially for those who report anxiety and depressive symptoms or rejection. For clinical practice it appears of great importance to know what might hinder treatment in being effective. Our findings indicate that several variables related to parental affective symptoms and parental rearing style impact negatively on treatment outcome. Therefore, parenting styles and parental anxiety appear barriers to treatment success. Though it is tempting to suggest we should

treat the anxiety and/or depression in parents and thereby removing anxiety maintaining or anxiety enhancing factors, it is premature to conclude that altering these variables will result in an enhanced or sustained treatment outcome. Even if it would be possible to alter anxiety maintaining or enhancing variables in parents drastically, this does not necessarily result in a changed perception in the child of their parents as 'anxious', 'depressed' or 'rejecting'.

A recent meta-analysis reported that the results of parental involvement in the treatment of children with an AD are inconsistent and no significant differences in outcome were found for child- and family focused treatment ($n = 16$ versus $n = 10$; In-Albon & Schneider, 2007). It should be noted that there were such essential differences between the family-focused studies mutually that a statement on the overall effect of parental involvement appears unjustified (e.g. parental anxiety or depressive symptoms versus life-time diagnoses, age of participants, design). Furthermore, family-focused treatment does not equal the treatment of adult anxiety and/ or depression. For instance, several studies did not find a surplus value of (additional) parent sessions with a focus on training of parents in child anxiety management skills (Mendlowitz et al., 1999; Nauta, Scholing, Emmelkamp, & Minderaa, 2003), or the surplus value faded over years (Barrett, Duffy, Dadds, & Rapee, 2001). Conversely, when anxious parents received parental anxiety management training the percentage of children who no longer met diagnostic criteria for an AD was significantly higher compared to percentage of AD diagnosis free children whose anxious parents did not receive this treatment (Cobham, Dadds, & Spence, 1998). The results of the present study suggest that parental depression management might enhance treatment outcome. Given that we do not know whether altering of parental anxiety and depressive symptoms might lead to a changed perception in children of their parents, this point of view appears worthy of exploring.

Limitations and Strengths

The relationship between paternal depressive symptoms and treatment success or failure was not reported by both members of the parent-child dyad; treatment outcome based on child reported anxiety symptoms was not predicted by any of the parenting or parental variables. Therefore these results should be interpreted with caution; we cannot say that the child's perception on treatment outcome is more or less important than the perception of parents or clinicians. As the aim of the study was to identify variables that could help to predict treatment outcome, the results were effective. Additionally, even though the findings with regard to parental depressive symptoms and rejection were consistent across informants and outcome measures, the associations were moderate and the contribution to and improvement of the regression models fairly modest. Therefore, these results need further investigation and replication in future studies.

In the present study, parental anxiety and depression were not clinically diagnosed but assessed with questionnaires. As far as the authors are aware of, previous studies did not investigate if diagnostic status of depression in parents was related to the treatment outcome

of CBT for childhood AD. It appears important for future research to study if the presented results can be replicated when parental depressive symptoms are diagnostically assessed for both fathers and mothers. Depressive symptoms were operationalized as present (1 or more symptoms) or absent (no symptoms). The usefulness of this distinction has both advantages and disadvantages. Information on parental diagnostic status would have been a more stringent method to assess parental depression and anxiety. For instance, children of mothers with a current anxiety disorder ($n = 12$) improved more than children of nonanxious mothers ($n = 12$) (Toren et al., 2000). The disadvantage of diagnostic status is in the risk of overlooking the impact of mild depressive symptoms. The presented findings suggest that parent reported outcome is sensitive to father reported depressive symptoms. The relation between paternal depressive symptoms, father reported rejection and a less favorable treatment outcome might have been predisposed by a paternal negative response style, especially as child reported treatment outcome was not predicted by these variables and tended to be more optimistic in general.

Parental factors of mothers and fathers were investigated separately, as if maternal and paternal parenting were unrelated. In reality, interaction patterns in parenting could be important to treatment outcome. For instance, mothers might try to compensate for the depressive symptoms and rejecting parenting style in their male parenting-partners by being warmer. This would imply that having two parents with elevated levels of psychopathology or disadvantageous parenting styles could be a stronger predictor than having one parent with similar problems.

A strength of the present study is the considerable clinical population included and the low drop-out rate. A second strength is the use of a refined and clinically relevant method to define treatment success and treatment failure groups, as well as the use of partial correlations to detect predictors. The strategic approach was chosen for its similarities with previous studies and therefore offers comparison possibilities. We did however not study if treatment led to changes in parenting styles, parental anxiety or depression. Change in these variables could have been more important for treatment success or failure than pretreatment levels of parenting, parental anxiety and depression since it might reflect the capacity of a family and its members to change and implement newly learned adaptive behavior.

Implications for Research, Policy and Practice

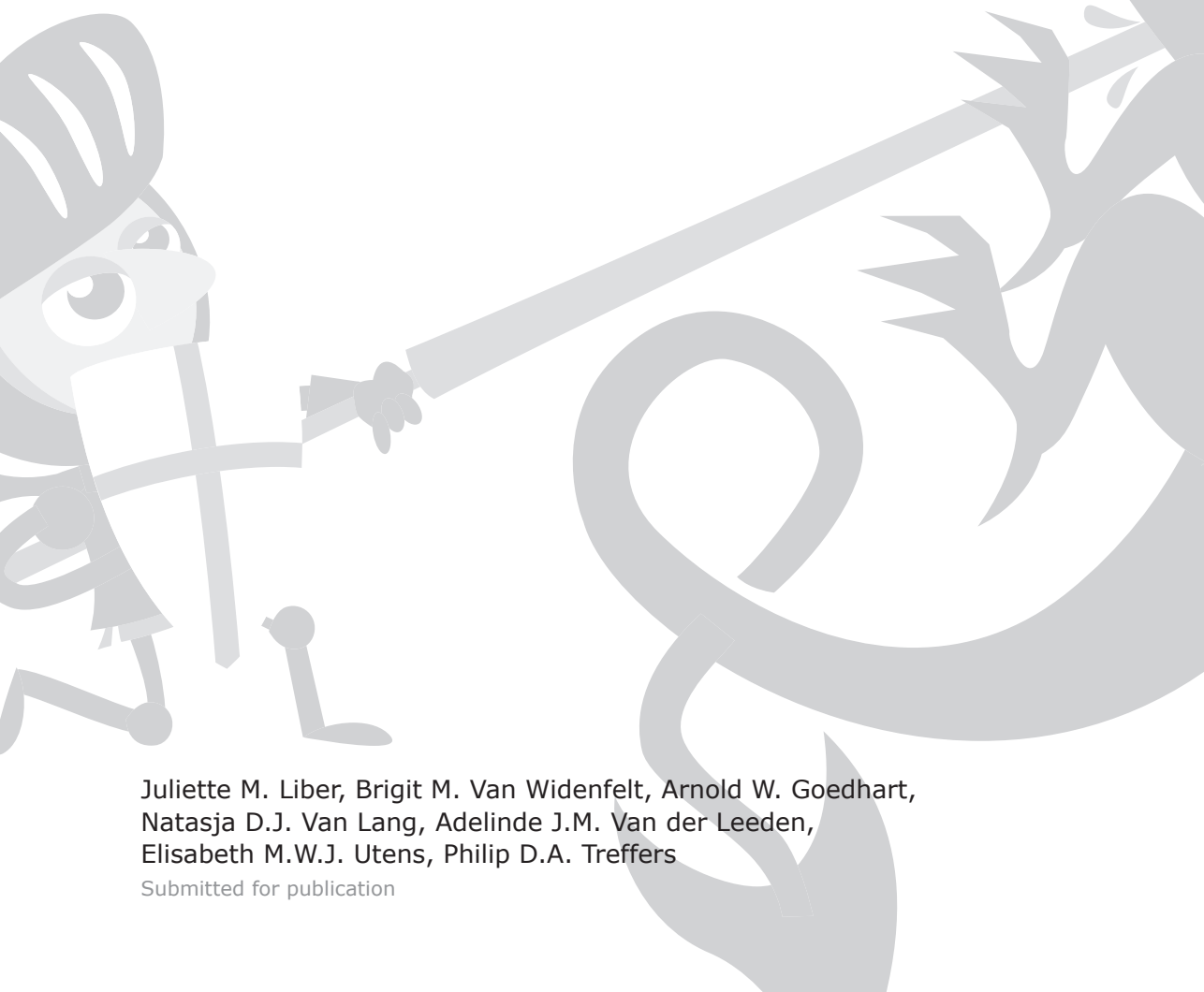
The results from the present study suggest that paternal anxiety and depressive symptoms, paternal rejection and maternal emotional warmth are important for clinical change. These findings warrant further investigation and replication. Therapists should be aware of the possible negative impact of paternal depressive symptoms and paternal rejection on treatment outcome. These presented findings stress the importance to include fathers in future studies on treatment outcome for childhood AD and assess the paternal role in pre to post treatment recovery.

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4

Social performance predicts treatment outcome in children with anxiety disorders



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ABSTRACT

The present study investigated aspects of social performance (assertion, responsibility, cooperation and self-control) of children with anxiety disorders and the predictive value of social performance for treatment outcome. Children aged 8-12 ($N=133$) were treated with manualized Cognitive Behavioural Therapy. Improvement in anxiety or internalizing symptoms was assessed from a multi-informant perspective including the clinician's perspective on the absence or presence of an anxiety disorder at post-treatment, and the children's and parents perspective on Clinically Significant Change (treatment success or failure; MASC and CBCL internalizing scale). Higher pre-treatment social performance (father reported self-control) was related to greater Clinically Significant change in self-reported anxiety symptoms. Higher pre-treatment father and mother reported assertion and self-control and father reported responsibility was related to greater Clinically Significant change in parent reported internalizing symptoms. The strongest and most consistent predictors for treatment success were the performance measures assertion and self-control. As social performance proved to be highly relevant for treatment outcome the authors stress the importance to include measures of social performance in future studies on the treatment of childhood anxiety disorders. It is suggested that treatment gains might be enhanced by addressing social performance difficulties in the treatment.

Keywords: childhood anxiety, social performance, cognitive behavioural treatment.

SOCIAL PERFORMANCE PREDICTS TREATMENT OUTCOME IN CHILDREN WITH ANXIETY DISORDERS

As approximately 20 to 50 percent of the children with anxiety disorders in research trials do not show an adequate treatment response (Compton, Burns, Egger, & Robertson, 2002) there is a serious need to identify factors associated with treatment success and failure. Social performance might be an important predictor of treatment outcome as children with anxiety disorders show disturbed or diminished social functioning, lower social acceptance, negative peer interactions and diminished peer popularity (Benjamin, Costello, & Warren, 1990; Chansky & Kendall, 1997; Ginsburg, La Greca, & Silverman, 1998; Strauss, Lahey, Frick, Frame, & Hynd, 1988). Factors that contribute to the development or maintenance of anxiety might also obstruct treatment from being effective, for instance by difficulties with implementing newly learned skills in social situations.

Treatment of Anxiety and Social Performance.

The role of social performance difficulties for Cognitive Behavioural Therapy (CBT) outcome in children with anxiety disorders could be explored by assessing the relation between social performance and anxiety reduction. As far as the authors are aware of only one study has been conducted on treatment outcome of CBT for anxiety disorders including a measure of social functioning as a predictor. Southem-Gerow, Kendall and Weersing (2001) showed an association between mother reported socially withdrawn behaviour on the Withdrawn subscale of the Child Behavior Checklist (CBCL; Achenbach, 1991) in clinically anxious children and a poor treatment response (i.e. children who still meet criteria for any anxiety disorder). Children with various anxiety disorders (Social Phobia (SOP), Avoidant Disorder, Generalized Anxiety Disorder (GAD), Separation Anxiety Disorder (SAD), and Overanxious Disorder) were included but the authors did not report if different outcomes were found with different disorders. The instrument the authors used (CBCL) did not allow a statement on the predictive value of social performance for the children in their study as withdrawn behaviour does not necessarily equals social performance difficulties; withdrawn behaviour might result from social performance difficulties but might also originate from a different cause (e.g. depression).

Cognitive models of anxiety emphasized that distortions in information processing and self-perception are highly relevant for the development and maintenance of anxiety in adults (Rapee & Heimberg, 1997) and in children (Epkins, 2000; Prins, 2001; Weems, Berman, Silverman, & Saavedra, 2001). Recently, researchers brought forward that anxious children do not necessarily show impaired social performance and suggested that it is the appraisal of the own performance by the anxious person rather than the performance itself that is affected (Cartwright-Hatton, Tschernitz, & Gomersall, 2005). However, observation of performance in social situations showed that anxious adults and children performed more poorly than

nonanxious adults and children in the same social situations (Spence, Donovan, & Brechman-Toussaint, 1999; Thompson & Rapee, 2002).

Treatment Outcome and Informant Issues

An important issue related to the study of treatment outcome is a clear description of treatment success and treatment failure. Effect-sizes tend to be used to reflect treatment success. Reporting significant effect-sizes might not be representative for the amount of clinical change obtained at post-treatment (Kendall, 1999). The issue of statistically significant change and clinically meaningful change has been repeatedly discussed (Chambless & Hollon, 1998; Kazdin, 1999). Various strategies have been suggested to describe clinical significance (Jacobson, Roberts, Berns, & McGlinchey, 1999; Kendall, Marrs-Garcia, Nath, & Sheldrick, 1999), leading treatment outcome researchers to report clinically significant and meaningful change (e.g. Shortt, Barrett, & Fox, 2001; Silverman et al., 1999). When studying predictors for treatment outcome, researchers tend to fall back on commonly used strategies (Rapee, 2000; Victor, Bernat, Bernstein, & Layne, 2006) (e.g. regression analysis with raw scores) leading to a model that accounts for variance in outcome but not for clinically significant or meaningful change.

As informants tend to disagree on ratings of psychopathology (De Los Reyes & Kazdin, 2006), it appears important to include multiple informants in the examination of treatment outcome. Informant discrepancies between parent-child dyads were especially emphasized whereas informant discrepancies between mother-father dyads in the rating of psychopathology showed to be of little significance (De Los Reyes & Kazdin, 2006) as fathers and mothers tend to show moderate to large interrater agreement on ratings of behaviour problems (Duhig, Renk, Epstein, & Phares, 2000). With regard to the predictors for treatment outcome, it appears prudent to include fathers and mothers separately. The findings of studies investigating maternal and paternal predictors separately showed differential results for mothers and fathers, which suggests that fathers and mothers might play a differential role in the prediction of treatment outcome (Crawford & Manassis, 2001; Liber et al., in press; Rapee, 2000).

In sum, the role of social performance difficulties in children with anxiety disorders is not clear yet. As far as the authors are aware of social performance as a predictor of treatment outcome has not yet been studied. The one study that did include social functioning measures showed a significant relationship between less withdrawn behaviour before treatment and reduced anxiety symptoms after treatment (Southam-Gerow, Kendall, & Weersing, 2001).

The Present Study

In the present study, first differences in the level of social performance were explored between three groups of children: a reference group of children from a Dutch general population, a group of children with anxiety disorders but without SOP and a group of children with SOP (with or without other anxiety disorders). The social performance of children with SOP

might be more strongly affected compared to anxiety disordered children without SOP, as for the latter social performance difficulties appear concomitant with the anxiety disorder instead of the core feature (American Psychiatric Association, 2000). Secondly, differential treatment outcome effects were explored for socially phobic children versus anxiety disordered children without SOP. Thirdly, it was assessed whether the level of mother and father rated pre-treatment social performance is related to treatment outcome in terms of Clinically Significant Change. Lastly, comparisons of the pre-treatment levels of social performance were made between the treatment success and treatment failure groups. Success and failure were assessed from a multi-informant perspective.

METHOD

Clinical Population

The sample was selected from all consecutive referrals of 8-12 year old children to the Anxiety and Depression Unit of the outpatient university clinic for Child and Adolescent Psychiatry of Leiden University Medical Center (LUMC)/ Curium or Erasmus Medical Center Rotterdam/Sophia. The present study is part of a study evaluating the efficacy of individual versus group CBT treatment (Liber et al., 2008) (FRIENDS; Barrett & Turner, 2000). As part of the routine procedure, children and their parents were interviewed with the Dutch version of the Anxiety Disorders Interview Schedule for children (ADIS-C/P; Siebelink & Treffers, 2001; Silverman & Albano, 1996). Children who received a diagnosis of SAD, GAD, SOP or Specific Phobia (SP) were included in the target sample. Exclusion criteria were an IQ below 85, poor command of the Dutch language, serious physical disease, Substance Abuse Disorder, Pervasive Developmental Disorder, Selective Mutism, Schizophrenia, another psychotic disorder or currently following psychotherapy. As a result, 142 children (aged 8-12) diagnosed with an anxiety disorder and their parents were asked to participate. Of these 142 children, 133 subjects signed informed consent and started treatment. The treatment completers sample included 124 children since nine children (6.8%) dropped out of treatment. Of the resulting 124 children 65 were treated individually and 59 children were treated in group format, 68 boys participated and 56 girls. Primary diagnosis of the children were SAD ($n = 50$), GAD ($n = 36$), SOP ($n = 20$) or SP ($n = 18$). Seventy children (56%) had at least one comorbid disorder and in sixty-two children (48%) the comorbidity referred to one or more anxiety disorders. Twenty-two children (18%) had a comorbid disorder other than anxiety (e.g. ADHD, Dysthymia, Oppositional Defiant Disorder or Depression). In total, 39 children suffered from Social Phobia, either as their primary diagnosis ($n = 20$) or as a comorbid condition ($n = 19$). Seven children did not maintain contact with their fathers or the fathers were unknown. Six fathers refused to participate, one father and one mother died and two fathers lacked sufficient proficiency in Dutch. Demographic data are presented in Table 4.1.

Table 4.1*Demographic Data: Social Phobia by Format*

Variable		Individual Treatment		Group Treatment	
		SOP (n=19)	NoSOP (n=46)	SOP (n=20)	NoSop (n=39)
Child	Boy	11	23	12	22
	Age (years)	10.3 (1.2)	10.1 (1.4)	10.4 (1.3)	9.7 (1.1)
SES	Low	3	6	4	6
	Middle	8	19	13	17
	High	8	21	3	16
Pre D	SAD	6	19	6	19
	GAD	2	18	2	14
	SP	1	9	2	6
	SOP	10	0	10	0
Comorbidity	N°D	2.3 (1.2)	1.7 (0.8)	2.6 (1.2)	1.6 (0.9)
Post D	None	9	24	7	16
	SAD	3	6	4	11
	GAD	1	4	1	5
	SP	2	10	1	6
	SOP	4	2	7	1

Note. N°D= Mean number of disorders with SD in parenthesis (e.g. Anxiety, ADHD, Depression), Pre D = diagnostic status pre treatment, Post D= diagnostic status post treatment

MEASURES

Diagnostic Interview

The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-C/P) was administered pre- and post treatment to obtain clinical information from the parents and the child (Siebelink & Trefers, 2001; Silverman & Albano, 1996). The ADIS is a reliable instrument for deriving DSM-IV anxiety disorder symptoms and diagnoses in children aged 7 to 16. The interview is organised according to DSM-IV criteria and yielded kappa coefficients for SAD, SOP, SP and GAD in the good to excellent range for both the child and the parent interview (Silverman, Saavedra, & Pina, 2001).

Self-report Measure

Information on self-reported anxiety was obtained by administering the Multidimensional Anxiety Scale for Children (MASC) (March, 1997; March, Sullivan, & Parker, 1999). The MASC is a general measure of pediatric anxiety for children aged 8 to 18 and includes 39-items which are rated on a 4-point Likert-style scale. A Dutch translation of the MASC by Utens and Ferdinand (2002) revealed a Cronbach's alpha of .93 for the total score ($N = 299$, age 8-12) and a test-retest correlation of .81 ($n = 196$, age 8-12) (Utens & Ferdinand, 2000).

Parent Report Measures

Child Behavior Checklist.

The Child Behavior Checklist (CBCL) is a standardised measure of parental perception of their children's emotional behavioural problems (Achenbach & Rescorla, 2001; Verhulst, Van der Ende, & Koot, 1996). The internal consistencies of the Child Behavior Checklist scales 'total behavior problems', 'externalizing problems' and 'internalizing problems' are good. Reliability coefficients ranged for the above-mentioned scales for the clinical norm group from .72 to .87. Test-retest correlations showed satisfying results, correlations ranged from .82 to .87. The internalizing scale of the CBCL (CBCL-Int) has been used for the present study.

Measure of Social Performance

Social Skills Rating System.

The Social Skills Rating System (SSRS; Gresham & Elliott, 1990) measures social performance by documenting the perceived frequency of social behaviours that demonstrate the ability to communicate with adults and regard for property or work (*responsibility*), behaviours such as asking others for information, introducing oneself, and responding to the actions of others (*assertion*), behaviours that emerge in conflict-situations, such as responding appropriately to teasing, and in non-conflict situations that require taking turns and compromising (*self-control*), and behaviours such as helping others, sharing and complying with rules and directions (*cooperation*). The four scales can be computed from 38 items relating to social behaviour. The SSRS parent version proved to be reliable (reliability coefficients range from .65 to .90) and valid for a population of American children (Gresham & Elliott, 1990). A translation of the SSRS-P was developed at the department of Child and Adolescent Psychiatry of the Sophia Children's Hospital. To investigate the social performance in a Dutch cohort and to investigate the psychometric properties of the Dutch SSRS, data from the TRAILS-study (Tracking Adolescents Individual Lives Survey; De Winter et al., 2005) were generously made available. TRAILS is a prospective cohort study of Dutch preadolescents who will be measured biennially until they are at least 25 years old. TRAILS is designed to chart and explain the development of mental health and social development from preadolescence into adulthood. The TRAILS target sample (age 10-12, $N = 2,230$) involved preadolescents living in five municipalities in the northern part of the Netherlands, including both urban and rural areas. Data from this sample (De Winter et al., 2005) were used as a reference group for the present study and involved information of 1,943 mothers and 89 fathers (gender of 12 parents was unknown and 186 were missing). The results of a confirmative factor analysis on the TRAILS (De Winter et al., 2005) data supported the original structure (Liber, Van Lang, & Treffers, 2006). Cronbach's alpha ranged from .68 to .79 in the Dutch reference sample. One hundred

twenty-three mothers and 108 fathers participated in the present clinical study. Cronbach's alpha's were identical in the Dutch clinical population and thus ranged from .68 to .79.

PROCEDURE

Psychologists using the ADIS-C/P interviewed children and parents separately. After verbal and written consent was obtained children were assigned to either individual or group CBT by sequential randomisation. Pre-treatment measures were administered to both parents and children. A waiting list condition was not used, since there is strong evidence that CBT is more effective than a waitlist condition (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). All participants received a manual-based 10-session weekly cognitive behavioural treatment program and parents received 4 sessions of parent training, which included mainly psycho-education. One week post-treatment children and parents were interviewed with the ADIS-C/P and assessment measures were again administered to both children and parents.

Treatment

Children were treated with a Dutch translation of the FRIENDS program (Barrett & Turner, 2000; Utens, de Nijs, & Ferdinand, 2001). The FRIENDS program is originally an adaptation from the Coping Cat workbook from Philip Kendall and based on a theoretical framework with three main target areas for change; physical symptoms, cognitive processes and coping skills. To bring about change therapeutic techniques such as cognitive restructuring, reinforcement, exposure and relaxation exercises were applied. All children were offered ten sessions, either in individual format or in group format. All parents were offered four sessions, also either in group treatment or in individual setting. Though the treatment did not include social skills components, it did stress the importance of social support and included exercises that encouraged children to seek social support in their environment.

Data Analysis

SPSS Version 14.01 was used for the statistical analyses. First, the social performance of the anxiety disordered children with and without SOP was assessed in relation to a reference group. Cohen's *d* was used as a measure of effect size, the 95% confidence interval for Cohen's *d* was calculated (Smithson, 2007). Furthermore, treatment outcome for the anxiety disordered children with and without SOP was compared with Chi-square tests.

Predictors of treatment success or failure for the MASC and CBCL were identified by using correlations between the predictor and the outcome and by testing if children in the treatment success and treatment failure groups (MASC, CBCL, ADIS) differed in pre-treatment levels of the predictor variables. Treatment outcome in terms of treatment success or treat-

ment failure was assessed from a multi-informant perspective. Diagnostic status as assessed with the ADIS-C/P reflected the clinical point of view on treatment success and failure. Any references to treatment success based on diagnostic status in the text from here on will indicate that children were free of any anxiety disorder at post-treatment. Pre and post-treatment self-reports of anxiety symptoms (MASC) and parent reported internalizing symptoms (CBCL-Int) were obtained to reflect the child's and parental point of view on treatment success. With these instruments a continuous and a dichotomous assessment of treatment success was computed using the method developed by Hageman and Arrindell (1999) for computing Clinically Significant Change (CS) (continuous measure) and for determining a dichotomy of recovered and not/ partially recovered children (CS index, for a detailed description; see Hageman & Arrindell, 1999; Jacobson & Truax, 1991). The CS scores of mothers and fathers on the CBCL-Int were highly correlated ($r = .66, p < .001$; $r = .68$) and not significantly different ($t(96) = 1.88, p = ns$). Therefore, results were combined and a child was considered recovered if one of the parents described the child as recovered.

RESULTS

Preliminary Analyses

Comparisons between children who completed treatment ($n = 124$) and non-completers ($n = 9$) showed that the children did not differ significantly on pre-treatment social economic status, age, gender or primary diagnosis and did not differ significantly with regard to social performance (SSRS) or the outcome measures (MASC, CBCL-Int). Therefore, we assumed there were no drop-out biases. Previous analyses showed that there were no significant differences in outcome (free of any anxiety disorder at post treatment) between individual and group treatment ($\chi^2(1, 124) = 1.74, p = .19$) (for a detailed description, see Liber et al., 2008). Furthermore, it has been suggested that high socially anxious children benefit more from individual treatment than from group treatment (Manassis et al., 2002). In the present study, the recovery rates and post-treatment diagnostic status were not different between children in the individual format with and without SOP and children in the group format with and without SOP (MASC: $\chi^2(3, 118) = 1.97, p = ns$; CBCL-Int: $\chi^2(3, 122) = 1.07, p = ns$; diagnostic status: $\chi^2(3, 124) = 2.05, p = ns$).

Main Analyses

Social performance differences between groups.

The levels of cooperation, assertion, self-control and responsibility as reported by both mothers and fathers were significantly below the reference population for children with SOP and for children without SOP with exception of father reported responsibility (see Table

Table 4.2

Social Skills Rating System Scales for the Normative, and Clinical Population (With or Without Social Phobia)

	A. Ref Pop	B. PRE SOP	C. PRE NoSOP	AvsB	AvsC	BvsC
Measure				Cohens <i>d</i>	Cohens <i>d</i>	Cohens <i>d</i>
SSRS scales	<i>n</i> >1846	<i>n</i> = 42	<i>n</i> ≥ 89			
Mother						
Cooperation	11.0 ± 0.1	8.4 ± 0.9	9.7 ± 0.7	0.9 [0.6–1.2]***	0.4 [0.2–0.6]***	0.5 [0.1–0.8]*
Assertion	17.6 ± 0.1	12.0 ± 0.9	15.2 ± 0.8	1.9 [1.5–2.2]***	0.7 [0.5–0.9]***	1.0 [0.6–1.4]***
Responsibility	14.5 ± 0.1	10.7 ± 0.8	13.4 ± 0.6	1.4 [1.1–1.7]***	0.4 [0.2–0.6]**	1.0 [0.6–1.4]***
Self-control	13.0 ± 0.2	10.0 ± 1.0	10.5 ± 0.7	0.9 [0.6–1.3]***	0.7 [0.5–1.0]***	0.2 [–0.2–0.5]
SSRS Scales Father	<i>n</i> >83	<i>n</i> ≥36	<i>n</i> ≥70			
Cooperation	11.2 ± 0.7	7.5 ± 1.0	9.4 ± 0.8	1.2 [0.8–1.6]***	0.5 [0.2–0.8]**	0.6 [0.2–1.0]**
Assertion	17.2 ± 0.7	12.0 ± 1.1	15.4 ± 0.9	1.6 [1.1–2.0]***	0.5 [0.2–0.8]**	1.0 [0.5–1.4]***
Responsibility	13.7 ± 0.6	10.6 ± 0.9	12.9 ± 0.7	1.1 [0.7–1.5]***	0.3 [–0.1–0.6]	0.8 [0.4–1.2]***
Self-control	12.9 ± 0.8	9.8 ± 1.0	10.9 ± 0.9	0.9 [0.5–1.3]***	0.6 [0.2–0.9]**	0.3 [–0.1–0.7]

Note. AvsB = comparison of reference versus clinical sample with SOP, AvsC = reference population versus clinical sample without SOP, BvsC = clinical sample with SOP versus clinical sample without SOP, Means ± 95% confidence interval, * = *t*-test is significant at *p*<.05, ** = *p*<.01, *** = *p*<.001, [] = 95% confidence interval for Cohens *d*.

4.2). Effects were all large (above .80) for children with SOP and small to moderate for those without SOP; with exception of father-reported responsibility, which was nonsignificant. Comparison of social performance between anxiety disordered children with and without SOP showed no differences in self-control but moderate to large effect-sizes on assertion and responsibility with lower levels in children with SOP. Results were similar for fathers and mothers. No effects for age or gender were found on social performance of the children with an anxiety disorder.

Pre-treatment diagnosis of SOP and treatment outcome.

Chi-square tests did not reveal a difference in recovery between children with or without SOP for any of the three outcome measures. Thirteen out of 36 children with SOP and 34 out of 82 children without SOP fell into the recovered category (*n* = 47) of the MASC index (missing; *n* = 6). Five out of 39 children with SOP and 16 out of 83 children without SOP fell into the recovered category (*n* = 21) based on the CBCL-Int index (missing; *n* = 2). Sixteen out of 39 children with SOP and 40 out of 85 children without SOP fell into the treatment success group (*n* = 56) based on diagnostic status (absence of any anxiety disorder based on the ADIS-C/P). In sum, the recovery rates and post-treatment diagnostic status of children with and without SOP did not differ from each other.

Predictors of Treatment Outcome

Correlations between pre-treatment social performance and Clinically Significant Change.

The pre-treatment levels of mother and father-reported assertion and self-control and father reported responsibility were significantly related to the CS of the CBCL-Int score (see Table 4.3), indicating that higher levels of pre-treatment social performance are related to a greater Clinically Significant Change. Pre-treatment social performance was not related to Clinically Significant Change on the MASC.

Table 4.3.
Correlations between the SSRS scales and the Clinically Significant Change (CS) scores on the MASC and CBCL-Int.

	CS scores	
	MASC	CBCL-Int
Mother		
Cooperation	.16	.06
Assertion	-.04	-.29**
Responsibility	.06	-.18
Self-control	-.07	-.26**
Father		
Cooperation	-.17	-.15
Assertion	-.08	-.31**
Responsibility	-.04	-.29**
Self-control	-.21*	-.45***

Note. Superscript* = $p < .05$, ** = $p < .01$, *** = $p < .001$, MASC = Multidimensional Anxiety Scale for Children, CBCL-Int = internalizing scale of the Child Behavior Checklist.

Pretreatment social performance in the treatment success and treatment failure groups.

Significant differences were found for children who recovered on the CBCL-Int (CS index; treatment success) compared to those who did not (CS index; treatment failure) with regard to mother and father reported assertion and self-control, and father reported responsibility and cooperation (see Table 4.4). The levels of pre-treatment social performance were higher for children who recovered from their internalizing symptoms. There were no significant differences between the recovered and the not/ partially recovered children on the MASC (see Table 4.4).

Children who were free of any anxiety disorder at post-treatment (ADIS-C/P) showed significantly higher levels of pre-treatment mother and father reported assertion and self-control, and father reported responsibility and cooperation. The results indicated that the pre-treatment levels of social performance of children with an anxiety disorder post-treatment were lower compared to children who were free of any anxiety disorder at post-treatment.

Table 4.4*Means, 95% CI and t-tests for the Treatment Success and Treatment Failure Groups*

	ADIS		MASC		CBCL-Int	
	Success	Failure	Success	Failure	Success	Failure
SSRS mothers						
Sample (n)	54	67	47	68	20	98
Cooperation	9.0 ± 1.5	9.5 ± 1.6	9.0 ± 1.6	9.5 ± 1.6	10.1 ± 2.7	9.1 ± 1.2
Assertion	15.3 ± 2.0	13.3 ± 1.7 ^{**}	14.3 ± 2.0	14.1 ± 1.8	16.2 ± 3.0	13.7 ± 1.4 ^{**}
Responsibility	13.0 ± 1.7	12.1 ± 1.4	12.6 ± 1.5	12.5 ± 1.6	13.4 ± 2.8	12.2 ± 1.2
Self-control	11.0 ± 1.4	9.8 ± 1.7 [*]	10.6 ± 1.6	10.2 ± 1.6	11.7 ± 2.4	10.0 ± 1.3 [*]
Fathers						
Sample (n)	49	57	43	59	20	84
Cooperation	9.6 ± 1.9	8.1 ± 1.5 [*]	8.9 ± 1.7	8.6 ± 1.8	11.1 ± 1.3	8.1 ± 1.3 ^{***}
Assertion	15.7 ± 2.2	13.0 ± 1.8 ^{***}	14.3 ± 2.4	14.2 ± 1.9	16.4 ± 3.4	13.6 ± 1.6 ^{**}
Responsibility	13.0 ± 1.9	11.3 ± 1.5 ^{**}	12.2 ± 1.8	12.1 ± 2.6	13.6 ± 2.6	11.7 ± 1.3 [*]
Self-control	12.1 ± 1.9	9.2 ± 1.7 ^{***}	11.3 ± 2.3	9.9 ± 1.7	13.7 ± 2.3	9.8 ± 1.4 ^{***}

Note. Superscript *t-test is significant at $p < .05$, ** $p < .01$, *** $p < .001$, Masc = Multidimensional Anxiety Scale for Children, CBCL-Int = internalizing scale of the Child Behavior Checklist, ADIS = Anxiety Disorders Interview Schedule, the sample sizes varied due to missing values.

CONCLUSION

The results of the present study confirm the important role of social performance difficulties in children with anxiety disorders. Children with an anxiety disorder showed pre-treatment significant lower levels of social performance compared to a normative population. The clinically anxiety disordered children with SOP showed even more impaired levels of assertion, cooperation and responsibility than the anxiety disordered children without SOP, though the presence or absence of SOP did not impact on treatment success. Social performance also predicted treatment outcome significantly in children with anxiety disorders. Better social performance was related to clinically significant change in (e.g. greater reduction of) internalizing symptoms. Moreover, the parents of children who were recovered at post-treatment reported higher levels of pre-treatment social performance compared to the parents of children who did not respond successfully to the treatment. The most consistent associations were found for responsibility, self-control and assertion. Especially assertion and self-control were strong and consistent predictors, they were valid across informants (mother and father), outcome measures (CBCL-Int or ADIS diagnostic status) and analyses (correlations, t-tests). Importantly, the degree of self-control appeared to be not different between anxiety disordered children with or without SOP.

DISCUSSION

A low level of self-control in children with an anxiety disorder was a substantial predictor for treatment-outcome. This finding underlines the important role of the ability to perform in a self-controlled manner in social situations. The role of control on anxiety (sense of ability to personally influence events and outcomes in one's environment) has previously been emphasized (Chorpita & Barlow, 1998). The finding that the treatment was equally effective for anxiety disordered children with and without SOP might be explained by the finding that anxiety disordered children both with and without SOP were equally impaired in self-control, and less impairment was related to a more favourable outcome.

Explaining the impact of assertion on treatment outcome is largely speculative as no other studies included this variable as a predictor for treatment outcome. As our findings were strong and consistent, we think hypothesizing on possible mechanisms is of great relevance for future studies. Lower levels of pre-treatment assertion might have hindered practicing skills in social settings other than the therapeutic setting whereas higher levels of pre-treatment assertion might have facilitated practicing and implementing skills in daily life. For instance, one girl held a presentation on the FRIENDS program for her peers at school and explained to them strategies for coping with anxiety. By going public with her fears she confronted herself with these fears and forced herself to think of adequate coping strategies and testing the adequacy by presenting her strategies to her peers.

This example illustrates that a (relatively) high level of adequate social performance might contribute to the generalization and maintenance of treatment gains. On the other hand, social performance difficulties might have impacted negatively upon treatment outcome for several reasons. First, children needed to generalize newly learned behaviour from the treatment setting to their daily lives. Diminished social performance might interfere with children practicing newly learned behaviour in anxiety provoking settings. Secondly, diminished social performance might have a negative effect on the therapeutic relationship and subsequently on treatment outcome as therapeutic relationship variables and treatment outcome have shown a consistent association (Shirk & Karver, 2003).

Previous arguments point to a need to improve social performance, which is generally conducted by means of social skills training. However, Greco and Morris bring forward that social skills training might not result in socially important outcomes even when children acquire components of the necessary skills, if they are not able to integrate them into their daily behavioural repertoire and if children are not able to perform accordingly when necessary (Greco & Morris, 2001). Additionally, training in social skills and problem solving abilities may not alter the perception of peers. Shy or withdrawn children may have been labelled as such by their peers; subsequently prosocial behaviour might be rejected due to the label and social status of children with an anxiety disorder, and for children with Social Phobia more specifically (Greco & Morris, 2001). Possible solutions might be to include strategies to cope

with labelling and social status, but might also include class-room strategies to prevent or reduce bullying.

Strengths and Limitations

The present study has several limitations. First, the study did not address the question whether children with anxiety disorders show performance deficits or suffer from cognitive distortions. The results do provide strong evidence that children with anxiety disorders show diminished social performance, irrespective of causality or direction of the relationships. Bierman and Welsh (2000) pointed out that children might have social difficulties for a number of reasons (e.g. social anxiety, attention-deficit-hyperactivity disorder, peer rejection) (Bierman & Welsh, 2000). Assessment of the origins of social difficulties could guide the choice what treatment to offer to individual children with specific needs. For instance, recent research (Chorpita, Taylor, Francis, Moffitt, & Austin, 2004) promoted the use of individually tailored treatments, which enables the implementation of treatment modules that focus on improving social skills or social cognition restructuring tailored to the individuals needs.

Secondly, it should be noted that this study by design did not include a wait-list control group. Such a group would have allowed us to examine whether the improvement due to the treatment would exceed changes due to spontaneous recovery. Our overriding argument not to include a wait-list control group was that there had been sufficient demonstration that CBT was superior to a wait-list control condition (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). For the purpose of predicting treatment outcome, we did not need a wait list control condition.

There are also several strengths of the present study worth mentioning. The present study included a large sample of clinically diagnosed children with a high rate of father participation and a substantial proportion of children with SOP. Furthermore, previous studies on the prediction of treatment outcome of CBT for children with anxiety disorders tended to overlook the social performance of children whereas the current study not only investigated the predictive value of social performance for treatment outcome, but also assessed it's relation to clinically significant change. The strong and consistent findings in the present study underline the relevance of further investigation into the role of social performance for the treatment of children with anxiety disorders.

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5

Comorbidity and cognitive behavioral treatment outcome for childhood anxiety disorders

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ABSTRACT

The present study investigated the impact of comorbidity on treatment outcome of Cognitive-Behavioral Therapy for children with anxiety disorders. Children (aged 8-12) diagnosed with an anxiety disorder were treated with a short-term CBT-protocol. Two kinds of comorbidity were examined each by forming two groups; 'total comorbidity' differentiates between anxiety disordered children with or without a co-occurring disorder. 'Other comorbidity' differentiates between anxious children with or without a comorbid disorder other than anxiety. Severity was separately assessed with a composite measure of child and parent reported symptoms. Treatment outcome was assessed in terms of a Reliable Change index reflecting changes in pre- to posttreatment symptom levels. Both severity and other comorbidity contributed to the prediction of a less favorable treatment outcome with regard to post-treatment diagnostic status and recovery. Similarly, some of the data suggested less change in self-reported anxiety in children with a comorbid disorder other than anxiety. Exploration of the mechanisms in which comorbidity hinders treatment outcome might give insight in how to adapt treatments to children's individuals needs.

Keywords: Childhood Anxiety Disorders, Cognitive Behavior Therapy, Comorbidity

COMORBIDITY AND SYMPTOM SEVERITY AS PREDICTORS OF TREATMENT OUTCOME OF CHILDHOOD ANXIETY DISORDERS

A recent review supports the efficacy for Cognitive Behavioral Therapy (CBT) targeting Childhood Anxiety Disorders (CAD) and accords CBT the status of an empirically supported treatment (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). Still 20 to 50 percent of children that participate in research trials for CAD do not show an adequate response (Compton, Burns, Egger, & Robertson, 2002). Identification of predictors of treatment response would be of great value, both clinically and theoretically (Rapee, 2000) as these predictors may give valuable insight in possible mechanisms or processes that facilitate or hinder treatment recovery. Outcome research would be enriched by the investigation of relevant subgroups with particularly good (or poor) treatment response (Hinshaw, 2007) and by examination of variables that predict clinically significant change.

Comorbidity

A potential predictor for treatment outcome is the presence of a (specific) comorbid DSM-IV (Diagnostic and Statistical Manual for Diseases; American Psychiatric Association, 2000) disorder. Children with an anxiety disorder often meet the diagnostic criteria for a comorbid anxiety, depressive or behavioral disorder (Angold, Costello, & Erkanli, 1999; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Verhulst, Van der Ende, Ferdinand, & Kasius, 1997). The co-occurrence of disorders has been suggested to either create a barrier to treatment implementation or to impact negatively upon the treatment process (Kennard, Ginsburg, Feeny, Sweeney, & Zagurski, 2005).

So far, studies investigating the treatment outcome of CBT for CAD have not found an impact of comorbidity on treatment recovery (Flannery-Schroeder, Suveg, Safford, Kendall, & Webb, 2004; Kendall, Brady, & Verduin, 2001; Rapee, 2003). A study by Kendall et al. (2001) compared three groups of children with an anxiety disorder (aged 8 – 13 years); anxious children with no comorbid disorders ($n = 35$), children with more than one anxiety disorder ($n = 86$) and children with one or more anxiety disorders and a comorbid externalizing disorder ($n = 44$). Kendall and his colleagues reported that the treatment was similarly effective in anxious children with or without comorbid (anxiety or externalizing) disorders, and that all groups showed clinically significant reductions in symptoms (based on ANOVA's and χ^2 tests). Treatment outcome was defined as the absence of the principal pretreatment anxiety disorder. Rapee (2003) compared three groups of anxious children aged 7 to 16; one group with no comorbid conditions (Anx; $n = 73$), one group with more than one anxiety disorder (Anx/Anx; $n = 72$) and one group with comorbid disorders other than anxiety (Anx/Other; $n = 20$) (mood disorders or externalizing disorders). Rapee (2003) concluded that children in the three diagnostic groups were not different in their treatment response at post-treatment (based on repeated measures ANOVA's), and negligibly different at 6 months follow-up. Time

by group interaction effects were found for father reported internalizing symptoms and mother-reported externalizing symptoms at 6 months follow-up, showing a slight increase of father-reported internalizing symptoms and mother-reported externalizing symptoms in the children of the Anx/Other group whereas children in the Anx and Anx/Anx groups still showed a decline in these symptoms. Diagnostic status was not assessed at post-treatment or at follow-up. From a clinical perspective it would have been informative to know more on the absence of any anxiety disorder at post-treatment, especially when studying comorbidity in relation to outcome.

Severity and Comorbidity

The clinical phenomenology of anxious youth with comorbid conditions (e.g. anxiety, externalizing disorders, depressive disorders) appears more severe compared to children with a single anxiety disorder (Franco, Saavedra, & Silverman, 2007). Moreover, severity has been associated with less favorable treatment outcomes in school-refusing and depressed youths (Brent et al., 1998; Layne, Bernstein, Egan, & Kushner, 2003), and for the long-term outcome of child CBT for anxiety disorders (Manassis, Avery, Butalia, & Mendlowitz, 2004). It has been suggested that it is not as much the co-occurrence of conditions that affect outcome, but that children with co-occurring conditions have more severe psychopathology, and that diversity of symptoms is less important than the sheer number of symptoms (Doss & Weisz, 2006). This suggestion is supported by the finding that comorbidity was no longer predictive for treatment outcome when initial severity was controlled for in depressed adolescents (Brent et al., 1998). Research examining the impact on treatment outcome for childhood anxiety disorders of severity and comorbidity separately is absent, as far as the authors are aware of. The results of previous studies may suggest that CBT is equally effective for anxiety disordered children with or without comorbid disorders, however it might be premature to assume that straight CBT will work for complex cases that present themselves in non-research settings (Southam-Gerow, Chorpita, Miller, & Gleacher, 2008). Given that previous studies on comorbidity and treatment outcome of CBT for childhood anxiety disorders did not differentiate between effects of comorbidity and severity, it is possible that unique effects for comorbidity were overlooked.

Measurement of Treatment Outcome

An important issue related to the study of treatment outcome is how to evaluate effectively the nature and degree of change that has occurred as a result of therapy. There are several pitfalls in the measurement of change and recovery. Estimation of pre- to post-treatment change is often inferred by calculating differences between pre and post-treatment scores on primary outcome measures, e.g. by using a repeated measures design including time. However, a serious drawback of the pre-post difference scores is that measurement-error is not taken into account (Hageman & Arrindell, 1999). Recovery reflects the clinical post-

treatment symptom-status given the pretreatment symptom status; e.g. a disorder that was present before treatment, is present (i.e. no recovery) or absent (recovery) at post treatment. If continuous outcome measures are used to estimate recovery, then both pre-post change and a cut-off score (dividing 'normal' from 'abnormal' scores) for post-treatment should be used (e.g. recovery is defined as: a significant pre-post change *and* a post-treatment score in the normal range). In recent years, it has become more common for treatment outcome researchers to report on clinically significant and meaningful change (e.g. Shortt, Barrett, & Fox, 2001; Silverman et al., 1999). Even these excellent studies did not take measurement-error into account when using continuous measures in computing treatment recovery.

The Present Study

The purpose of the present study was to investigate the impact of pretreatment comorbidity and severity on treatment outcome. Essential for disentangling the effects of severity and comorbidity on treatment outcome are a mutual understanding and agreement upon these concepts. For the current study we conceptualize comorbidity as the co-occurrence of DSM disorders. As different kinds of psychiatric comorbidity may have different effects (e.g. Rohde, Clarke, Lewinsohn, Seeley, & Kaufman, 2001), two kinds of comorbidity were examined in the present study. First, an aggregated quantitative measure of comorbidity (labeled 'total comorbidity') was defined by forming two groups: one including children with a single anxiety disorder and no comorbid disorder(s) (Anx) and the other including children with a primary anxiety diagnosis and one or more comorbid disorders (AnxCom). Second, a qualitative measure of comorbidity (labeled 'other comorbidity') was obtained by differentiating between anxious children with one or more anxiety disorders (Anx-S) versus anxious children with one or more anxiety disorders and a comorbid disorder other than anxiety (AnxOther).

As agreement between informants often diverges, the present study will include a multiple-informant perspective on pre- to post-treatment changes and on recovery. Child and parent-reported continuous measures will be used to define pre- to post-treatment changes. Change will be calculated using an improved method that corrects for error-based regression to the mean (RC-score; see *data-analysis*). Treatment recovery will be defined as the absence or presence of any anxiety disorder at post-treatment in order to reflect the clinicians point of view, and the Clinically Significant Change index (CS-index; see *data-analysis*) will be used to reflect parents and childrens point of view on recovery.

Severity is defined as increased levels of symptoms. For analytic purposes a composite measure ('severity score') was calculated consisting of the mean Z-scores on child-reported anxiety symptoms and parent-reported internalizing symptoms.

The impact of comorbidity and severity on outcome was assessed by addressing the following questions: (1) Does comorbidity account for variance in pretreatment symptoms? (2) Do severity and comorbidity predict recovery? (3) Do severity and comorbidity predict Reliable Change in self-reported anxiety and parent-reported internalizing symptoms? (4) Do

severity and comorbidity predict Reliable Change in co-occurring symptoms (self-reported depressive symptoms and parent-reported externalizing symptoms)?

METHOD

Participants

Eligible for participation were children aged 8-12 years referred between September 2002 and December 2005 to the anxiety and depression outpatient clinic for Child and Adolescent Psychiatry Department, Leiden University Medical Center and Erasmus Medical Center, Sophia Children's Hospital in Rotterdam, in the Netherlands. This study has previously been described elsewhere (for a detailed description of the randomization process and efficacy; see Liber et al., 2008). Children diagnosed with Separation Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), Social Phobia (SOP) or Specific Phobia (SP) were eligible for participation. Children were excluded if they had an IQ below 85, poor command of the Dutch language, serious physical disease or Pervasive Developmental Disorder. Children with Obsessive Compulsive Disorder, Posttraumatic Stress Disorder and Panic Disorder were excluded because at the time the present study started there was no empirical evidence that children would benefit more from CBT compared to medical or combined treatment, it was generally assumed that combined treatment was the method of choice. PTSD and OCD were also excluded from reviews evaluating the efficacy of CBT for anxiety disorders (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; Compton, Burns, Egger, & Robertson, 2002). As part of the routine procedure, all children and their parents were interviewed with the Anxiety Disorders Interview Schedule (ADIS-C/P; Silverman & Albano, 1996).

A total of 142 children principally diagnosed with an Anxiety Disorder and their parents were asked to participate in the present study. Of these 142 children and their families, 133 subjects gave informed consent to participate. Children who received medication for ADHD ($n = 5$) were not excluded from the study. Dosage of medication was kept constant during the study; as a constant dosage of medication for ADHD was considered unlikely to confound treatment effects.

Participants were randomly assigned in sequences of 6 to either group or individual treatment. Sixty-two children (36 boys and 26 girls) participated in the group treatment, and 71 children (38 boys and 33 girls) were individually treated. The primary diagnoses of the children were SAD ($n = 53$), GAD ($n = 39$), SOP ($n = 22$) or SP ($n = 19$). The social economic status (SES) was low for 19 children, medium for 61 children and high for 53 children (Central Bureau of Statistics Netherlands, 2001).

Nine children dropped out of treatment, which resulted in a sample of 124 children, the sample of treatment completers. Children who completed treatment and children who

dropped out of treatment did not differ in the number of pretreatment disorders ($t(131) = 0.57, p = ns$). Two times two groups were composed; (1) a group of children with a primary anxiety disorder and no comorbid disorders (Anx; $n = 55$) and a group of children with one or more comorbid disorders (AnxCom; $n = 69$), (2) a group of children with primarily one or more anxiety disorders (Anx-s; $n = 102$) and a group of children with primarily an anxiety disorder, possible comorbid anxiety disorders and a comorbid disorder other than anxiety (AnxOther; $n = 22$). There were no significant differences between these groups with regard to SES, age, gender or primary diagnosis. All results are based on the sample of children who completed the treatment unless otherwise specified. Demographic data for the children who completed treatment are presented in Table 5.1.

Table 5.1
Demographic Data on Diagnostic Groups

Variable		Total Comorbidity		Other Comorbidity	
Comorbid Groups		Anx ($n = 55$)	AnxCom ($n = 69$)	Anx-s ($n = 102$)	Anx-Other ($n = 22$)
Gender					
	Male	26	42	56	12
	Female	29	27	46	10
Age	Mean (years)	10.06	10.07	10.02	10.30
	SD	1.24	1.32	1.28	1.34
SES:	Low	8	11	15	4
	Middle	21	36	46	11
	High	26	22	41	7
Primary Diagnosis					
	SAD	21	29	39	11
	GAD	17	19	30	6
	SP	8	11	16	2
	SOP	9	10	17	3
Comorbid Diagnosis					
	SAD	-	8	5	3
	GAD	-	24	17	7
	SP	-	28	23	5
	SOP	-	9	4	5
	Agoraphobia	-	2	2	0
	ADHD	-	12	-	12
	ODD	-	6	-	6
	Depression	-	2	-	2
	Dysthymia	-	6	-	6

Note. Anx= single anxiety disorder, AnxCom= more than one disorder, Anx-s= one or more anxiety disorders, Anx-Other= one or more anxiety disorders and a co-occurring non-anxiety disorder. All group differences were nonsignificant at an alpha level of .05 (χ^2 and t-tests). SAD= Separation Anxiety Disorder, GAD= Generalized Anxiety Disorder, SP= Specific Phobia, SOP= Social Phobia, ADHD= Attention Deficit Hyperactivity Disorder, ODD= Oppositional Defiant Disorder.

PROCEDURE

Children and parents were interviewed with the ADIS-C/P and further assessed with the routine assessment procedure to confirm clinical diagnosis of the child. The routine procedure included at both sites at least one psychiatric consult, intelligence testing, and assessment of school and family functioning. Symptoms of anxiety and depression were assessed with the Multi-dimensional Anxiety Scale for Children (MASC; March, 1997) and the Children's Depression Inventory (CDI; Kovacs, 1992). Clinical case conferences were used to exclude possible diagnoses which are not addressed in the ADIS-C/P (i.e., Pervasive Developmental Disorder).

After the initial routine assessment verbal and written consent were obtained from the parents as well as children above age 11 and children were randomly assigned to individual or group CBT. Prior to the treatment parents and children were asked to complete additional questionnaires (see *Measures*). All children participating received a manual-based 10 session weekly cognitive behavioral treatment and their parents received 4 sessions of cognitive behavioral parent training (FRIENDS; Barrett & Turner, 2000). One week post-treatment children and parents were interviewed with the ADIS-C/P and post-treatment measures were administered to both children and parents. The present study is part of a larger study on a stepped-care model investigating the effect of an additional treatment protocol for nonresponders to a traditional CBT program. Follow-up data could be affected by this additional treatment and are therefore not presented.

MEASURES

Diagnostic Interview

The ADIS-C/P is a semi structured interview schedule and was administered to both parents and children pre- and post-treatment to obtain clinical information and derive DSM-IV diagnoses. The ADIS-C/P is a reliable instrument organized according to DSM-IV criteria and yields kappa coefficients for SAD, SOP, SP and GAD ranging from .62 to .92 for both the child and the parent interview (Silverman, Saavedra, & Pina, 2001). The ADIS-C/P has the strongest evidence when it comes to providing reliable and valid diagnoses and sensitivity to clinical change in treatment outcome research according to Silverman and Ollendick (2005). A Dutch translation of the ADIS-C/P was made in close consultation with the original authors and used in the present study (Siebelink & Treffers, 2001). Guidelines for adequate translation and cross-cultural adaptation were followed (Van Widenfelt, Treffers, De Beurs, Siebelink, & Koudijs, 2005).

Experienced clinicians or master level students administered the ADIS-C/P pretreatment. Clinicians of both institutions met several times to ensure that the procedures and decision-making were alike. Master level students were trained by observing live and videotaped

interviews and completed an exam to prove adequate administration of the interview. The training protocol and examination criteria can be obtained from the first or third author upon request. The authors reviewed, supervised and discussed the interview reports of the students during the conduct of the research project to ensure that administration, scoring and reporting would not drift.

Self-report Measures

Information on self-reported child anxiety, anxiety related and depressive symptoms were obtained by administering the Dutch versions of the MASC, NASSQ and CDI. The MASC is a general measure of anxiety and includes 39 items. The internal reliability of the total score (Cronbach's alpha of .87 for boys and .88 for girls) and the test-retest reliability (3 months) are excellent (intra class correlation coefficient of .87 for the total score for children) (March, Parker, Sullivan, Stallings, & Conners, 1997; March, Sullivan, & Parker, 1999). Utens and Ferdinand (2000) translated the MASC into Dutch. Reliability analyses of the Dutch version revealed a Cronbach's alpha of .93 ($N = 299$, age 8-12) and a test-retest correlation of .81 for a school based population ($n = 196$, age 8-12).

The CDI is a 27-item scale suited for monitoring changes in a child's mood (Kovacs, 1992). A Dutch version of the CDI (Koot & van Widenfelt, 2000) was used as a continuous measure of depressed mood in the present study. The CDI has good internal consistency (alphas ranging from .71 (outpatient group) to .89) and acceptable test-retest reliability (correlation of .75). The Dutch translation showed good psychometric properties, the Cronbach's alpha was .82 for elementary school children ($N = 649$, age 8-12).

The Negative Affectivity Self-Statements Questionnaire (NASSQ; Ronan, Kendall, & Rowe, 1994) was included in order to assess not only children's experience of anxiety symptoms, but also cognitive structures related to anxiety. The NASSQ is a questionnaire developed to assess self-statements with regard to anxious and depressive inner speech, which is thought to represent the contents of cognitive structures. Data on the Dutch version (Van Widenfelt, Goedhart, Brandsma, Ronan, & Treffers, 2005) were collected from 562 children and adolescents from a school-based sample, of which 271 (48.2%) were boys. The age range of the sample was 9 to 17 years of age (mean = 12.9; SD = 2.3). Factor analysis on the 70 items yielded four factors, similar to the original NASSQ; physiological hyperactivity (NASSQ-Ph), referring to anxious arousal, anhedonic depressive (NASSQ-Dep), negative affect (NASSQ-NA), and positive affect (NASSQ-PA) self-statements. Reliability coefficients for the factors ranged from .81 (anxious arousal) to .87 (positive affect). For the present study a shortened version (30 items) was used, reliability coefficients for the four subscales ranged from .66 (anxious arousal) to .83 (positive affect) in the norm population and from .67 (anxious arousal) to .90 (negative affect) in the clinical population of the present study.

Parent-report Measures

The Child Behavior Checklist (CBCL) is a well-known and researched 113 item scale that assesses child behavior problems by parents (Achenbach & Rescorla, 2001). Verhulst, Van der Ende and Koot (1996) translated the CBCL into Dutch and collected norm data on 1,422 clinically referred children. This resulted in a standardized questionnaire with sound psychometric properties for the scales 'total behavior problems', 'externalizing problems' and 'internalizing problems'. Cronbachs alpha's ranged for the above-mentioned scales for the clinical norm group from .72 to .87. For the analyses in the present study the internalizing problem scale (CBCL-Int) and the externalizing problem scale (CBCL-Ext) will be used.

Treatment

Children were treated with the Dutch translation of the FRIENDS program (Barrett & Turner, 2000; Utens, de Nijs, & Ferdinand, 2001). Results from previous research indicate that FRIENDS is an effective treatment for childhood anxiety disorders (Shortt, Barrett, & Fox, 2001). The FRIENDS program is based on the Coping Cat workbook (Kendall, Kane, Howard, & Siqueland, 1990). FRIENDS is a manualized treatment and based on a theoretical framework with three main target areas for change: physical symptoms, cognitive processes and coping skills. Children are taught coping techniques such as relaxation and breathing exercises to learn to cope with physical symptoms of anxiety. Children are also taught to challenge negative cognitions, irrational beliefs and negative self-talk by changing them into helpful cognitions, realistic beliefs and positive self-talk. Increased awareness of avoidant strategies is stimulated, as well as the development of problem solving skills and coping skills. In the second half of the therapy, gradual exposure to the feared stimulus and underlying fears is more prominent. Attempts to cope are positively rewarded.

Children were assigned to either individual or group CBT by sequential randomization. Previous analyses showed that there are no significant differences in outcome (free of any anxiety disorders at post treatment) between individual and group treatment ($\chi^2 (1, 124) = 0.55, p = .46$) (Liber et al., 2008).

Treatment integrity.

Adherence was checked as part of the treatment integrity measures. All therapy sessions were videotaped; a random selection of 30% of the tapes of individual sessions and all tapes of the group sessions were checked for adherence. Each session contained 6-12 therapeutic activities, coders watched entire therapy sessions and then rated how well the therapist met the aims of each activity on a four point Likert-scale ranging from 1 (extremely well) to 4 (not at all). Scores were recoded into 'met' (1) and 'not met' (0) in order to calculate the percentage of adherence to the treatment protocol. Results indicated that therapists adhered satisfactorily to the treatment protocol (94% of the child sessions and 85% of the parent sessions were provided as intended). Adherence rates for the child sessions were higher compared to

the adherence rates for the parent sessions ($t(117) = 6.83, p < .01$). Twenty-three therapists conducted the therapy sessions; six were doctoral students and 17 were licensed psychologists. The three diagnostic groups did not differ with regard to adherence to the treatment protocol ($F(2, 116) = 1.34, p = ns$). Therapists at each institute met regularly to discuss the treatment and were supervised by two experienced licensed cognitive behavioral therapists. Every three to four months the therapists of the two institutions met to prevent therapist drift between institutions.

Data Analytic Strategy

Statistical analyses.

Regression methods have been recommended for use with clinical trials and related studies as robust methods that can be designed to address a broad diversity of specific questions arising from the study design (Vickers, 2005) and therefore employed in all analyses. Prediction models with recovery as outcome measure are conducted using logistic regression, prediction models with change as outcome measure are performed using multiple regression. Regression analyses are performed with backward selection. All analyses were rerun including interaction-terms to explore interaction-effects of comorbidity and severity. Predictors included in the analyses are comorbidity status (both total and other comorbidity) and our composite measure for severity.

Recovery and Reliable Change.

Recovery was determined by post-treatment diagnostic status (presence (1) or absence (0) of any anxiety disorder) as assessed with the ADIS-C/P and by Clinically Significant Change Indices (CS-index). Change was determined by Reliable Change-scores (RC-scores). References to treatment success based on diagnostic status will from here on indicate that children were free of any anxiety disorder at post-treatment according to the overall ADIS-C/P severity rating. The CS-index was computed from the pre- and post-treatment scores on the CBCL-Int and the MASC (see Hageman & Arrindell, 1999). RC-scores were computed for the CBCL-Int and Ext, the MASC, CDI and NASSQ-scales. For questionnaire measures, individual reliable change and clinically significant change are the methods of choice to describe pre to post-treatment change since comparing pre and post-treatment scores cannot indicate whether clinical significant change was obtained (Wise, 2004). RC-scores were used because they represent the most precise estimation of the true pre-post differences and are a more conservative approach than using the observed difference score (for a detailed description see Liber et al., in press). Negative RC-scores reflect a reliable reduction in symptoms.

The RC-score can be transformed into three categories (RC_{IND} index): (a) improved ($RC\text{-score} < -1.65$); (b) not reliably changed ($-1.65 \leq RC\text{-score} \leq 1.65$); and (c) deteriorated ($RC\text{-score} > 1.65$). A client whose RC-score indicates improvement and whose post-score on the outcome mea-

sure is passing the cutoff for 'normal' functioning, is considered to have 'recovered' or to show a clinically significant change. In the present study, the CS-index is a dichotomy of 'recovered' versus 'not/ partially recovered'. To determine which clients have reliably passed the cutoff for 'normal functioning', the CS_{INDIV} -score was computed (using cutoff type c; see Hageman & Arrindell). A CS_{INDIV} -score < -1.65 is used to conclude that the individual client has passed the cutoff for 'normal' functioning. With all outcome measures used in this study a lower score indicates more 'normal' functioning.

The CS indexes from fathers and mothers were combined: if the pre- and post-treatment CBCL-Int scores of either parent resulted in a CS index of 'recovered', the outcome was considered successful (coded as 1) unless the RC-score of the other parent was >1.65 ('deteriorated') (coded as 0). The CS of the CBCL Int scores for mothers and fathers showed a correlation of .67 ($p < .001$). SPSS Version 14.01 was used for the statistical analyses.

RESULTS

Pre-treatment Comparisons

Multiple regression analyses were conducted with pretreatment symptoms as dependent variables and the two kinds of comorbidity as independent variables, to explore whether comorbidity accounts for variance in pretreatment symptoms. As seen in Table 5.2, the children in the other comorbidity group showed significantly higher levels of pretreatment symptoms on most measures. Other comorbidity accounted for 4% of the variance in parent-reported internalizing symptoms and for 11- 15% of the variance in parent-reported externalizing symptoms, self-reported pretreatment depressive symptoms (CDI) and depressive, positive affectivity and negative affectivity self-statements (NASSQ-dep, NASSQ-PA and NASSQ-NA). Variance in MASC and NASSQ-Ph scores was not accounted for by other comorbidity. Total comorbidity did not account for variance on any of the measures. Biserial correlation coefficients revealed small to moderate correlation coefficients between severity and total and other comorbidity ($r_b = .20$, $r_b = .37$ respectively).

Comorbidity and Severity as Predictors for Recovery

Logistic regression analyses showed that recovery on the MASC was significantly predicted for by other comorbidity (see Table 5.3). Both severity and other comorbidity contributed to the prediction of recovery with the ADIS-C/P. Recovery on the CBCL-Int was significantly predicted by the composite severity score. All analyses were rerun including interaction-terms between severity and comorbidity. None of the models improved significantly by including interaction terms. As shown in Table 5.3, recovery on the MASC was far less probable for children with other comorbidity (children without other comorbidity showed a likelihood of recovery of about 3 times higher) and the probability of recovery on CBCL-Int was lower

Table 5.2.
Pretreatment Symptoms Accounted for by Total and Other Comorbidity

		Comorbidity Status				β	$p <$	%V
		<i>Absent</i>		<i>Present</i>				
		Mean	SD	Mean	SD			
Pretreatment MASC								
	Total Comorbidity	49.91	16.13	52.53	19.82	-.03	<i>ns</i>	-
	Other Comorbidity	50.39	18.01	55.76	19.12	.10	<i>ns</i>	-
Pretreatment CBCL-Int								
	Total Comorbidity	16.97	7.99	19.83	8.16	-.08	<i>ns</i>	-
	Other Comorbidity	17.56	8.25	23.18	6.04	.23	.05	4%
Pretreatment CBCL-Ext								
	Total Comorbidity	9.11	5.55	12.09	8.29	-.04	<i>ns</i>	-
	Other Comorbidity	9.39	6.10	17.16	9.14	.39	.001	13%
Pretreatment CDI								
	Total Comorbidity	8.92	5.89	9.76	8.02	.15	<i>ns</i>	-
	Other Comorbidity	8.00	5.84	15.58	9.01	.48	.001	18%
Pretreatment NASSQ-Dep								
	Total Comorbidity	7.11	2.55	8.32	3.68	-.04	<i>ns</i>	-
	Other Comorbidity	7.22	2.54	10.41	4.79	.36	.001	11%
Pretreatment NASSQ-NA								
	Total Comorbidity	15.28	4.27	19.07	8.99	-.10	<i>ns</i>	-
	Other Comorbidity	15.95	5.51	23.91	11.25	.37	.001	11%
Pretreatment NASSQ-PA								
	Total Comorbidity	21.25	5.61	20.83	6.04	-.05	<i>ns</i>	-
	Other Comorbidity	21.53	5.75	18.37	5.65	-.22	.05	11%
Pretreatment NASSQ-PH								
	Total Comorbidity	8.15	2.55	9.41	3.24	-.15	<i>ns</i>	-
	Other Comorbidity	8.55	2.76	10.23	3.74	.15	<i>ns</i>	-

Note. MASC = Multidimensional Anxiety Scale for Children; CBCL- Int = Child Behavior Checklist Internalizing Scale; CBCL Ext = Child Behavior Checklist Externalizing Scale, CDI = Children's Depression Inventory, NASSQ= Negative Affectivity Self-Statement Questionnaire, Dep= Depression, NA= Negative Affect, PA = Positive Affect, PH = physiological hyperarousal; %V = percentage explained variance. Other comorbidity: Anx-s = 0, AnxOther = 1; Total comorbidity: AnxCom = 0, Anx = 1.

Table 5.3.
Logistic Regression Analyses

	B	SE(B)	Wald	df	Exp(B) (95% CI)
MASC ¹					
Other Comorbidity	-1.30	0.59	4.82*	1	0.28 (0.09-0.87)
CBCL-Int ²					
Severity	-1.16	0.39	8.73**	1	0.32 (0.15- 0.68)
ADIS-C/P ³					
Other Comorbidity	-1.63	0.67	5.95*	1	0.20 (0.05- 0.73)
Severity	0.73	0.28	7.05**	1	2.08 (1.21- 3.58)

Note. Superscript¹: Nagelkerke $R^2 = .06$, Cox and Snell $R^2 = .05$, Hosmer and Lemeshow = .00 (perfect fit), superscript²: Nagelkerke $R^2 = .14$, Cox and Snell $R^2 = .08$, Hosmer and Lemeshow = 5.70, $p = ns$, superscript³: Nagelkerke $R^2 = .20$, Cox and Snell $R^2 = .15$, Hosmer and Lemeshow = 11.54, $p = ns$. ADIS, MASC and CBCL recovery = 1, no recovery = 0. Other comorbidity; present = 1, absent = 0

for children with higher levels of severity. Recovery on the ADIS-C/P was less probable for children with other comorbidity and those with higher levels of severity. Total comorbidity did not account for variance on any of the outcome measures.

Comorbidity and Severity as Predictors for Reliable Change

Multiple regression analyses with backward selection showed a predictive value for the composite severity score and other comorbidity for Reliable Change in self-reported anxiety symptoms (MASC, see Table 5.4). The negative beta-value of the composite severity score indicate more improvement (e.g. negative RC values) for children with higher levels of severity, the positive value of other comorbidity indicates less improvement for children with other comorbidity present. Reliable Change in self-reported depressive symptoms (CDI) was significantly accounted for by total comorbidity (8%) as well as other comorbidity (16%). As the signs of the beta-values differed, we performed an ANOVA with composite comorbidity (no comorbidity, anxiety-comorbidity and other-comorbidity) as independent variables. Bonferroni post-hoc analyses showed less improvement in self-reported depressive symptoms for anxiety-only comorbidity compared with no-comorbidity ($p < 0.01$) and with other-comorbidity ($p < 0.001$). Reliable Change in negative affectivity (NASSQ-NA) was significantly accounted for by other comorbidity: children with other comorbidity present showed more improvement. Total comorbidity, other comorbidity and severity did not account for any variance in Reliable Change in parent-reported internalizing and externalizing symptoms, or children's depressive, positive affectivity and physiological-hyperarousal self-statements. All analyses were rerun including interaction-terms between severity and other and total comorbidity. None of the models improved significantly by including interaction terms.

Table 5.4.
Regression Analyses Predicting Reliable Change

Outcome	Mean Process Variables				
	<i>B</i>	<i>p</i> <	<i>R</i> ²	<i>P</i> <	Var
RC-score MASC			.08	.05	
Other Comorbidity	0.22	.05			5%
Severity	-0.24	.05			6%
RC-score CDI			.15	.001	
Other Comorbidity	-0.40	.0001			16%
Total Comorbidity	-0.29	.005			8%
RC-score NASSQ-NA			.04	.05	
Other Comorbidity	-0.20	.05			4%

Note. MASC = Multidimensional Anxiety Scale for Children; CDI = Children's Depression Inventory, NASSQ= Negative Affectivity Self-Statement Questionnaire, NA= Negative Affect. Other comorbidity: Total comorbidity: Present = 1, Absent = 0.

DISCUSSION

The main purpose of this study was to investigate the predictive value of comorbidity and severity for treatment outcome using a short-term CBT protocol for anxiety disorders. The prediction of treatment recovery and Reliable Change in anxiety was examined with severity and two kinds of comorbidity reflecting the quantity (total comorbidity) and the quality (other comorbidity) of co-occurring disorders. Total comorbidity differentiates between anxiety disordered children with or without a co-occurring disorder. Other comorbidity differentiates between anxious children with or without a comorbid disorder other than anxiety.

In general, recovery appears less likely when children suffer from a comorbid disorder other than anxiety. These results were consistent across child and clinician information. In addition, children with more severe pretreatment symptoms also appeared less likely to have recovered at post-treatment, as reported by parents and clinicians. With regard to Reliable Change the data suggest that less change in self-reported anxiety is reported by children with a comorbid disorder other than anxiety and less change in depressive symptoms is reported by children with more than one anxiety disorder.

Our findings are in contrast with those of previous studies in which no impact of comorbidity on treatment outcome (e.g. absence of anxiety disorders at post-treatment) for anxiety disordered children was found (i.e., Flannery-Schroeder, Suveg, Safford, Kendall, & Webb, 2004; Kendall, Brady, & Verduin, 2001; Rapee, 2003). The studies by Kendall et al. (2001) and Flannery-Schroeder et al. (2004) included in the 'other comorbidity' group anxious children with comorbid externalizing disorders only and used a somewhat different statistical approach. As did Rapee (2003) we included in the comorbid group not only anxious children with externalizing disorders but also anxious children with mood disorders in order to obtain sufficient power. In our study, with a more refined definition of treatment outcome and inclusion of a composite measure reflecting severity, we did find an impact of comorbidity on treatment outcome.

Implications

The results from the present study indicated that some of the pretreatment variance in symptom severity is accounted for by a comorbid condition other than anxiety. These findings suggest that children with co-occurring non-anxiety disorders appear in need of a greater decrease in symptoms to recover from treatment. Importantly, it appeared not as much the quantity of comorbid conditions but the quality of the comorbid condition that predicted a less favorable treatment outcome. In general, the presence of co-occurring disorders such as ADHD and Dysthymia did appear to hinder recovery independently from the negative impact of symptom severity. Our results suggest that treatment of anxiety disorders might be effective regardless the number of anxiety disorders children suffer from, as anxiety disorders share common causal or maintaining factors. Treatment strategies may impact these common

factors thereby reducing symptoms of all anxiety disorder and not only the primary anxiety disorder. Alternatively, it could be argued that the co-occurrence of anxiety disorders is common and that it might be reflective of a problematic nosology. The high rate of comorbidity for childhood anxiety disorders may partly be explained by insufficient diagnostic validity (Angold, Costello, & Erkanli, 1999; Ferdinand, Van Lang, Ormel, & Verhulst, 2006).

Several explanations can be given for the negative impact of co-occurring disorders other than anxiety on treatment outcome. First, the underlying causal factors for anxiety and co-occurring disorders appear different, but the causal factor maintaining the co-occurring disorder may interfere with the effectivity of the treatment of anxiety symptoms. For instance, attention deficit hyperactivity could interfere with children's ability to learn the requisite skills for anxiety management (Rapee, 2000). And reduced activity levels and motivation may create a barrier to practicing and generalizing new skills in case children suffer from a comorbid mood disorder.

Given the need for a greater symptom reduction in children with a comorbid disorder other than anxiety, knowledge on what might contribute to a greater change appears vital. One question often brought forward in the case of comorbidity and justified by our findings is which disorder should be treated first. In answering that question clinicians should not only take the current impairment and suffering of anxiety into account, but also a strategic decision as to whether one treatment ingredient might obstruct the effectiveness of a second ingredient. A solution to this complicated dilemma can be to offer children a combined, modular or prescriptive treatment; a treatment including strategies targeting anxiety as well as strategies targeting comorbid problems. Such treatment strategies can prevent children being obliged to attend one treatment protocol after the other, or spend many hours a week attending various treatment protocols. A pilot study evaluating a modular treatment for anxious children aged 7 to 13 in which a standardized and manualized treatment was tailored to children's individual needs showed all children to be free of their diagnoses (e.g., including anxiety and comorbid depressive disorders) at post-treatment and six out of seven at 6 months follow-up (Chorpita, Taylor, Francis, Moffitt, & Austin, 2004). One of the major points made in the latter study was that addressing comorbid symptoms may result in enhanced outcomes. Our findings suggest there might also be a positive spin-off of the treatment of anxiety disorders leading to a decrease in co-occurring depressive symptoms. In the present study greater change in depressive symptoms and negative affectivity was associated with other comorbidity. Similarly, the findings of a recent treatment outcome study indicated greater decreases in depressive scores in depressed adolescents with comorbid anxiety disorders, importantly these children reported significantly higher depression scores at intake (Rohde, Clarke, Lewinsohn, Seeley, & Kaufman, 2001). We did not find any effects of comorbidity or severity on externalizing symptoms. It might be that the effects of CBT for internalizing disorders can generalize to depressive symptoms, but that the presence of Depression or Dysthymia in itself interferes with anxiety treatment. Conversely, comorbid-

ity with other disorders did not appear to result in greater or less change in externalizing symptoms in anxious children. Likewise, a recent study evaluated the effectiveness of an intervention that targeted anxiety disorders and comorbid aggression (Levy, Hunt, & Heriot, 2007). Children ($n = 69$, age 8 to 14) were treated with either a fixed regular CBT program for anxiety or a fixed CBT intervention targeting both anxiety and comorbid aggression. Levy et al. (2007) expected that although treatment strategies that target anxiety might also reduce externalizing problem behavior, the effect would not be as large as if the externalizing problem behavior would be directly targeted. Both programs led to significant reductions in externalizing and internalizing parent reported problem behavior, the combined treatment program did not show a higher effectiveness. There are two limitations to the study by Levy et al; first, it was underpowered to detect small to moderate effect-sizes. Furthermore, contrasting explanations can be given for these findings; first, one could argue that the pre- to posttreatment changes in externalizing symptoms were not different due to the effectivity of the ingredients in the CBT intervention targeting anxiety, secondly, one could argue that pre- to posttreatment reductions were not different as the ingredients in the CBT intervention targeting comorbid aggression were not effective. This illustrates that with regard to the treatment of comorbid disorders and co-occurring symptoms our knowledge and understanding is still in need of enrichment.

CONCLUSION

Our main aim in conducting the present study was to address the clinical question of whether comorbidity and severity could predict treatment outcome. Briefly spoken: comorbidity with disorders other than anxiety and severity were associated with less favorable outcomes but the quantity of disorders was not. Anxious children with a co-occurring disorder other than anxiety were less likely to recover after a short-term CBT protocol aimed at reducing anxiety. Conversely, decreases in co-occurring depressive symptoms were found for the same group of children. We think that the current results underline the importance of addressing comorbid conditions in the treatment of anxiety disorders. Children with comorbid conditions other than anxiety are without doubt in need of more change. Offering anxious children with co-occurring non-anxiety disorders an extended treatment protocol to achieve such additional change is one option worthy of investigation.

Strengths and Limitations

Though the sample size in the present study is quite large, it was designed to investigate main effects and not designed for interaction effects. An adequate test of an interaction requires an even larger sample size than for detecting a simple main effect (Shoham-Salomon & Han-

nah, 1991). These considerations point at the need for an adequately powered trial testing the mechanisms through which comorbidity might interact with treatment.

For the present study, children with comorbid conditions other than anxiety were treated as one group, whereas the investigation of children with comorbid externalizing disorders versus comorbid affective disorders could have proven more fruitful. As only 17% of the children showed a comorbid disorder other than anxiety, the power did not permit a further splitting of this group. A further limitation of the present study is that we only assessed at post-treatment the presence or absence of anxiety disorders, and not the absence or presence of affective or externalizing disorders. This information could have given further insight in the impact of comorbidity on the treatment process, as Kendall et al. (2001) found that children with continued presence of comorbidity were less likely to recover from their primary pre-treatment diagnosis. Additionally, five children were on a consistent dose of medication for ADHD, it is unknown whether the negative impact of comorbid conditions would have been stronger if children had not been medicated for ADHD. However, it was deemed unethical to withhold medication from children with ADHD for study purposes. Furthermore, results are applicable and can be generalized to children with a primary diagnosis of either Separation Anxiety Disorder, Generalized Anxiety Disorder, Specific Phobia or Social Phobia.

Important assets of the present study are the multi-informant perspective on treatment outcome, assessment of changes not only in anxiety but also in anxiety-related and comorbid symptoms, use of a clinically meaningful method to define treatment recovery and computation of reliable pre to post-treatment changes.

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6

Examining the relation between the therapeutic alliance, treatment adherence, and outcome of cognitive behavioral treatment for children with anxiety disorders

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ABSTRACT

Little is known about the contribution of technical and relational factors to child outcomes in Cognitive Behavioral Therapy (CBT) for children with anxiety disorders. This study investigated the association between treatment adherence, the child-therapist alliance, and child clinical outcomes in manual-based individual- and group-based CBT for youths with anxiety disorders. Trained observers rated tapes of therapy sessions for treatment adherence and child-therapist alliance in a sample of 52 children (aged 8 to 12) diagnosed with anxiety disorders. Self-reported child-anxiety was assessed at pre-, mid-, and post-treatment, parent-reported child internalizing symptoms was assessed at pre- and post-treatment. The results showed high levels of treatment adherence and child-therapist alliance in both CBT programs. Our findings also revealed a relation between child-therapist alliance and reliable change in child-reported anxiety symptoms. Implications of these findings for expanding our understanding of how treatment processes relate to child outcome in CBT for children with anxiety disorders are discussed.

Key words: Therapeutic alliance, treatment adherence, child anxiety disorders, cognitive-behavioral therapy.

EXAMINING THE RELATION BETWEEN THE THERAPEUTIC ALLIANCE, TREATMENT ADHERENCE, AND OUTCOME OF COGNITIVE BEHAVIORAL TREATMENT FOR CHILDREN WITH ANXIETY DISORDERS

Reviews of the child and adolescent psychotherapy literature consistently identify cognitive-behavioral treatment (CBT) as an efficacious intervention for youths with anxiety disorders (see Ollendick & King, 1998; Ollendick & King, 2000). Despite evidence in support of the efficacy of CBT for youths with anxiety, 20 to 60% of children continue to meet criteria for an anxiety disorder after receiving a full course of CBT (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; In-Albon & Schneider, 2007). Identifying ways to optimize the delivery of CBT for youths with anxiety and improve the response rate therefore represent important goals for the field. Though treatment processes, such as the therapeutic alliance, are hypothesized to help promote positive child outcomes, little is known about the role such processes play in CBT for children with anxiety disorders (Chu et al., 2004; Kendall & Ollendick, 2004). This represents an important gap in the field. The goal of the present paper is to address this knowledge gap by evaluating the contribution of the therapeutic alliance and treatment adherence to outcome in CBT for children with anxiety disorders.

The child-therapist alliance (herein referred to as the child alliance) is considered an important relational factor in child psychotherapy (Shirk & Karver, 2003). Defined as the therapist's ability to develop a warm relationship and engage the child in the therapeutic process (McLeod & Weisz, 2005). A strong child alliance is believed to be important for child outcomes by helping to maximize child participation in treatment (McLeod & Weisz, 2005; Shirk & Saiz, 1992).

A strong child alliance is believed to also help promote positive outcomes in CBT for youths with anxiety (Chu et al., 2004). There are at least two ways in which the child alliance might help produce positive outcomes in CBT for youths with anxiety. First, a strong alliance may help maximize child involvement in the skill-building components of CBT that depend upon child participation for success (Chu & Kendall, 2004). Second, a child-therapist relationship marked by trust may help children more fully participate in emotionally demanding exposure tasks (Kendall & Ollendick, 2004). A strong child alliance is therefore considered to play a facilitative role in CBT for youths with anxiety disorders.

However, though the child alliance is posited to be instrumental in promoting change in CBT for children with anxiety disorders, a conclusive link between child alliance and outcome has not been established. To date, only two studies have examined the alliance-association in CBT for children with anxiety disorders and neither study found a significant alliance-outcome association (Kendall, 1994; Kendall et al. 1997). Though some authors have stated that limited variability in the alliance ratings may explain the null findings (see Chu et al. 2004 for a discussion), no empirical evidence exists linking alliance to child outcomes in CBT for youths with anxiety. As a result, the question of whether the child alliance is associated

with clinical outcomes in CBT for youths with anxiety disorders remains open. A goal of the present study is to address this gap.

Therapeutic interventions are also considered critical change agents in CBT for children with anxiety disorders (Shadish & Sweeney, 1991). If the technical aspects of CBT do represent change agents, then the level of therapist adherence to the treatment protocol should predict youth outcomes. Adherence checks can be used to assess for variability in the treatment variable (e.g. treatment dosage), thus creating the means to examine intervention-outcome relations (Doss & Atkins, 2006). Higher dosages of therapeutic interventions are expected to result in improved treatment outcomes (Doss & Atkins, 2006). However, to the best of our knowledge, no study has evaluated the relation between treatment adherence and child outcomes in CBT for youths with anxiety. In the present study, we evaluate the relation between therapist adherence and child clinical outcomes in CBT for children with anxiety disorders.

Evaluating technical and relational elements at the same times provides the opportunity to address an important issue in the field. Some clinicians assert that the use of manualized treatments negatively affect the client-therapist alliance (Addis, Wade, & Hatgis, 1999; Strupp & Anderson, 1997). However, this assertion has not received empirical support in adult psychotherapy. For example, Loeb and colleagues (2005) reported a positive relation between alliance and treatment adherence in manualized treatments for adult bulimia, suggesting that adhering to a treatment manual does not negatively influence the therapeutic alliance. However, this hypothesis has not been subjected to empirical scrutiny in the child field. We therefore evaluated the relation between adherence and alliance in CBT for youths with anxiety.

A few methodological features are particularly important when assessing process-outcome associations. First, establishing the temporal precedence of process variables is important (Feeley, DeRubeis, & Gelfand, 1999). A unique feature of the present study is that treatment processes and treatment outcomes were assessed multiple times throughout treatment allowing for the examination of the direction of effects linking process and outcome variables. Second, since child- and parent-report of process variables may be subject to demand characteristics, it is important to utilize independent evaluators' ratings of actual therapy sessions (McLeod & Weisz, 2005; Shirk & Karver, 2003). Thus, in the present study we used observer-rated measures of child alliance and treatment adherence. Employing these methodological features can enhance the interpretability of findings, and advance knowledge regarding the role of treatment processes in CBT for child anxiety.

The present study aimed to examine the relative contribution of relational and technical aspects of treatment to outcome in CBT for child anxiety. To achieve this goal, treatment adherence and child alliance were assessed in a sample of 52 children diagnosed with anxiety disorders who received CBT in a randomized controlled trial. We hypothesized that a strong alliance and high treatment adherence would predict improved outcomes.

METHODS

Source

A randomized multisite trial was conducted at two university-based centers in the Netherlands comparing group-based CBT (GCBT) and individual CBT (ICBT) for childhood anxiety disorders. One-hundred thirty-three children (aged 8-12) were randomly assigned in blocks of six to GCBT ($n = 62$) or ICBT ($n = 65$); six children could not be randomized and were excluded. Treatment lasted 14 weeks and consisted of 14 sessions (10 child, 4 parent). Exclusion criteria included an IQ below 85, Psychosis, Obsessive Compulsive Disorder, Post-Traumatic Stress Disorder, or current medication for anxiety. Among treatment completers, 45.2% (GCBT 39%, $n = 23$; ICBT 51%, $n = 33$) were free of any anxiety disorder at post-treatment, and 58.9% (GCBT 53%, $n = 31$; ICBT 65%, $n = 42$) were free of their primary anxiety disorder at post-treatment. No differences in post-treatment status or outcomes between ICBT and GCBT were found (Liber et al., 2008). A full description of the study design and findings are reported elsewhere (see Liber et al., 2008; Liber et al., in press).

Participants

Child participants. Participants were children with a primary diagnosis of Separation Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), Social Phobia (SOP), or Specific Phobia (SP). Of the 142 children invited to participate, 133 signed informed consent, and 124 completed treatment. Permission to videotape the sessions was obtained for 119 out of the 124 treatment completers, and a subset of these children ($n = 52$) was selected for the present study. The sample of 52 child participants (24 ICBT, 28 GCBT) met the following criteria: (a) had audible videotapes; (b) had two therapy sessions (see below for sampling procedure) coded for both child alliance and adherence; and (c) pre-, mid-, and post-treatment outcome data.

The 52 children (30 males, 22 females) averaged 10.22 years of age ($SD = 1.15$, range 8 to 12), were Dutch (Caucasian), with a current primary diagnosis of SAD ($n = 20$), GAD ($n = 15$), SOP ($n = 10$), and SP ($n = 7$). Of the 52 child participants, eight were diagnosed with at least one comorbid disorder other than anxiety (attention deficit hyperactivity disorder, $n = 6$; oppositional defiant disorder, $n = 2$; dysthymia, $n = 1$; major depressive disorder, $n = 1$). According to the criteria of the Central Bureau of Statistics Netherlands (2001), the socioeconomic status was low for six children, medium for 25 children, and high for 21 children.

Therapist participants. Therapists ($n = 16$) participating in this study were all Caucasian and female. Six children were treated by master-level students ($n = 5$), thirteen children were treated by licensed psychologists ($n = 6$) with 1 to 5 years experience, and 33 children were treated by licensed psychologists ($n = 5$) with over 5 years of clinical experience. Prior to the start of the study, all participating therapists met to discuss the protocol. Therapists met

weekly and were supervised by two licensed psychologists with experience in CBT. Therapists were naive to the cases selected for alliance and adherence coding.

Coders. The coding team consisted of six female master-level graduate students in clinical psychology. The coding team was trained and supervised by the first and fifth authors. Five coders participated in adherence coding, and four coders participated in alliance coding.

Treatments

Both GCBT and ICBT were guided by a treatment manual – the Dutch translation of the FRIENDS program (Barrett & Turner, 2000; Utens, de Nijs, & Ferdinand, 2001) – based upon the Coping Cat program (Kendall, Kane, Howard, & Siqueland, 1990). The FRIENDS program involves: (1) Teaching children to identify anxious feelings and physiological signs of anxiety; (2) Teaching children to identify their own anxiety-provoking cognitions; (3) Developing a plan to guide coping – a plan that involves changing the child's thoughts (into positive self-talk) and actions (into self-initiated exposures); and (4) Self-evaluation and self-reward. The therapist uses modeling (e.g., therapist sharing successful coping experiences), in vivo exposure tasks, role-playing (e.g., to prepare for exposure tasks), relaxation training, and contingent reinforcement (e.g., for trying and for succeeding at exposure tasks), in developing these themes.

The main difference between GCBT and ICBT was session length and format. Treatment duration was approximately 90 minutes in GCBT and approximately 60 minutes in ICBT. The treatment format differed; GCBT had two therapists and four to six children in each session, whereas ICBT condition had one therapist.

Assessment Procedure

Children completed assessments on four occasions: (a) Two pre-treatment assessments (time 0 = at least two weeks prior to start of the treatment, time 1 = start of the treatment); (b) A mid-treatment assessment one week after the fifth child session (time 2); and (c) Post-treatment assessment (time 3). Parent-report assessments were obtained at time 0 or 1 and time 3; child-report assessments were obtained at time 0 to 3. Assessments took approximately 30-90 minutes for children and parents separately. Upon treatment completion children received a gift coupon.

MEASURES

Clinical outcomes.

Children's DSM-IV disorders were assessed using the Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions (ADIS-C/P; Silverman & Albano, 1996), a semi-structured interview schedule with favorable psychometric properties (Silverman, Saavedra, & Pina,

2001). A Dutch translation of the ADIS-C/P (Siebelink & Treffers, 2001) was made in consultation with the first author (Silverman). The ADIS-C/P was administered to children and parents at times 0 and 3. Procedures for interviewer training are reported elsewhere (Liber, Van der Leeden, Sauter, & Treffers, 2007; Liber et al., in press).

Children completed the Multidimensional Anxiety Scale for Children (MASC; March, 1997; March, Sullivan, & Parker, 1999), a 39-item measure of self-reported child anxiety. A translation of the MASC by Utens and Ferdinand (2002) was used to generate Dutch normative data ($N = 299$, age 8-12). Reliability analyses revealed an excellent alpha ($\alpha = .93$) and good test-retest reliability ($r = .81$, $n = 196$, age 8-12). The MASC was administered at times 0-3. The total score of the MASC was used for analyses.

The Child Behavior Checklist (CBCL) consists of 113 items and is a parent-report measure that assesses a wide range of child emotional and behavior problems with sound psychometric properties (Achenbach & Rescorla, 2001). A Dutch translation of the CBCL was used for the present study (Verhulst, 2002). The CBCL Internalizing scale (CBCL-Int) was used for the present study. The CBCL was administered at times 0 or 1 and 3.

Therapy Process Measures

Therapeutic alliance.

The Therapy Process Observational Coding System for Child Psychotherapy – Alliance scale (TPOCS-A; McLeod, 2005; McLeod & Weisz, 2005), was translated into Dutch and used to measure the quality of the child alliance (see Liber et al., 2007). The TPOCS-A consists of items designed to assess affective elements of the child-therapist relationship (6 items), as well as child participation in therapeutic activities (3 items). The scoring strategy involves coders watching entire therapy sessions and then rating each item on a 6-point scale ranging from 0 (not at all) to 5 (a great deal). The TPOCS-A has demonstrated adequate psychometric properties in a previous study (see McLeod & Weisz, 2005), as has the Dutch version (see Liber et al., 2007).

Treatment adherence.

The Australian treatment adherence protocol for the FRIENDs treatment (Barrett, 1999) was translated into Dutch (see Utens, Liber, & Van der Leeden, 2002). The coding system was designed to assess the extent to which therapists delivered the therapeutic exercises prescribed in the treatment manual. Each session contained 6-12 therapeutic exercises, which represent CBT techniques (e.g., cognitive restructuring, relaxation exercises). An example of an activity was 'Practicing your Step plan', with the following aim 'to help participants practice the second step of their step plan in preparation for implementing the step outside the group/treatment environment'. Coders watched entire therapy sessions and then rated how well the therapist met the aims of each activity on a four point Likert-scale ranging from 1 (extremely well) to 4 (not at all).

Coding and Session Sampling Procedures

To ensure that coders were properly trained, and to minimize rater drift (Margolin et al., 1998), the following procedures were employed to generate scores on the alliance and adherence measures.

Coder training.

Coder training for the adherence measure consisted of reading the coding manual and related literature, practice coding, and attending weekly coder meetings. The coders coded 14 practice sessions that were consensus-coded by the first and fifth authors. Coder scores on these practice sessions were compared to those generated by the first and fifth authors. Independent coding commenced once coders obtained acceptable interrater agreement (Yules $Y \geq .55$; Spitznagel & Helzer, 1985).

Training for the TPOCS-A included reading the original and translated TPOCS-A coding manuals and reviewing relevant literature. During training, coders double coded tapes and discussed differences until consensus was reached. After sufficient interrater-reliability was obtained independent coding commenced (see Liber et al., 2007). Weekly meetings were held with both teams to monitor coding and prevent rater drift (see Margolin et al., 1998).

Sampling of therapy sessions.

For coding, taped therapy sessions were randomly sampled from the first (early) and second (late) half of treatment. When a tape was not available, the subsequent or preceding session was used. Alliance and adherence ratings were coded from the same therapy session; 104 sessions (52 early sessions: sampled sessions ranged from 1-4, Median = 3; 52 late sessions: sampled sessions ranged from 7-10, Median = 8) were coded.

Treatment Recovery and Reliable Change

Treatment recovery or failure was determined by post-treatment diagnostic status (presence (1) or absence (0) of any anxiety disorder) as assessed with the ADIS-C/P and by Clinically Significant Change Indices (CS-index). The CS-index and the Reliable Change-scores (RC-scores) were computed from the pre- and post-treatment scores on the CBCL-Int and the MASC (see Hageman & Arrindell, 1999a). For questionnaire measures, individual reliable change and clinically significant change are the methods of choice to describe pre to post-treatment change since comparing pre and post-treatment scores cannot indicate whether clinical significant change was obtained (Wise, 2004). RC-scores were used because they represent the most precise estimation of the true pre-post differences and are a more conservative approach than using the observed difference score (for a detailed description see Liber et al., in press). Negative RC-scores reflect a reliable reduction in symptoms.

The RC-score can be transformed into three categories (RC_{IND} index): (a) improved ($RC\text{-score} < -1.65$); (b) not reliably changed ($-1.65 \leq RC\text{-score} \leq 1.65$); and (c) deteriorated ($RC\text{-score} > 1.65$).

A client whose RC-score indicates improvement and whose post-score on the outcome measure is passing the cutoff for 'normal' functioning, is considered to have 'recovered' or to show a clinically significant change. In the present study, the CS-index is a dichotomy of 'recovered' versus 'not/ partially recovered'. To determine which clients have reliably passed the cutoff for 'normal functioning', the CS_{INDIV} -score was computed (using cutoff type c). A CS_{INDIV} -score < -1.65 is used to conclude that the individual client has passed the cutoff for 'normal' functioning. A lower score indicates more 'normal' functioning with all outcome measures used in this study.

The CS indexes from fathers and mothers were combined: if the pre- and post-treatment CBCL-Int scores of either parent resulted in a CS index of 'recovered', the outcome was considered successful unless the RC-score of the other parent was >1.65 ('deteriorated'). The CS of the CBCL Int scores for mothers and fathers showed a correlation of .67 ($p < .001$).

RESULTS

Data-analyses were conducted using a stepped approach. First, pretreatment comparisons were conducted in order to detect any biases prior to the analyses. Second, we assessed the psychometric properties of the child alliance and adherence measures. Third, associations between alliance and adherence were assessed. Fourth, prediction of treatment outcome was assessed using three different approaches: (a) Regression analyses with post-treatment scores as the dependent variable and pretreatment scores as a predictor in order to correct for symptom severity; (b) Logistic regression with treatment recovery on the ADIS-CP, MASC and CBCL as dependent variables; and (c) Regression analyses with Reliable Change in self-reported anxiety symptoms and parent-reported internalizing symptoms as dependent variables. For all three methods alliance, adherence and interactions with treatment format were entered as predictors. Lastly, directions of effects were assessed.

Pretreatment Comparisons

The present sample ($n = 52$) did not differ significantly from the original sample ($n = 133$) in demographic or clinical characteristics (e.g., age, gender, principal diagnosis, SES). In the original study, the ICBT and GCBT conditions did not differ in demographic or clinical characteristics; however, in the present study children in the GCBT condition were younger ($M = 9.80$, $SD = 1.07$; $M = 10.72$, $SD = 1.10$, for GCBT and ICBT, respectively), $t(50) = -3.07$, $p < .01$.¹

Psychometric Properties of the Therapy Process Measures

Interrater reliability for the Dutch version of the TPOCS-A was calculated using intraclass correlation coefficients (ICC; Shrout & Fleiss, 1979). Following Cicchetti (1994), ICCs below .40 reflect 'poor' agreement, ICCs from .40 to .59 reflect 'fair' agreement, ICCs from .60 to .74

reflect ‘good’ agreement, and ICCs .75 and higher reflect ‘excellent’ agreement. The interrater reliability indicated fair agreement, ranging from .42 to .59 ($M = .48$, $SD = .06$). Next, we assessed the internal consistency of the TPOCS-A. TPOCS-A scores were produced by totaling the mean item scores for each session and adding the item scores across the total, early, and late sessions. The internal consistency was acceptable for the total ($\alpha = .92$), early ($\alpha = .83$), and late ($\alpha = .81$) alliance scores. In sum, the psychometric properties of the Dutch version of the TPOCS-A were adequate.

Interrater reliability for the treatment adherence protocol was calculated using Yule’s Y , as this index is less sensitive to skewed distributions (Spitznagel & Helzer, 1985). The interpretation of Y is similar to kappa. The Y scores at the start of independent scoring ranged from .55 to .73 for the five coders ($M = .68$, $SD = .08$). For analyses, scores for each session activity were recoded, added together, and then divided by the number of session activities, which produced a score ranging from 0.00 to 3.00.

Associations between Alliance and Adherence

Correlations between child alliance and adherence were computed for each treatment stage (early, late) and each treatment group. Variance shared between the two variables ranged from .01 (GCBT) to .19 (ICBT) for the early sessions and from .03 (GCBT) to .20 (ICBT) for the late sessions. See Table 6.1. The correlation between late alliance and late adherence was significantly different between the ICBT and GCBT condition ($z = 2.26$, $p < .05$), and a trend was found for a significant difference with regard to the early alliance and adherence ($z = 1.85$, $p < .10$).

Table 6.1.
Correlations (and Shared Variance) Between Alliance and Adherence by Treatment Stage and Treatment Condition

		Early Adherence	Early Alliance
Early	Adherence	-	.44 [*] (.19) [!]
	Alliance	-.07 (.01) ⁶	-
		Late Adherence	Late Alliance
Late	Adherence	-	.45 [*] (.20) [!]
	Alliance	-.18 (.03) ⁶	-

Note. The correlation for GCBT is in the lower box and indicated by superscript ⁶; the correlation for ICBT is in the upper box and indicated by superscript [!]. Between parentheses= shared variance. * $p < .05$

Treatment Adherence and Alliance in ICBT and GCBT

To examine the levels of adherence and alliance across sessions we conducted two separate 2 X 2 (treatment by session) ANOVAs with repeated measures on session. The results for adherence were nonsignificant, $F(1, 50) = 1.81$, ns . The grand mean of adherence was 2.69 ($SD = 0.22$); the ICBT grand mean was 2.65 ($SD = 0.27$) and the GCBT grand mean was 2.73 ($SD =$

0.22). The results for the treatment by session repeated measures ANOVA was nonsignificant for alliance, $F(1, 50) = 3.26$, *ns*. The grand mean for alliance was 3.75 ($SD = 0.52$); the ICBT grand mean was 3.89 ($SD = 0.53$) and the GCBT grand mean was 3.63 ($SD = 0.50$). Together, these findings indicate that across both conditions alliance and treatment adherence were high.

Prediction of Treatment Outcome with Alliance and Adherence

We examined relations between the alliance and adherence ratings and outcome in a series of regression analyses (see Table 6.2). For each regression analysis, we first entered the mean alliance and adherence ratings, treatment format (GCBT vs. ICBT), and prescores on the outcome measure (to control for initial severity). In the second step, interaction effects were entered (treatment format X alliance; treatment format X adherence).

We found no significant relations between the alliance or adherence and child-report of anxiety (MASC time 3) and no interaction effects. We also found no significant relation between alliance or adherence and parent-reported internalizing symptoms (CBCL-Int time 3), and no significant interaction effects. Moreover, neither alliance nor treatment adherence accounted for a significant proportion of the variance in either outcome measure. See Table 6.2.

Table 6.2.
Regression Analyses Examining the Relation Between Child Alliance, Treatment Adherence and Child Outcomes

Mean Process Variables						
Outcome	β	$p <$	R^2	ΔR^2	$p <$	Var
MASC						
Step 1			.64	.64	$p < .001$	
MASC 1	0.82	$p < .001$				61%
Alliance	0.07	<i>ns</i>				0%
Adherence	-0.01	<i>ns</i>				0%
TF	-0.07	<i>ns</i>				0%
Step 2			.64	.00	<i>ns</i>	
Alliance x TF	0.08	<i>ns</i>				0%
Adherence x TF	0.15	<i>ns</i>				0%
CBCL						
Step 1			.52	.52	$p < .001$	
CBCL-Int 1	0.72	$p < .001$				52%
Alliance	-0.02	<i>ns</i>				0%
Adherence	0.00	<i>ns</i>				0%
TF	0.05	<i>ns</i>				0%
Step 2			.56	.04	<i>ns</i>	
Alliance x TF	-1.60	<i>ns</i>				3%
Adherence x TF	-0.60	<i>ns</i>				0%

Note. MASC = Multidimensional Anxiety Scale for Children; TF = Treatment Format; CBCL-Int = Child Behavior Checklist Internalizing Scale; DW = Durbin Watson; *ns* = non-significant.

Prediction of Treatment Recovery with Alliance and Adherence

We examined relations between the alliance and adherence and treatment recovery in a series of logistic regression analyses predicting outcome (see Table 6.3). For each regression analysis, we entered treatment format and the mean alliance and adherence ratings, and the treatment format X alliance and treatment format X adherence interaction. Neither alliance nor adherence predicted recovery on the MASC or CBCL-Int (see Table 6.3); the interaction effects were not significant for either adherence or alliance. Mean alliance and adherence did not predict recovery on the ADIS-C/P (see Table 6.3), but an interaction effect was significant. Children in ICBT who did not meet diagnostic criteria for any anxiety disorder at post-treatment had significantly higher alliance scores compared to children in GCBT who did not meet diagnostic criteria for any anxiety disorder at post-treatment, $F(3, 48) = 3.21$, $p < .05$.

Table 6.3.

Logistic Regression Mean Alliance, Adherence, and Child Outcomes

Predictors	OR	95% CI	GOF	df	p
Predictors of MASC Recovery			4.86	5	ns
MASC					
Constant	68.90				ns
Alliance	1.07	0.17- 6.88			ns
Adherence	0.14	0.00- 6.20			ns
TF	0.08	0.00- 2146781.00			ns
Alliance x TF	0.24	0.02- 3.14			ns
Adherence x TF	22.19	0.05- 10243.69			ns
Predictors of CBCL-Int Recovery			3.44	5	ns
CBCL-Int					
Constant	0.00				ns
Alliance	3.92	0.13- 115.58			ns
Adherence	29.63	0.03- 27458.76			ns
TF	50929937	0.00- 2,8E+019			ns
Alliance x TF	0.27	0.01- 14.12			ns
Adherence x TF	0.01	0.00- 77.54			ns
Predictors of ADIS-C/P Recovery			8.15	5	ns
ADIS-C/P					
Constant	2,930.10				ns
Alliance	0.10	0.01-1.29			ns
Adherence	1.40	0.03- 59.54			ns
TF	0.03	0.00- 2,601,609.30			ns
Alliance x TF	23.20	1.12- 481.66			$p < .05$
Adherence x TF	0.05	0.00- 25.45			ns

Note. MASC = Multidimensional Anxiety Scale for Children; TF = Treatment Format; CBCL-Int= Child Behavior Checklist Internalizing Scale; ADIS-C/P Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent Versions; ns = non-significant. GOF= Goodness of Fit; model χ^2 . It should be noted that recovery on the MASC and CBCL are indicated by 1 and failure by 0, recovery on the ADIS-C/P is indicated by 0 (absence of disorders) whereas failure is indicated by 1 (1 or more anxiety disorders).

Prediction of Reliable Change with Alliance and Adherence

Finally, alliance and adherence together with treatment format and the interaction variables were entered with the Reliable change score of the MASC and CBCL-Int as dependent variables. The resulting model showed a predictive value of alliance for Reliable Change MASC scores indicating that higher alliance was related to greater symptom change. Treatment format and the interaction variables did not improve the model (see Table 6.4). It should be noted that the overall model did not reach significance but showed a trend. The model was significant when alliance was entered as a single predictor, $F(1, 50) = 4.03, p = .05$. The model for the CBCL-Int was not significant.

Table 6.4.
Regression of Alliance and Adherence on Reliable Change

Outcome	Mean Process Variables					
	β	$p <$	R^2	ΔR^2	$p <$	Var
RC-score MASC						
Step 1			.15	.15	$p = .06$	9%
Alliance	0.32	$p < .05$				6%
Adherence	-0.26	<i>ns</i>				0%
TF	0.04	<i>ns</i>				
Step 2			.15	.01	<i>ns</i>	
Alliance x TF	1.36	<i>ns</i>				0%
Adherence x TF	-0.28	<i>ns</i>				1%
RC-score CBCL Int						
Step 1			.01	.01	<i>ns</i>	
Alliance	0.08	<i>ns</i>				0%
Adherence	-0.09	<i>ns</i>				1%
TF	-0.03	<i>ns</i>				0%
Step 2			.07	.06	<i>ns</i>	
Alliance x TF	-1.62	<i>ns</i>				4%
Adherence x TF	-1.64	<i>ns</i>				1%

Note. MASC = Multidimensional Anxiety Scale for Children; TF = Treatment Format; CBCL-Int = Child Behavior Checklist Internalizing Scale; *ns* = non-significant.

Direction of effects.

We evaluated the direction of effects linking child alliance and treatment adherence to outcome to test the hypothesis that symptom reduction translated into a stronger child alliance and/or increased treatment adherence. Change in outcome between pre and mid-treatment anxiety symptoms were entered in a model predicting late alliance. This variable did not add to the prediction of late alliance. Similar results were obtained for the prediction of late adherence; change in anxiety symptoms did not predict late adherence.

DISCUSSION

The primary aim of the present study was to examine the contribution of relational and technical factors to outcome in CBT for youths with anxiety. Our findings indicate that both the GCBT and ICBT conditions had high alliance ratings, which is consistent with findings from past randomized controlled trials evaluating CBT for youths with anxiety (Kendall, 1994; Kendall et al., 1997). We also found that treatment adherence was high across both conditions. A stronger early alliance was related to a better early treatment adherence in the ICBT condition, and a similar relation was found in the ICBT condition for late alliance and adherence. In the GCBT condition, these relations were not found. Our findings showed that children in the ICBT condition with a strong alliance were more likely to be diagnosis free at the end of treatment compared to children with a strong alliance in the GCBT condition. Altogether, these findings have clinical and empirical implications.

Our findings regarding the relation between child alliance and outcomes were mixed. We found that a stronger child alliance was associated with greater reliable change, an index that minimizes measurement error, in child-reported anxiety symptoms. These findings run counter to the two previous studies that found no significant relation between child alliance and outcome in CBT for youths with anxiety (see Kendall, 1994; Kendall et al. 1997). However, the magnitude of the alliance-outcome association in the present study ($r = .02$) is similar to past studies that found no significant alliance-outcome association in two clinical trials evaluating CBT for youths with anxiety ($r = .00$; Kendall, 1994; $r = .12$; Kendall et al., 1997; see Shirk & Karver, 2003).

Together, these findings suggest two possible interpretations. First, traditional measurement approaches may not detect the alliance-outcome relation which is dependent on the measurement of outcome. We used three outcome measures in the alliance-outcome analyses: (a) residual change scores (i.e. analyses with post-treatment scores as dependent variable and pretreatment scores as first predictor); (b) reliable change scores; and (c) clinical significant change index. The finding of no association between outcome and residual change scores may reflect the shortcomings of residual change scores. The use of residual change scores has been criticized as it often suffers from a considerable bias in the regression part due to measurement errors and the influence of atypical data points (Hageman & Arrindell, 1999). Second, the alliance-outcome relation may be weaker in CBT for youths with anxiety compared to treatments for other child behavioral and emotional problems. Past meta-analytic findings produced by Shirk and Karver (2003) suggest that the therapeutic relationship-outcome relation may be significantly stronger in psychotherapy for children with externalizing problems ($r = .30$) compared to children with internalizing problems ($r = .10$). More research is required to help clarify these questions.

A significant finding did emerge between the conditions. We found that a strong child alliance was associated with better diagnostic outcomes in the ICBT condition, compared to the

GCBT condition. This interaction suggests that a strong alliance may play a more important role in promoting diagnostic recovery when CBT is delivered one-on-one, compared to a group format. It is plausible that other treatment processes, such as group cohesion, may be more important in GCBT. Treatment processes, such as group cohesion, have been linked with treatment response and completion in group-delivered CBT for adults (see e.g., Hilbert et al., 2007; Taft, Murphy, King, Musser, & DeDeyn, 2003); though the same evidence has not been found in group-delivered CBT for youths (see e.g. Kaufman, Rohde, Seeley, Clarke, & Stice, 2005). Though our findings require replication, future studies of GCBT may increase their yield by studying treatment processes related to group dynamics.

We did not find a significant relation between treatment adherence and outcome in the present study. These results contribute to a field characterized by mixed findings. Some past studies have found significant adherence-outcome relations (see e.g., Forgatch, Patterson, & Degarmo, 2005; Hogue, Dauber, Samuolis, & Liddle, 2006; Huey et al., 2004), whereas other studies have found no significant relation (see e.g., Carroll, Nich, & Rounsaville, 1997; Loeb et al., 2005). Overall, however, few studies have addressed this topic, and the existing studies vary along important dimensions (e.g., type of problems, age range, focus of treatment). It therefore is difficult to draw conclusions regarding the relation between treatment adherence and outcome.

A few factors must be considered when interpreting our treatment adherence findings. Our measurement of treatment adherence assessed the extent to which therapists delivered the FRIENDS program as designed; however, in the present study we could not assess the relation between specific techniques and outcome. Past studies have found that specific prescribed therapeutic interventions predict child outcomes for adolescent substance abuse (see Hogue et al., 2006). It is plausible that specific therapeutic techniques in the FRIENDS program, such as in vivo exposures, may be particularly important for outcomes in CBT for youths with anxiety. Moreover, some techniques that are critical to outcome may be more difficult to implement compared to others (e.g. importance of exposure, see Chorpita, Taylor, Francis, Moffitt, & Austin, 2004; Silverman et al., 1999). So although we did not find a relation between global treatment adherence and outcome it is possible that an approach that assesses the extent to which specific CBT techniques are used across the course of treatment may help identify significant technique-outcome relations.

We also did not assess therapist competence. In the present study, mean treatment adherence was high in both conditions possibly leading to a ceiling-effect; however, it is plausible that how well therapists implemented the treatments would predict clinical outcomes (Waltz, Addis, Koerner, & Jacobson, 1993). Future studies may therefore benefit from measuring therapist competence. Lastly, we did not measure child involvement, which refers to the extent to which the client participates in specific within session activities. Considered a key therapy ingredient, client involvement facilitates the transmission of therapeutic content from therapist to client (Nock & Ferriter, 2005). And, in fact, client involvement may be par-

ticularly important for CBT which focuses upon skill-building and behaviour change (Karver et al., 2008), especially CBT for youths with anxiety (Chu & Kendall, 2004).

Interestingly, neither child alliance nor treatment adherence accounted for substantial variance in child outcomes. The variance in outcome that was accounted for by technical and relational factors ranged from 0 to 9%. Our findings therefore suggest that other treatment processes account for (more) variability in child outcomes. Despite this fact, the relation between treatment adherence and child alliance differed across the two conditions. In the ICBT condition, the alliance-adherence correlation was significant indicating that adhering to the treatment manual was not inconsistent with a strong child alliance. In contrast, the adherence-alliance correlation in the GCBT condition was nonsignificant. Variance shared between adherence and alliance condition was higher (.19-.20) in ICBT compared to GCBT (.01-.03). These findings suggest that the relation between specific and nonspecific factors differ across individual and group-based interventions. As the outcome of individual and group treatment was not significantly different, our results suggest that equal outcomes may be obtained by different processes. Thus, researchers need to consider what treatment processes are important to assess across ICBT and GCBT.

The present study has several limitations that bear comment. First, scores on the process measures were generally high with restricted variance. Low variability in process measures represents a limitation in the child field due to its ceiling effects (Chu et al., 2004), and may have limited the likelihood of significant findings in the present study. Second, because the present sample was comprised of children diagnosed primarily with anxiety disorders, the generalizability to treatment for other primary child emotional or behavioral disorders may be limited. Finally, since the present sample of children was treated with CBT, the findings might not generalize to other treatment approaches (e.g., psychodynamic).

Despite these limitations, the current investigation has multiple strengths. First, we examined the relative contribution of treatment adherence and alliance to child outcomes within interventions with established efficacy. The present study is the first to assess the relative contribution of technical and relational variables simultaneously in different types of treatment format. Second, observational measures rated by trained evaluators were used to assess the technical and relational processes. Third, clinical outcomes and treatment processes were assessed at multiple time points allowing us to rule out alternative explanations. Altogether, these method features helped reduce reporter bias and minimize the chances of alternative explanations accounting for the findings.

This study contributes to a growing area of interest in child psychotherapy focused upon understanding how treatment processes affect the outcome of child psychotherapy. Neither technical nor relational factors predicted traditional measurements of child outcomes in the present study, but a relation between alliance and outcome was found using a more precise estimation of the true pre-post differences. Method factors (e.g. ceiling effects) may have limited our ability to find significant associations. Efforts to further clarify the relation between

treatment processes and child outcomes in CBT for child anxiety would likely benefit from evaluating how treatment processes develop and unfold over time. Moreover, our findings suggest that different treatment processes may be important in ICBT versus GCBT.

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Footnotes

¹Since child age was significantly different between the ICBT and GCBT conditions we reran all analyses and entered age as an additional predictor. The results did not change, age was not a significant predictor for treatment outcome.

7

General Discussion



GENERAL DISCUSSION

The research presented in this dissertation had as its central focus the prediction of outcome of the treatment of childhood anxiety disorders. Identification of relevant predictors could lead to treatments that take into account children's potential for change. Pinpointing why therapy helps only some persons who suffer from a clinical disorder has been posed as a criterion for a mature science of therapeutics (Marks, 2002). In the present study a selection of variables that were thought to have prognostic validity for successful CBT outcome were explored in a population of children with anxiety disorders.

What Works for Whom?

Previously, attempts have been made to shed a light on the topic 'What works for whom' (Fonagy, Target, Cottrell, Phillips, & Kurtz, 2002). Lambert and Asay (1999) proposed a model in which variance in outcome of adult treatment could be accounted for by four general factors. These factors were described in the introduction and variables pertaining to them were assessed throughout this thesis, i.e. (1) specific therapeutic techniques, technical factors and treatment modalities, (2) extra-therapeutic variables; environmental factors and client characteristics, (3) relationship variables, and (4) placebo-effects. The results of the present dissertation will be briefly described below, followed by the interpretation of our findings, clinical implications and recommendations, and some remarks on the strengths and limitations of the study.

Specific Therapeutic Techniques, Treatment Modalities and Technical Factors

The modalities to which children were randomized were individual CBT and group CBT for childhood anxiety disorders. Adherence checks were proposed as a means to assess variability in the treatment dosage, thus creating the means to examine intervention-outcome relations as higher dosages of therapeutic interventions are expected to result in improved treatment outcomes (Doss & Atkins, 2006).

Main findings.

Chapter 2 reported a rather consistent pattern of no differences in treatment response for individual CBT or group CBT. The percentages of children who were free of any anxiety disorder at post-treatment were 48% in the individual CBT and 41% in the group CBT; 62% versus 54% being free of their primary disorder at post-treatment. Differences in treatment outcome between the individual and group formats were non-significant for the intent-to-treat sample as well as for the sample of treatment completers. Similarly, regression analyses with pre- and post-treatment scores and treatment format as a predictor did not show any significant difference between individual CBT and group CBT.

In Chapter 2 the results were presented in terms of diagnostic status, effect-sizes and pre- post-treatment changes. The subsequent chapters included additionally analyses with Reliable Changes scores and Clinically Significant Change indices. For the sake of completeness and accuracy we will also report in this discussion a comparison of individual CBT and group CBT with the measurements that reflect not only statistically significant but also clinically meaningful change. Comparison of the recovered versus the not or partially recovered population (CBCL-Int and MASC) using a dichotomy based on the RC-scores and CS-index did not show any significant differences in treatment outcome for individual CBT and group CBT ($\chi^2(1, n = 124) = 0.52, p = ns$; $\chi^2(1, n = 118) = 0.01, p = ns$). Treatment format did not account for variance in Reliable Change on the CBCL-Int and MASC either ($\Delta R^2 = 0.01, p = ns$; $\Delta R^2 = 0.00, p = ns$).

In contrast, technical variables did show differential effects for children who responded to the treatment compared to those who did not sufficiently respond. Therapists' level of adherence to the treatment protocol in the first treatment sessions, regardless of the treatment format, was significantly lower for children who did not benefit sufficiently from the treatment, e.g. children who still met diagnostic criteria on the ADIS-C/P for an anxiety disorder at post-treatment (in the sample described in chapter six and the sample of treatment completers; $n = 124$). However, adherence did not predict Reliable Change (CBCL-Int and MASC) and did not predict treatment recovery (CBCL-Int and MASC).

Interpretation of the findings.

The findings of no significant differences between the individual and group CBT were consistent across outcome measures, methods of analysis and informants. These results are similar to findings in previous studies that had smaller sample sizes and thus lower statistical power (Flannery-Schroeder & Kendall, 2000; Manassis et al., 2002; Muris, Mayer, Bartelds, Tierney, & Bogie, 2001). Thus, equal results can be expected with regard to recovery for individual CBT and group CBT.

As was brought forward in Chapter 2, there is still a possibility that similar results were obtained through different processes. There are some hints in the data that support this suggestion. Chapter 6 showed that alliance was significantly related to treatment outcome in individual CBT, whereas this relation was not found in the group format. Unfortunately, we did not assess variables related to group processes. Though adherence in the early treatment sessions was significantly lower for children who did not recover on the ADIS, this variable did not contribute to the prediction of treatment outcome using other methods of measurement or other methods of analysis. Moreover, these effects were quite modest and not consistent across outcome measures. The consistently high levels of adherence may have resulted in low variability and ceiling effects reducing the statistical power to evaluate the prognostic value of these indices.

Implications.

Equal results can be expected with regard to treatment recovery for individual CBT and group CBT. The choice for offering individual CBT or group CBT could be based on pragmatic considerations such as therapeutic resources, referral rates or the preference of the parents and the child. Offering parents and children a choice may enhance treatment involvement, which has been identified as a significant predictor for child treatment outcome for conduct problems (Nye, Zucker, & Fitzgerald, 1995).

Various methods of analyses and multiple-informants all consistently reported no significant differences in treatment outcome or recovery for individual and group CBT; therefore children from both formats could be combined into one research-population for further analyses. For the sake of accuracy interaction effects of treatment format were nevertheless studied in subsequent analyses.

Extra-therapeutic Variables; Environmental Factors

The environmental factors included in the present study pertain to parenting and parental internalizing symptoms. Parental rearing and parental anxiety and depression were assessed as possible prognostic indices for their previously established relation with elevated levels of child anxiety (Beidel & Turner, 1997; McLeod, Wood, & Weisz, 2006; Rapee, 1997; Weissman et al., 2005). It was hypothesized that variables contributing to increased levels of child anxiety might have obstructed treatment from being effective since these anxiety enhancing or maintaining variables were not addressed in the treatment. Fathers and mothers were assessed separately as previous studies showed differences in paternal and maternal rearing (Aunola & Nurmi, 2005; Bögels, Bamelis, & Van der Bruggen, 2008).

Main findings.

Parenting and parental factors that contributed significantly to the prediction of treatment outcome were self reported paternal rejection, paternal anxiety and depressive symptoms and maternal emotional warmth (Chapter 3). Predictors that remained significant after Bonferroni correction were self-reported paternal depressive and anxiety symptoms and child-reported maternal emotional warmth. Predictors that were identified across outcomes (also including Bonferroni trends) were paternal self-reported rejection and paternal depressive symptoms. Higher levels of paternal rejection and paternal anxiety and depressive symptoms were consistently associated with a less favorable treatment outcome and a higher level of maternal emotional warmth was incidentally associated with a less favorable treatment outcome.

Partial correlations revealed that the pre-treatment levels of self-reported paternal anxiety and depression significantly correlated with post-treatment levels of parent-reported internalizing symptoms. Self-reported paternal rejection and father reported depressive symptoms showed trends; each accounted for 3% of variance in Reliable Change in parent-reported children's internalizing symptoms ($\Delta R^2 = 0.03$, $p < .10$; $\Delta R^2 = 0.03$, $p < .10$). Maternal overprotec-

tion showed a trend explaining 2% of the variance in Reliable Change in parent-reported internalizing symptoms ($\Delta R^2 = 0.02$, $p < .10$). Variance in Reliable Change in child-reported anxiety symptoms revealed a trend for child reported maternal overprotection (3%) ($\Delta R^2 = 0.03$, $p < .10$).

Interpretation of the findings.

Our results revealed that children whose father showed more depressive symptoms and acted more rejecting were the least likely to recover from treatment outcome. Paternal rejection was one of the variables that consistently contributed to outcome, across outcome measures and methods of analyses. Paternal overprotection and paternal anxiety symptoms also exerted a negative impact upon the likelihood for recovery. Child-reported maternal emotional warmth was also found to impact negatively upon the likelihood of parent-reported recovery.

A predictive role was expected for parental variables because reviews and meta-analyses revealed that these variables can contribute to the development of anxiety (Bögels & Brechman-Toussaint, 2006; Chorpita & Barlow, 1998; McLeod, Wood, & Weisz, 2006; Rapee, 1997). A consistent finding was the significant contribution of various paternal factors in the prediction of treatment outcome. This finding is somewhat surprising given the results of a meta-analysis that showed stronger associations between maternal psychopathology than paternal psychopathology and the presence of internalizing problems, though the effect-sizes were all small in magnitude (Connell & Goodman, 2002). The objective of the present study however was not the cross-sectional investigation of associations between internalizing or anxiety problems and parental variables, but investigation of potential predictors for treatment outcome. The scarce results in previous studies investigating maternal and paternal predictors for CBT outcome of childhood anxiety disorders also showed differential results for mothers and fathers (Crawford & Manassis, 2001; Rapee, 2000).

The question “are these findings similar for boys and girls?” that immediately arose given these results was answered by means of interaction-effects; no effects for gender were found. Perhaps it is not as much the gender of the child that is important, but the identification in general of children with their fathers as a role model on how to cope with anxiety provoking situations. A recent study showed that more variance in anxious symptoms was accounted for by (individual) gender-role orientation compared to actual identity (Muris, Meesters, & Knoop, 2005). Notably, whether the gender-role orientation also extends to gender specific identification merely rests on speculation. There is some evidence that parent-child interactions more generally tend to be affected by the other parent (Buhrmester, Camparo, Christensen, Gonzalez, & Hinshaw, 1992) and that the involvement of fathers in care giving increased in case of life-events (Wood & Repetti, 2004).

Involvement of fathers in daily care giving also led us to question whether the results with regard to parents are not an artefact of their absence in the therapeutic process. The FRIENDS treatment includes four parent sessions, which had to be attended by at least one parent. The

sessions were significantly more frequent attended by mothers compared to fathers, but the mean number of attended sessions was for both above three (mothers; $M = 3.59$, $sd = 0.67$, fathers; $M = 3.26$, $sd = 1.08$; $t(141) = 2.19$, $p < .05$).

Implications.

The finding that child reported maternal emotional warmth predicted less favourable outcomes was puzzling. However, a systematic review using Round Robin data suggested that children may be less reliable informants with regard to family interaction processes such as warmth and cohesion compared to their parents or elder counterparts (Eichelsheim, Dekovic, & Buist, Submitted). Round Robin designs can be used in the assessment of social interaction data in which each person interacts with every other person and reports on this interaction (Warner, Kenny, & Stoto, 1979). Interinformant differences in reports on family relationships were mainly explained by characteristics of the child (Eichelsheim, Dekovic, & Buist, Submitted). These results imply that children who described their mother as more emotionally warm may not have described the actual expressed maternal emotional warmth, but may have expressed their experience of their mothers emotional warmth biased by personal characteristics. It should be noted that in our research population there was no significant relationship between child's report of maternal emotional warmth and mothers report on their emotional warmth ($r = .12$, $p = ns$). Children's reports of maternal emotional warmth did predict treatment outcome, therefore it would be informative to know whether this variable actually reflected emotional warmth or a different child characteristic with prognostic value.

Our findings insinuate that though maternal variables appear more potent for the development of increased levels of child anxiety, paternal variables may be more potent with regard to the prediction of therapeutic recovery. Buhrmester et al. showed that in interactions the paternal role of fathers of sons with ADHD was different compared to the paternal role of fathers of sons without ADHD, in triadic interaction (i.e. child-mother-father) fathers of ADHD sons showed rescue-coercion toward the mother (Buhrmester, Camparo, Christensen, Gonzalez, & Hinshaw, 1992). During triadic interactions fathers of normal children tended to be more supportive towards their partner whereas mothers tended to be more intrusive towards fathers (Lindsey & Caldera, 2006). Parenting of children with anxiety disorders is likely to be more demanding compared to the parenting of non-anxious children, a supportive coercive mother-father bond may be even more important for the upbringing of anxious compared to non-anxious children. As anxious children of fathers that displayed higher levels of depressive or rejecting symptoms were less likely to recover from treatment, it may have been that these fathers acted in a less supportive and coercive manner towards their parenting-partner and while participating in triadic interactions. There is some support showing that fathers of clinically anxious children displayed less support toward their partner (Bögels, Bamelis, & Van der Bruggen, 2008).

Extra-therapeutic Variables; Client Factors

The client characteristics assessed in the present study included various aspects of social performance (e.g. assertion, responsibility, cooperation and self-control). Two kinds of comorbidity (total comorbidity and other comorbidity) and severity were also assessed as client characteristics with the potency to predict treatment outcome. 'Total comorbidity' differentiates between anxiety disordered children with or without a co-occurring disorder. 'Other comorbidity' differentiates between anxious children with or without a comorbid disorder other than anxiety.

Main findings.

Various aspects of social performance (assertion, responsibility, cooperation and self-control) were investigated as predictors of treatment outcome for children with anxiety disorders in Chapter 4. The strongest and most consistent predictors for treatment success were the performance measures assertion and self-control. Results were consistent across mothers and fathers and various methods of analyses. Children were more likely to recover from all anxiety disorders if they were described as having higher levels of self-control, assertion and cooperation. The prediction of treatment recovery with regard to parent-reported internalizing symptoms improved by including father-reported self-control, and mother-reported assertion and cooperation. Similarly to the analyses conducted with the ADIS the results from analyses conducted with the CBCL showed that higher levels of self-control, assertion and cooperation predicted treatment success. Father reported self-control was consistent across outcomes as this variable also predicted treatment recovery based on children's self-reported anxiety symptoms.

A higher level of pre-treatment self-control was significantly associated with greater Reliable Change in child reported anxiety symptoms ($r = -.20, p < .05$). Father reported self-control accounted significantly for 4% of the variance in child reported anxiety symptoms ($\Delta R^2 = 0.04, p < .05$). Self-control showed a consistent contribution to the prediction of treatment outcome, across outcome measures (ADIS, MASC and CBCL), informants (child, mother and father) and methods of analyses (t-tests, logistic regression, partial correlations and correlation with Reliable Change in self-reported anxiety symptoms).

Further analyses showed that at pre-treatment children with an anxiety disorder were described as having significant lower levels of social performance compared to a normative population. Anxious children with Social Phobia showed even more impaired levels of assertion, cooperation and responsibility compared to anxiety disordered children without SOP, though the presence or absence of SOP did not impact upon the likelihood to recover from anxiety.

In order to study the impact of comorbidity on treatment outcome the sample of anxious children was split twice into different diagnostic groups; one including children with a single anxiety disorder and the other a primary anxiety diagnosis and one or more comorbid dis-

orders (labeled 'total comorbidity'); secondly a differentiation was made between children with one or more anxiety disorders versus children with one or more anxiety disorders and a comorbid disorder other than anxiety (labeled 'other comorbidity').

Both 'other comorbidity' and 'severity' contributed to the prediction of less favourable treatment outcomes with regard to post-treatment diagnostic status and treatment recovery. Some of the variance in reliable change in self-reported anxiety symptoms was significantly accounted for by 'other comorbidity' and 'severity', indicating less improvement in anxiety symptoms in children with 'other comorbidity'. Conversely, more improvement in self-reported anxiety symptoms and negative affectivity self-statements was found for children with higher levels of severity. Our findings also showed less improvement in self-reported depressive symptoms for children with anxiety-only comorbidity compared with children with 'no-comorbidity' and children with 'other-comorbidity'. Children with 'other comorbidity' present showed more improvement in negative affectivity self-statements.

Interpretation of the findings.

The social performance measures self-control and assertion were remarkably potent predictors of treatment outcome. Self-control refers to behaviors that emerge in conflict situations (e.g. taking turns, responding to conflict situations) and assertion refers to behaviors such as asking others for information, introducing oneself, and responding to the actions of others (see Chapter 4; Gresham & Elliott, 1990). Chorpita and Barlow (1998) defined control as the ability to personally influence events and outcomes in one's environment, which appears for the most part similar to our definition of self-control. The association between a diminished sense of control with the (immediate) expression of anxiety was also reported elsewhere (Weems, Silverman, Rapee, & Pina, 2003). This may elicit the question whether diminished self-control is a symptom of increased anxiety levels. Our measure of self-control does not seem specific for anxiety, as a study on children with ADHD showed that these children were also described as significantly lower in control using the same measurement instrument (Van der Oord et al., 2005). Van der Oord et al. (2005) furthermore showed that children with ADHD suffered from significantly lower levels of assertion, similar to children in the present study. As suggested in Chapter 4 assertion might facilitate practicing skills in social settings and might facilitate implementation of newly learned skills in daily life. Children with lower pre-treatment levels of assertion may therefore be less likely to recover from the treatment.

Assessment of pretreatment associations showed that variance in pretreatment symptoms could partly be accounted for by 'other comorbidity'. Children with a comorbid condition other than anxiety (e.g. depression, ADHD) showed significantly higher levels of pretreatment symptoms, not only for child-reported anxiety symptoms and parent-reported internalizing symptoms, but also for self-reported depressive and parent-reported externalizing symptoms. Children with 'other comorbidity' not only suffered from higher pretreatment symptom levels but were also less likely to have recovered at post treatment. 'Severity' showed a negative

impact on treatment recovery of its own. In sum, comorbidity with disorders such as ADHD and Depression did appear to obstruct the effectiveness of CBT for CAD. Furthermore, children with anxiety comorbidity might benefit from a spin-off of the treatment to co-occurring depressive symptoms. Reliable change in parent-reported internalizing and externalizing symptoms was not accounted for by other comorbidity, total comorbidity or severity.

Implications.

Social performance variables may enable us to differentiate between children who are more or less likely to recover from the treatment. Social performance difficulties may result from cognitive styles in which non-threatening or ambiguous situations are interpreted as threatening (Suarez & Bell-Dolan, 2001). A possible maintaining mechanism between social performance difficulties and anxiety is illustrated by Hopko et al. (2001), who propose that (social) performance deficits may have different origins; performance deficits may result from skills deficits (primary failure), from anxiety problems (secondary failure) or from a combination of anxious responding and skills deficits (tertiary failure). This model illustrates that anxious children may be more prone to suffer from performance difficulties compared to non-anxious children, but are not automatically impaired in social performance. The results presented in this thesis combined with results from other studies (Gaub & Carlson, 1997; Van der Oord et al., 2005) suggest that social performance difficulties may not be specific for anxiety problems, but may be characteristic for childhood behavior problems more generally.

Self-control more specifically was an important predictor for negative treatment outcomes. These results suggest that diminished levels of self-control might prevent treatment from being effective. The mechanism through which self-control negatively impacted upon or undermined the therapeutic process is yet unknown. A diminished sense of control might be related to an undermining disbelief in the ability to successfully apply therapeutic techniques or skills when confronted with anxiety provoking situations. Future research could be of great value for treatment outcome by addressing the mechanisms through which self-control influenced the therapeutic process.

Anxious children with Social Phobia showed more impaired levels of assertion, cooperation and responsibility compared to anxious children without Social Phobia but equally impaired levels of self-control. This could indicate that though social performance is affected in general in children with behaviour problems, there might be specificity in the impairment with regard to various forms of social performance.

The suggestion that social performance difficulties may be characteristic for childhood behavior problems more generally might have implications for the children in our study who suffered from a comorbid condition other than anxiety; it makes one wonder whether anxious children with a comorbid condition other than anxiety are more likely to suffer from decreased social performance? The two definitions or dichotomies of comorbidity came essentially down to three diagnostic groups; no-comorbidity, anxiety-comorbidity and

other-comorbidity. Comparison of the children in these three groups showed that the group of anxious children with a comorbid disorder other than anxiety suffered from the most impaired levels of social performance. Children with a comorbid condition other than anxiety showed significantly more impaired levels of father and mother reported self-control ($F(2,103) = 5.59, p < .01$; $F(2,117) = 6.21, p < .01$ respectively) and cooperation ($F(2,103) = 8.76, p < .001$; $F(2,118) = 3.60, p < .05$ respectively), and father reported assertion ($F(2,103) = 4.86, p < .05$) and responsibility ($F(2,103) = 4.73, p < .05$), mother reported assertion and responsibility showed trends in the same direction ($.05 < p < .10$) compared to children with anxiety comorbidity or no comorbidity. Differences in primary, secondary and tertiary failure might have contributed to the more severe symptoms we found on almost all measures of functioning (internalizing and externalizing behavior problems, depressive symptoms).

Previous studies (e.g. Kendall, Brady, & Verduin, 2001; Rapee, 2003) did not show a negative impact of comorbidity on treatment outcome for CAD. These differential findings may originate from our inclusion of separate measures for comorbidity and severity in the analyses and the use of a more refined method to define clinically significant recovery. As children with 'other comorbidity' showed higher pretreatment symptom levels one could say that they are in greater need for change. Additionally, these children are less likely to show recovery at post-treatment. Adapting treatments to the needs of these children appears a necessary challenge for the future in order to prevent that children either enroll successively from one treatment into another or that children's daily lives become filled with participating in various treatments. In chapter 5 we already brought forward that clinicians should not only take the current impairment and suffering from anxiety into account, but also make a strategic decision whether one treatment ingredient might obstruct the effectiveness of a second ingredient. Future studies should therefore try to delineate more precisely in which aspects of other comorbidity obstruct treatment from being effective, in order to be able to offer children treatments that are tailored to their needs (e.g., Chorpita, Taylor, Francis, Moffitt, & Austin, 2004). Especially intriguing is the question why change in depressive symptoms was greater in children with anxiety comorbidity, especially as there was less change in anxiety symptoms in children with co-occurring disorders other than anxiety. We suggested that the effects of CBT for anxiety disorders might generalize to depressive symptoms, but that the presence of a mood or externalizing disorder in itself interferes with anxiety treatment. For instance, the reduced activity levels and motivation associated with depression may create a barrier to practicing and generalizing new skills which are essential for anxiety treatment. A barrier to treatment outcome might be created by the levels of positive and negative affectivity, as these variables are often put forward to explain both differences and similarities between anxiety and depressive symptoms (Lonigan, Phillips, & Hooe, 2003). Low positive affectivity specifically has been associated with Depression. Changes in positive affectivity in the study by Lonigan, Phillips and Hooe (2005) were not explained by differences in anxiety and depression whereas changes in negative affectivity were correlated both with changes

in anxiety and depressive symptoms. The present study did not assess the predictive value of negative and positive affectivity but as they appear related to changes in anxiety and depression they might prove valid for future studies as prognostic indices.

Relationship Variables

Main findings.

Analyses of relational and technical process-variables revealed an association between child-therapist alliance and Reliable Change in child-reported anxiety symptoms (Chapter 6). Moreover, therapeutic alliance was significantly lower for children who did not benefit (sufficiently) from the treatment as assessed with parent-reported internalizing symptoms. Furthermore, child-therapist alliance during the end of the FRIENDS treatment was significantly higher for children who showed recovery at post-treatment with regard to parent-reported internalizing symptoms.

However, the therapeutic alliance did not add to the overall prediction of either parent-reported treatment recovery or child reported treatment recovery. Children in the ICBT condition with a stronger alliance were more likely to be diagnosis free at the end of treatment compared to children with a stronger alliance in the GCBT condition. The interaction of alliance by treatment format accounted for 6% of variance in Reliable Change in child reported anxiety symptoms. Therapeutic alliance did not show a partial correlation with treatment outcome.

Interpretation of the findings.

Therapeutic alliance accounted for some of the variance in treatment outcome, but this finding was not consistent across methods of analyses or outcome measures. Contrary to our expectations the overall findings with regard to the impact of alliance on the treatment outcome and recovery were non-significant. These non-significant findings could have resulted from generally high alliance levels leading to ceiling effects and thus reducing the statistical power to detect significant effects of alliance on outcome.

Implications.

Though the data do hint that relationship variables may influence treatment outcome, the results are very modest and not consistent across outcome measures and informants. We think it is premature to conclude that a good alliance is irrelevant for CBT outcome of childhood anxiety disorders, though the overall impact of therapeutic alliance may not be as crucial for recovery as has been suggested (DiGiuseppe, Linscott, & Jilton, 1996; Green, 2006). A significant interaction effect of therapeutic alliance and treatment format was revealed, suggesting that in individual CBT a stronger alliance does relate to a more favorable treatment outcome. These findings might have been stronger if children and parents were offered a choice for

either group or individual CBT as a recent study showed that treatment preferences affected the therapeutic relationship (Iacoviello et al., 2007).

Expectancy and Placebo-Effects

The model by Lambert (1995) defined the fourth area of factors that may account for treatment outcome as 'placebo-effects'. Though CBT or active treatments might result in better outcomes (e.g. larger effect-sizes) compared to the effects obtained in placebo-conditions, part of these effects might be explained by the same factors (i.e. expectancy, conditioning and verbal information). As we did not include a wait-list condition, we were not able to determine whether placebo effects might explain some of the variance in treatment outcome. However, some of our data suggest that expectancy might have played a role for (active) treatment outcome. Self-reported anxiety was assessed two times prior to the treatment, a significant decline in symptoms was found for this anticipatory period ($p < .001$).

Our findings that anxiety symptoms declined significantly in the anticipatory period prior to treatment hint that placebo effects (expectancy, conditioning, verbal information) may have accounted for some of the variance in outcome. Expectancy may not only bring about change in placebo conditions or during waiting periods, but may also impact upon the therapeutic process. For instance, it was shown that depressed adolescents with greater expectations for improvement were more likely to benefit from treatment (Curry et al., 2006). Patients' expectations regarding outcome also showed to be a significant predictor in adult treatment of Panic Disorder (Dow et al., 2007a). Furthermore, part of the placebo-effect may be a retest effect, as there is some evidence that retesting leads to significant drops of small effect-sizes at retest (Arrindell, 1993; Ormel, Koeter, & Van den Brink, 1989).

A factor that might impact on the therapeutic process in both placebo and active treatment conditions are client motivation and readiness for change. Studies on treatment outcome of substance abuse have started to include measures for readiness of change and motivation (Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003; Henderson, Saules, & Galen, 2004; Hernandez-Avila, Burleson, & Kranzler, 1998). Blanchard et al. (2003) explain that there are five stages through which people progress when changing behavior; the precontemplation, contemplation, preparation, action and maintenance stages. There are some results that suggest that the stages of readiness for change account for variance in treatment outcome of substance abuse (e.g. Henderson, Saules, & Galen, 2004; Hernandez-Avila, Burleson, & Kranzler, 1998). Motivation and readiness for change may also be valid predictors for the treatment of children with anxiety disorders, though change processes may vary depending on the nature and complexity of the target behaviour and external stressors and supports, among other things (Girvin, 2004).

Clinical Recommendations

One of the often given reasons for offering CBT in a group format is the hypothesized greater cost-effectiveness of group treatment compared to individual treatment (e.g. Flannery-Schroeder, Choudhury, & Kendall, 2005; Silverman et al., 1999). The results of a meta-analysis suggest less cost-effectiveness of adult anxiety group CBT compared to individual CBT (Tucker & Oei, 2007). The present study cannot adequately address this issue, as a true study of cost-effectiveness includes costs such as health care costs (i.e. treatment), child- and family costs (e.g. traveling expenses, baby-sitters) and costs occurring in other sectors (e.g. absence from work) (Bodden, Dirksen, & Bögels, 2008). A study into the cost-effectiveness of individual CBT and group CBT might help therapists take evidence-based *and* cost-effective choices.

Given that findings with regard to treatment outcome and recovery were similar for individual CBT and group CBT clinicians could consider offering their clients a choice between the two formats. Congruence between preference and treatment format might contribute to a transfer of control from the therapist to the client, and thereby enhance the personal feeling of control in clients. This latter appeared a noteworthy predictor for favorable treatment outcomes. Congruence between preference and treatment format may also enhance clients expectations regarding treatment effectiveness, and thereby enhance treatment outcome (Dow et al., 2007a).

The inclusion of fathers in the treatment process is one of the strongest recommendations we would like to make. Of course, their role in the therapeutic process and the impact of fathers as a role model in coping with anxiety provoking situations needs further exploration.

Assessing whether children suffer from social performance difficulties may be relevant for the selection of effective treatment strategies. Helping children learn adequate social skills might be the method of choice for children who suffer from primary failure whereas learning to cope with anxiety might be the method of choice for children who suffer from secondary failure. In case of tertiary failure children might be best helped with a combination of anxiety reducing strategies and social skills training.

We conclude with regard to comorbidity that though recovery for children with comorbidity other than anxiety is possible it is less likely. Furthermore, these children are in need of greater change as the change obtained with a short-term treatment protocol such as FRIENDS may not result in sufficient change for these children. A further exploration of the mechanisms through which other comorbidity obstructs treatment recovery may give valuable insight in how to effectively tailor treatments to individuals needs. Current treatment protocols tend to be homotypically oriented; they focus on one problem (e.g., Depression, Social Phobia, ADHD) or one cluster of problems (anxiety disorders, behavioral disorders). In clinical practice, a vast number of the participants meet criteria for a comorbid condition; homotypic as well as heterotypic (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). As a result, children with comorbid problems might have to enroll in several treatments one after another (or simultaneously) to address all their problems. It has been suggested that children

with differential symptom constellations might benefit from individually tailored treatments, such as the modular treatment approach developed by Chorpita (2007). Modular treatments could tailor the treatment to the individuals needs, for instance by assessing whether children suffer from primary, secondary or tertiary failure and subsequently selecting the necessary modules. Modular treatment could have the additional advantage of being able to treat co-occurring problems. The first findings on modular treatment for anxiety (Chorpita, Taylor, Francis, Moffitt, & Austin, 2004) showed promising results.

Some strengths and weaknesses of the study.

Among the strengths of the present study is the multi-informant perspective on outcome including clinician, parental and child data, and the inclusion of fathers in the parental perspective. Furthermore, the present study includes a large sample of clinically referred and treated children which leads to appropriate numbers that allow more sophisticated statistical analyses. Reliable Change scores and Clinically Significant Change indices were used to describe pre-to-post-treatment changes and treatment recovery as these indices represent a closer approximation of true treatment gains by correcting for measurement errors. Statistical analyses and building of prediction models were conducted with RC-scores and CS-indices as outcome measures.

The present study delineated predictors of CBT outcome, which are currently poorly understood for childhood anxiety disorders. Previous studies on the predictive value of parental variables were inconsistent, studies on the predictive value of comorbidity were scarce and studies on the predictive value of social performance were absent. Therefore, the present study is an informative supplement to the current field. Furthermore, the impact of format for treatment outcome was assessed, though many researchers implicitly choose for either individual or group CBT, such a choice lacked empirical evidence in either direction. Importantly, the inclusion of real and sometimes complex clinical cases with a high comorbidity rate allows generalization of the findings to other clinical settings.

There are also several limitations to the present study that bear comment. We did not include a waitlist condition by design, for which our overriding argument was that there had been sufficient demonstration that CBT is superior to wait-list control. Furthermore we did not include a placebo-condition as the second major goal of the present study was to explore predictors for CBT outcome, and not for placebo outcome. Predictors for CBT outcome might not be relevant or applicable for the prediction of placebo outcome and vice-versa.

Currently, mediators and moderators tend to be studied as a means to broaden our understanding of the mechanisms that facilitate or hinder treatment outcome. Moderators specify for whom and under what conditions the treatment works, mediators identify possible mechanisms through which a treatment might achieve its effects (Dow et al., 2007b; Kraemer, Wilson, Fairburn, & Agras, 2002). The concept of predictor is close to the concept of moderator, and several of the predictors that were included in the present study may indeed

be viewed as moderators. However, moderators are baseline or pre-randomization characteristics that can be shown to have an interaction effect with treatment and do not change over treatment. Moderators have been described as third variables that affect the zero-order correlation between two other variables and may be qualitative (site, gender or treatment format) or quantitative (e.g., level of reward) (Baron & Kenny, 1986). Moderators always precede what they moderate, which in turn precedes outcome; mediators always come between what they mediate and the outcome (Kraemer, Wilson, Fairburn, & Agras, 2002). Several of our predictors could be labeled moderators or might show to be mediators on the long run; however our variables did not meet criteria for mediator analyses.

The present study mainly addressed the question ‘for whom’ the treatment works, and much less ‘what’ works. Though our results showed positive effects we can only assume that these effects have been obtained through the CBT ingredients, as we did not explore whether the presumed active ingredients actually accounted for the degree of change. By showing evidence that the treatment worked, we might be tempted to pass too easily over all the difficult steps required in the chain of scientific proof to establish causal links between a proposed therapeutic procedure, its underlying mechanisms of change, and client outcomes (Jensen, Weersing, Hoagwood, & Goldman, 2005). Kazdin brings forward that identification of predictors (or risk factors) might tempt us to suggest that we ought to address these risk factors and adapt treatments accordingly (Kazdin, 2007). However, this would lead us to overlook the mechanism through which the risk factor works. Kazdin differentiates between risk factors and causal risk factors and advocates we should investigate in a second step causality of risk factors (or predictors) and the mechanisms that are at work in therapy before adapting treatments. Nevertheless, our study has contributed to a growing field of knowledge on the evaluation for whom CBT works, thereby helping the science of psychiatric therapy a small step further in its development to a mature science.

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Appendix

Main Diagnostic Features of the primary Anxiety Disorders included in the present study.

Separation Anxiety Disorder (309.21, p. 121-122)

Diagnostic Features

The essential feature of Separation Anxiety Disorder is excessive anxiety concerning separation from the home or from those to whom the person is attached (Criterion A). This anxiety is beyond that which is expected for the individual's developmental level. The disturbance must last for a period of at least 4 weeks (Criterion B), begin before age 18 years (Criterion C), and cause clinically significant distress or impairment in social, academic (occupational), or other important areas of functioning (Criterion D). The diagnosis is not made if the anxiety occurs exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder or, in adolescents or adults, if it is better accounted for by Panic Disorder With Agoraphobia (Criterion E). ...

Diagnostic Criteria for 309.21 Separation Anxiety Disorder (p. 125)

- A. Developmentally inappropriate and excessive anxiety concerning separation from home or from those to whom the individual is attached, as evidenced by three (or more) of the following:
 - (1) recurrent excessive distress when separation from home or major attachment figures occurs or is anticipated
 - (2) persistent and excessive worry about losing, or about possible harm befalling, major attachment figures
 - (3) persistent and excessive worry that an untoward event will lead to separation from a major attachment figure (e.g., getting lost or being kidnapped)
 - (4) persistent reluctance or refusal to go to school or elsewhere because of fear of separation
 - (5) persistently and excessively fearful or reluctant to be alone or without major attachment figures at home or without significant adults in other settings
 - (6) persistent reluctance or refusal to go to sleep without being near a major attachment figure or to sleep away from home
 - (7) repeated nightmares involving the theme of separation
 - (8) repeated complaints of physical symptoms (such as headaches, stomachaches, nausea, or vomiting) when separation from major attachment figures occurs or is anticipated
- B. The duration of the disturbance is at least 4 weeks
- C. The onset is before the age 18 years.
- D. The disturbance causes clinically significant distress or impairment in social, academic (occupational), or other important areas of functioning.
- E. The disturbance does not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and, in adolescents and adults, is not better accounted for by Panic Disorder With Agoraphobia.

Specify if:

Early Onset: if onset occurs before age 6 years.

Specific Phobia (300.29, p. 443)

Diagnostic Features

The essential feature of Specific Phobia is marked and persistent fear of clearly discernible, circumscribed objects or situations (Criterion A). Exposure to the phobic stimulus almost invariably provokes an immediate anxiety response (Criterion B). This response may take the form of a situationally bound or situationally predisposed Panic Attack. Although adolescents and adults with this disorder recognize that their fear is excessive or unreasonable (Criterion C), this may not be the case with children. Most often, the phobic stimulus is avoided, although it is sometimes endured with dread (Criterion D). The diagnosis is appropriate only if the avoidance, fear, or anxious anticipation of encountering the phobic stimulus interferes significantly with the person's daily routine, occupational functioning, or social life, or if the person is markedly distressed about having the phobia (Criterion E). In individuals under age 18 years, symptoms must have persisted for at least 6 months before Specific Phobia is diagnosed (Criterion F). The anxiety, Panic Attacks, or phobic avoidance are not better accounted for by another mental disorder (e.g., Obsessive-Compulsive Disorder, Posttraumatic Stress Disorder, Separation Anxiety Disorder, Social Phobia, Panic Disorder With Agoraphobia, or Agoraphobia Without History of Panic Disorder) (Criterion G). ...

Diagnostic Criteria for Specific Phobia (p. 449-450)

- A. Marked and persistent fear that is excessive or unreasonable, cued by the presence or anticipation of a specific object or situation (e.g. flying, heights, animals, receiving an injection, seeing blood).
- B. Exposure to the phobic stimulus almost invariably provokes an immediate anxiety response, which may take the form of a situationally bound or situationally predisposed Panic Attack. **Note:** In children, the anxiety may be expressed by crying, tantrums, freezing, or clinging.
- C. The person recognizes that the fear is excessive or unreasonable. **Note:** In children, this feature may be absent.
- D. The phobic situation(s) is avoided or else is endured with intense anxiety or distress.
- E. The avoidance, anxious anticipation, or distress in the feared situation(s) interferes significantly with the person's normal routine, occupational (or academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.
- F. In individuals under age 18 years, the duration is at least 6 months.
- G. The anxiety, Panic Attacks, or phobic avoidance associated with the specific object or situation are not better accounted for by another mental disorder, such as Obsessive-Compulsive Disorder (e.g., fear of dirt in someone with an obsession about contamination), Posttraumatic Stress Disorder (e.g., avoidance of stimuli associated with a severe

stressor), Separation Anxiety Disorder (e.g., avoidance of school), Social Phobia (e.g. avoidance of social situations because of fear of embarrassment), Panic Disorder With Agoraphobia, or Agoraphobia Without History of Panic Disorder.

Specify type:

Animal Type

Natural Environment Type (e.g., heights, storms, water)

Blood-Injection-Injury Type

Situational Type (e.g, airplanes, elevators, enclosed places)

Other Type (e.g., fear of choking, vomiting, or contracting an illness; in children, fear of loud sounds or costumed characters).

Social Phobia (300.23, p. 450) (Social Anxiety Disorder)

Diagnostic Features

The essential feature of Social Phobia is a marked and persistent fear of social or performance situations in which embarrassment may occur (Criterion A). Exposure to social or performance situations almost invariably provokes an immediate anxiety response (Criterion B). This response may take the form of a situationally bound or situationally predisposed Panic Attack. Although adolescents and adults with this disorder recognize that their fear is excessive or unreasonable (Criterion C), this may not be the case with children. Most often, the social or performance situation is avoided, although it is sometimes endured with dread (Criterion D). The diagnosis is appropriate only if the avoidance, fear, or anxious anticipation of encountering the social or performance situation interferes significantly with the person's daily routine, occupational functioning, or social life, or if the person is markedly distressed about having the phobia (Criterion E). In individuals under age 18 years, symptoms must have persisted for at least 6 months before Social Phobia is diagnosed (Criterion F). The fear or avoidance is not due to the direct physiological effects of a substance or a general medical condition and is not better explained by another mental disorder (e.g., Panic Disorder, Separation Anxiety Disorder, Body Dysmorphic Disorder, a Pervasive Developmental Disorder, or Schizoid Personality Disorder) (Criterion G). If another mental disorder or general medical condition is present (e.g., Stuttering, Parkinson's disease, Anorexia Nervosa), the fear or avoidance is not limited to concern about its social impact (Criterion H). ...

Diagnostic Criteria for Social Phobia (p. 449-450)

- A. A marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or possible scrutiny by others. The person fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. **Note:** In children, there must be evidence of the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interaction with adults.

- B. Exposure to the feared social situation almost invariably provokes anxiety, which may take the form of a situationally bound or situationally predisposed Panic Attack. **Note:** In children, the anxiety may be expressed by crying, tantrums, freezing, or shrinking from social situations with unfamiliar people.
- C. The person recognizes that the fear is excessive or unreasonable. **Note:** In children, this feature may be absent.
- D. The feared social or performance situations are avoided or else are endured with intense anxiety or distress.
- E. The avoidance, anxious anticipation, or distress in the feared social or performance situation(s) interferes significantly with the person's normal routine, occupational (or academic) functioning, or social activities or relationships, or there is marked distress about having the phobia.
- F. In individuals under age 18 years, the duration is at least 6 months.
- G. The fear or avoidance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition and is not better explained by another mental disorder (e.g., Panic Disorder With or Without Agoraphobia, Separation Anxiety Disorder, Body Dysmorphic Disorder, a Pervasive Developmental Disorder, or Schizoid Personality Disorder).
- H. If a general medical condition or another mental disorder is present, the fear in Criterion A is unrelated to it, e.g., the fear is not of Stuttering, trembling in Parkinson's disease, or exhibiting abnormal eating behavior in Anorexia Nervosa or Bulimia Nervosa.

Specify if:

Generalized: if the fears include most social situations (also consider the additional diagnosis of Avoidant Personality Disorder)

Generalized Anxiety Disorder (300.02) (Includes Overanxious Disorder of Childhood)

Diagnostic Features

The essential feature of Generalized Anxiety Disorder is excessive anxiety and worry (apprehensive expectation), occurring more days than not for a period of at least 6 months, about a number of events or activities (Criterion A). The individual finds it difficult to control the worry (Criterion B). The anxiety and worry are accompanied by at least three additional symptoms from a list that includes restlessness, being easily fatigued, difficulty concentrating, irritability, muscle tension, and disturbed sleep (only one additional symptom is required in children) (Criterion C). The focus of the anxiety and worry is not confined to features of another Axis I disorder such as Panic Attack (as in Panic Disorder), being embarrassed in public (as in Social Phobia), being contaminated (as in Obsessive-Compulsive Disorder), being away from home or close relatives (as in Separation Anxiety Disorder), gaining weight (as in Anorexia Nervosa), having multiple physical complaints (as in Somatization Disorder), or having a serious illness (as in Hypochondriasis), and the

anxiety and worry do not occur exclusively during Posttraumatic Stress Disorder (Criterion D). Although individuals with Generalized Anxiety Disorder may not always identify the worries as 'excessive', they report subjective distress due to constant worry, have difficulty controlling worry, or experience related impairment in social, occupational, or other important areas of functioning (Criterion E). The disturbance is not due to the direct physiological effects of a substance (i.e., a drug of abuse, a medication, or toxin exposure) or a general medical condition and does not occur exclusively during a Mood Disorder, a Psychotic Disorder, or a Pervasive Developmental Disorder (Criterion F). ...

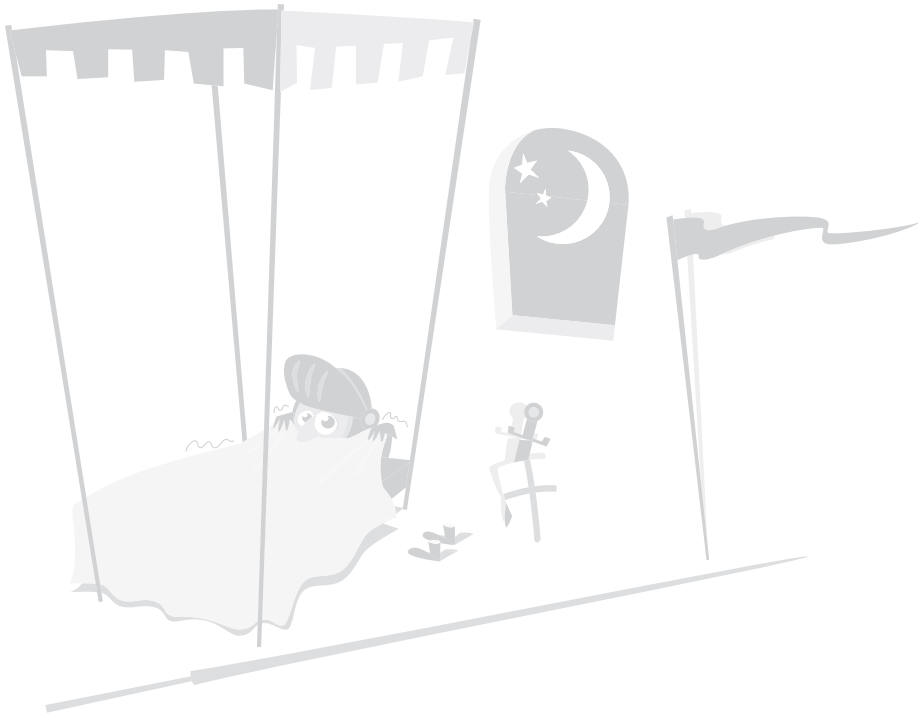
Diagnostic Criteria for 300.02 Generalized Anxiety Disorder (p. 476)

- A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).
- B. The person finds it difficult to control the worry.
- C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past 6 months).

Note: only one additional symptom is required in children.

- (1) restlessness or feeling keyed up or on edge
- (2) being easily fatigued
- (3) difficulty concentrating or mind going blank
- (4) irritability
- (5) muscle tension
- (6) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep)
- D. The focus of the anxiety and worry is not confined to features of another Axis I disorder, e.g., the anxiety or worry is not about having a Panic Attack (as in Panic Disorder), being embarrassed in public (as in Social Phobia), being contaminated (as in Obsessive-Compulsive Disorder), being away from home or close relatives (as in Separation Anxiety Disorder), gaining weight (as in Anorexia Nervosa), having multiple physical complaints (as in Somatization Disorder), or having a serious illness (as in Hypochondriasis), and the anxiety and worry do not occur exclusively during Posttraumatic Stress Disorder.
- E. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- F. The disturbance is not due to the direct physiological effects of a substance (i.e., a drug of abuse, a medication) or having a serious illness (as in Hypochondriasis), and the anxiety and worry do not occur exclusively during a Mood Disorder, a Psychotic Disorder, or a Pervasive Developmental Disorder.

Summary



Introduction

The present dissertation had as its central focus the prediction of outcome of the treatment of childhood anxiety disorders. In the present study a selection of variables that were thought to have prognostic validity for successful cognitive behavioral treatment (CBT) outcome were explored in a population of children with anxiety disorders. Eligible for participation were children aged 8-12 years ($n = 133$) attending primary education and diagnosed with Separation Anxiety Disorder (SAD), Generalized Anxiety Disorder (GAD), Social Phobia (SOP) or Specific Phobia (SP). Participants were referred to the anxiety and depression outpatient clinic's of the Child and Adolescent Psychiatry Department, Leiden University Medical Center and Erasmus Medical Center, Sophia Children's Hospital in Rotterdam, in the Netherlands. Children were treated with a standardized and manualized CBT protocol.

In Chapter 2 the impact of allocation to either individual CBT or group CBT was investigated for the randomized intent-to-treat sample ($n = 127$) and the randomized sample of treatment completers ($n = 119$). Chapter 3 investigated the impact of parenting and paternal internalizing symptoms for treatment recovery and reliable change for all treatment completers ($n = 124$). The prognostic value of these variables was separately assessed for mothers and fathers. This chapter also included a first description of the results in terms of statistically significant *and* clinically meaningful change. Social performance was also assessed for its prognostic value in the prediction of treatment outcome. Self-control, assertion, responsibility and cooperation were the social performance measures included in the analyses. As anxious children with Social Phobia were more likely to show social performance difficulties, the impact of this disorder on treatment recovery was also assessed as well as possible differences in social performance difficulties between anxious children with and without Social Phobia. The fifth chapter delineated the potential obstructive influence of comorbidity on treatment outcome in anxious children. The last chapter investigated the relative contribution of technical (therapist adherence to the treatment) and relationship variables (therapeutic alliance) for treatment outcome.

Findings

Chapter 2 showed no differences in treatment response for individual CBT (ICBT) or group CBT (GCBT). The percentages of children who were free of any anxiety disorder at post-treatment were 48% in the ICBT and 41% in the GCBT; 62% versus 54% were free of their primary disorder at post-treatment. Differences between the groups were non-significant for the intent-to-treat sample as well as the sample of treatment completers. Regression analyses with pre- and post-treatment observed scores did not show any significant differences between the groups.

Parenting and parental factors that contributed significantly to the prediction of treatment outcome were maternal emotional warmth, paternal rejection, and anxiety and depressive symptoms. Predictors that remained significant after Bonferroni correction were self-

reported paternal depressive and anxiety symptoms and child-reported maternal emotional warmth. Predictors that were identified across informants (also including Bonferroni trends) were paternal self-reported rejection and depressive symptoms. A higher level of maternal emotional warmth was associated with a less favorable treatment outcome. Higher levels of paternal rejection, anxiety and depressive symptoms were consistently associated with a less favorable treatment outcome.

Investigation of social performance (assertion, responsibility, cooperation and self-control) as a predictor of treatment outcome showed a significant prognostic value for this variable. The strongest and most consistent predictors for treatment success were the performance measures assertion and self-control. Results were consistent across mothers and fathers. Moreover, father reported self-control was significantly related with Reliable Change, suggesting that higher levels of self-control are related to greater Reliable Change in child-reported anxiety symptoms. At pre-treatment, the levels of social performance in children with an anxiety disorder were significant below the levels of social performance of a normative population. Anxious children with Social Phobia showed even more impaired levels of assertion, cooperation and responsibility compared to anxiety disordered children without SOP, though the presence or absence of SOP did not impact on the likelihood to recover from anxiety.

Comorbidity was defined (1) as the absence or presence of comorbid disorders (total comorbidity) and (2) as the absence or presence of a co-occurring disorder other than anxiety. In order to differentiate between the effects of comorbidity and severity a composite severity measure was calculated reflecting increased symptom levels. The findings revealed a significant prognostic value for severity and for children with a co-occurring disorder other than anxiety (other comorbidity group). Children in the 'other comorbidity group' were less likely to recover from the treatment as were children who suffered from more severe symptom levels. Children in the 'other comorbidity group' also showed less Reliable Change in self-reported anxiety symptoms but greater change in self-reported depressive and negative affectivity symptoms.

Analyses of relational and technical process-variables revealed a relation between child-therapist alliance and reliable change in child-reported anxiety symptoms. Adherence was not related to Reliable Change. Furthermore, a stronger early alliance was related to a better early treatment adherence in the ICBT condition, and a similar relation was found in the ICBT condition for late alliance and adherence. In the GCBT condition, these relations were not found. Children in the ICBT condition with a strong alliance were more likely to be diagnosis free at the end of treatment compared to children with a strong alliance in the GCBT condition. It should be noted that the results with regard to the prognostic value of alliance and adherence were modest and inconsistent.

Discussion and Implications

In Chapter 7 we presented our main conclusions and a discussion of the findings. We concluded that ICBT and GCBT appear equally effective in reducing elevated levels of anxiety in anxiety disordered children. This finding indicates that children, parents and therapists might select a treatment format based on pragmatic considerations such as preference or waiting lists. Parental indices pointed to a so far underestimated role for fathers in the prediction of treatment outcome. Paternal anxiety and depressive symptoms and paternal rejection significantly contributed to the prediction of treatment outcome, across outcome measures and various methods of analyses. Child-reported maternal emotional warmth also predicted treatment outcome, but recent advances in understanding informant discrepancies suggest that children's report of family interaction processes may be biased by personal characteristics. Research into the paternal role in therapeutic processes and for triadic interactions in children with anxiety disorders might be helpful to improve our understanding of the potential role fathers may play in enhancing treatment outcomes. Engaging fathers in the pre-treatment assessment might enhance our capacity to predict treatment outcome.

Prognostic value for treatment recovery was found for various aspects of social performance (e.g. self-control, assertion, responsibility and cooperation); the strongest and most consistent aspects of social performance were self-control and assertion. Self-control appeared a key prognostic indices in the prediction of CBT outcome for childhood anxiety disorders. A diminished sense of self-control was found to predict treatment failure. Additionally, assertive children were more likely to show post-treatment recovery. Furthermore, the social performance levels of the anxious children were significant below the levels of social performance of children in a normal population, the social performance of anxious children with Social Phobia was even more impaired compared to anxious children without Social Phobia, with exception of self-control. Self-control may be generally affected in children with psychopathology, we do not know yet however in what way self-control interferes with the therapeutic process. With regard to assertion we hypothesized that assertive behaviour might facilitate the generalization of newly learned skills to others settings than the treatment setting.

Anxious children with a comorbid condition other than anxiety were less likely to recover from anxiety disorders compared to children with one or more anxiety disorders but no comorbid conditions. Severity predicted a less favourable outcome as well. Especially with regard to the impact of 'other comorbidity' we suggested that the co-occurrence of non-anxiety disorders interfere with anxiety treatment. Enhanced understanding of the actual mechanisms that either facilitate or hinder the therapeutic process appear worthy for adapting treatment strategies. One promising study into the tailoring of treatments to childrens individual needs was put forward as a possible solution to the current choice between either offering children various treatment protocols simultaneously or obliging them to follow protocols succinctly in case anxious children suffer from a comorbid condition other than anxiety.

Technical and relationship variables only marginally contributed to the prediction of treatment outcome. Some of our findings showed that children in the ICBT condition with a strong alliance were more likely to be diagnosis free at the end of treatment compared to children with a strong alliance in the GCBT condition. Analyses were complicated however by a successful implementation of the treatment and a successful bonding of the therapists with their clients; the levels of adherence and alliance were generally high with low variance thus resulting in low power to detect any prognostic value of these variables.

The present study delineated predictors of CBT outcome, which are currently poorly understood for childhood anxiety disorders. A strength of the present study is the multi-informant perspective on outcome including clinician, parental and child data, and the inclusion of fathers in the parental perspective. Furthermore, the present study included a large sample of clinically referred and treated children which leads to appropriate numbers that allow more sophisticated statistical analyses. Outcome was defined not only in terms of statistical significance, but also in terms of clinically meaningful change. There are also some limitations to the present study that bear comment. The present study did not include a placebo condition nor did it include specific mediator/ moderator analyses. Furthermore, by addressing 'for whom' the treatment worked it ignored part of the bigger picture; namely '*what* works for whom'. Solely identifying predictors (or risk factors) might tempt us to suggest that we ought to address these risk factors and adapt treatments accordingly, but this could lead us to overlook the mechanism through which the risk factor works.

Summary in Dutch



Introductie

Dit proefschrift richt zich met name op het voorspellen van de behandeluitkomst bij kinderen met angststoornissen. Een selectie aan variabelen met potentieel voorspellende waarde is onderzocht bij een populatie kinderen met angststoornissen. Kinderen in de leeftijd van 8 tot en met 12 jaar ($n = 133$) die naar de basisschool gaan en bij wie als primaire diagnose sprake is van separatie-angststoornis, gegeneraliseerde angststoornis, sociale fobie of specifieke fobie kwamen in aanmerking voor dit onderzoek. De deelnemers waren afkomstig van de angst- en depressieteams van de poliklinieken kinder- en jeugdpsychiatrie van het Leids Universitair Medisch Centrum te Oegstgeest of het Sophia Erasmus Medisch Centrum te Rotterdam. De behandeling bestond uit een gestandaardiseerde, geprotocolleerde cognitief-gedragmatige behandeling.

In hoofdstuk 2 werd de invloed onderzocht van het aanbieden van individuele dan wel groepsgewijze behandeling aan kinderen uit de intent-to-treat populatie (kinderen die de hebben toegezegd deel te zullen nemen aan de behandeling; $n = 127$) en aan kinderen die de behandeling afrondten ($n = 119$). In hoofdstuk 3 is de invloed onderzocht van opvoedingsstijl en internaliserende symptomen van ouders zelf op herstel na de behandeling en op de betrouwbare verandering (Reliable Change) bij alle kinderen die de behandeling hebben afgerond. De voorspellende waarde van deze variabelen werd afzonderlijk onderzocht voor vaders en moeders. Dit hoofdstuk bevat ook een eerste beschrijving van de resultaten in termen van statistisch significante en klinisch zinvolle verandering. Sociaal functioneren werd eveneens onderzocht op de voorspellende waarde voor behandeluitkomst. Zelfcontrole, assertiviteit, verantwoordelijkheid en samenwerking zijn de maten voor sociaal functioneren die in de analyses werden opgenomen. Daar het waarschijnlijk is dat met name kinderen met een sociale fobie moeite hebben met sociaal functioneren werd de invloed van deze stoornis op herstel onderzocht. Ook werden mogelijke verschillen in sociaal functioneren onderzocht bij angstige kinderen met en zonder een sociale fobie. In het vijfde hoofdstuk werd de potentieel remmende werking van comorbiditeit op behandeluitkomst bij angstige kinderen onderzocht. In het voorlaatste hoofdstuk werd de relatieve bijdrage van technische variabelen (volgen van een behandelprotocol) en relatieve variabelen (therapeutische relatie) aan behandeluitkomst onderzocht.

Bevindingen

In hoofdstuk één werden geen verschillen in reactie op de behandeling gevonden tussen individueel aangeboden cognitieve gedragstherapie (ICGT) en groepsgewijs aangeboden cognitieve gedragstherapie (GCGT). De percentages kinderen die niet meer voldeden aan de criteria voor een angststoornis na de behandeling waren 48% in de ICGT en 41% in de GCGT; 62% versus 54% van de kinderen was vrij van de primaire angststoornis na behandeling. Verschillen tussen de groepen waren noch in de groep kinderen die aanvankelijk aan de behandeling begonnen waren, noch in de groep kinderen die de behandeling daadwerkelijk

heeft afgerond significant. Regressie-analyse met de geobserveerde scores van voor- en na de behandeling lieten geen verschillen tussen de groepen zien.

Opvoedingsstijl en ouderlijke factoren die significant bijdroegen aan de voorspelling van een ongunstige behandeluitkomst waren moeders emotionele warmte, afwijzing door vaders, en angstige en depressieve symptomen bij vaders. Voorspellers die na Bonferroni correctie nog steeds significant bleken waren de depressieve en angstige symptomen die de vaders over zichzelf rapporteerden en de door de kinderen gerapporteerde emotionele warmte van moeders. Voorspellers die bij verschillende informanten terugkwamen (inclusief Bonferroni-trends) waren afwijzing door, en depressieve symptomen van vaders. Meer emotionele warmte bij moeders vertoonde een verband met een minder gunstige behandeluitkomst. Meer afwijzing, angst en depressieve symptomen bij vaders vertoonde een consistente associatie met een minder gunstige behandeluitkomst.

Bestudering van sociaal functioneren (assertiviteit, zelfcontrole, samenwerking en verantwoordelijkheid) als voorspeller voor behandeluitkomst liet een significante voorspellende waarde zien voor deze variabele. De beste en meest consistente voorspellers voor behandeluitkomst waren de maten 'assertiviteit' en 'zelfcontrole'. Deze resultaten kwamen zowel bij moeders als bij vaders naar voren. Door vader gerapporteerde zelfcontrole vertoonde een significant verband met betrouwbare verandering, meer zelfcontrole leek in verband te staan met een sterkere verandering (afname) in door het kind gerapporteerde angstsymptomen. Verder bleek dat het niveau van sociaal functioneren bij de angstige kinderen voorafgaand aan de behandeling significant onder het niveau van een normale bevolkingsgroep lag. Angstige kinderen met een sociale fobie vertoonden een nog lager niveau van assertiviteit, samenwerking en verantwoordelijkheid dan angstige kinderen zonder sociale fobie. Het wel of niet hebben van een sociale fobie leek evenwel niet van invloed op de kans op herstel van de angststoornis.

Comorbiditeit werd op twee manieren gedefinieerd, namelijk als (1) de aan- of afwezigheid van comorbide stoornissen ('totale comorbiditeit') en als (2) de aan- of afwezigheid van een comorbide stoornis anders dan angst ('andere comorbiditeit'). Om onderscheid te kunnen maken tussen de invloed van comorbiditeit en de ernst van de problematiek werd een samengestelde score in de analyses opgenomen die verhoogde symptoomniveaus weergeeft ('ernstscore'). Uit de resultaten bleek een voorspellende waarde voor 'andere comorbiditeit' en voor de ernstscore. De kans op herstel was minder groot voor kinderen uit de groep 'andere comorbiditeit' en voor kinderen die leden onder ernstiger symptomen. Kinderen uit de 'andere comorbiditeit' groep vertoonden ook minder verandering in door henzelf gerapporteerde angstsymptomen, daarentegen vertoonden zij een grotere afname in depressieve symptomen in vergelijking met de kinderen zonder een comorbide stoornis anders dan angst.

Analyse van de relationele en technische proces-maten lieten een relatie zien tussen therapeutische alliantie van de therapeut met het kind en betrouwbare verandering in door

het kind gerapporteerde angstsymptomen. Het navolgen van het behandelprotocol, ookwel 'adherence' genoemd, vertoonde geen relatie met betrouwbare verandering. Verder bleek een sterkere therapeutische alliantie in verband te staan met een betere vroege (eerste behandel sessies) 'adherence' in de ICGT, een vergelijkbare relatie werd gevonden in de ICGT tussen 'adherence' in de laatste behandelzittingen en therapeutische alliantie. In de GCGT conditie werden deze relaties niet gevonden. De kans dat kinderen na behandeling niet meer voldeden aan de criteria van een angststoornis was groter bij kinderen in de ICGT met een sterkere therapeutische alliantie in vergelijking met kinderen uit de GCGT. Hierbij dient opgemerkt te worden dat de resultaten met betrekking tot de voorspellende waarde van therapeutische alliantie en 'adherence' bescheiden en niet consistent bleken.

Discussie en Gevolgtrekkingen

In hoofdstuk 7 presenteerden we onze belangrijkste conclusies en bespraken we onze bevindingen. We concludeerden dat ICGT en GCGT even effectief leken in het reduceren van verhoogde angstniveaus bij kinderen met een angststoornis. Op basis van deze bevinding stelden we dat kinderen, ouders en therapeuten in de toekomst wellicht een vorm van behandeling kunnen kiezen die is gebaseerd op pragmatische overwegingen, zoals hun eigen voorkeur of de lengte van de wachtlijst. Ouderkenmerken wezen op de totnogtoe onderschatte rol van vaders voor het voorspellen van behandeluitkomst. Depressieve en angstsymptomen van vaders en afwijzing door vaders lieten een significante bijdrage zien aan het voorspellen van een minder gunstige behandeluitkomst op verschillende uitkomstmaten en bij verschillende statistische benaderingen. Door kinderen gerapporteerde emotionele warmte van moeders voorspelde ook een minder gunstige behandeluitkomst, maar recente ontwikkelingen in het begrijpen van verschillen tussen informanten suggereren dat de beschrijving van interactieprocessen in gezinnen door kinderen sterk gekleurd zijn door hoe het kind zelf is. Onderzoek naar de rol van vaders in therapeutische processen en in triadische interacties bij kinderen met angststoornissen kan wellicht helpen bij het verbeteren van ons begrip over wat de potentiële rol van vaders kan zijn bij het bevorderen van een gunstige behandeluitkomst. Een voorspellende waarde voor behandeluitkomst werd tevens gevonden voor verschillende aspecten van sociaal functioneren (o.a. zelfcontrole, assertiviteit, verantwoordelijkheid en samenwerking); de sterkste en meest consistente maten voor sociaal functioneren bleken assertiviteit en zelfcontrole te zijn. Zelfcontrole bleek in het bijzonder een voorspeller voor behandeluitkomst van kinderen met angststoornissen te zijn. Een lager niveau van zelfcontrole voorspelde een minder gunstige behandeluitkomst. Daarnaast bleek dat herstel na behandeling waarschijnlijker was bij assertievere kinderen. Het niveau van sociaal functioneren van de angstige kinderen was significant lager dan het niveau van sociaal functioneren in een normale populatie kinderen, en het niveau van sociaal functioneren, met uitzondering van zelfcontrole, van angstige kinderen met een sociale fobie bleek nog eens significant lager ten opzichte van en de normale populatie en de angstige kinderen zonder sociale fobie.

Zelfcontrole zou in het algemeen bij kinderen die psychopathologie vertonen aangedaan kunnen zijn, we weten echter nog niet op welke wijze een beperkte mate van zelfcontrole het therapeutische proces belemmerd. Met betrekking tot assertiviteit veronderstelden we dat assertief gedrag wellicht het generaliseren van nieuw aangeleerd gedrag naar andere settings dan de behandelsetting kan vergemakkelijken.

Herstel van angst was minder waarschijnlijk bij angstige kinderen met een comorbide stoornis anders dan angst, in vergelijking met kinderen met een of meer angststoornissen maar geen andersoortige stoornis. De ernstscore voorspelde eveneens een minder gunstige behandeluitkomst. Met name in relatie tot de invloed van 'andere comorbiditeit' veronderstelden we dat het voorkomen van een comorbide stoornis anders dan angst kan interfereren met de angstbehandeling. Een beter begrip van de daadwerkelijke mechanismen die het therapeutische proces vergemakkelijken dan wel belemmeren lijkt van belang voor het aanpassen van behandelstrategieën. Het op maat maken van behandeling naar de individuele behoeftes van kinderen is een mogelijk alternatief voor de huidige keuze om kinderen met comorbide stoornissen ofwel meerdere behandelprotocollen tegelijkertijd ofwel opvolgend aan te bieden.

Technische en relationele variabelen droegen slechts marginaal bij aan de voorspelling van behandeluitkomst. Enkele van de bevindingen lieten zien dat het waarschijnlijker was dat kinderen in de ICGT conditie met een betere therapeutische alliantie na de behandeling geen angststoornis meer vertoonden, in vergelijking tot kinderen met een betere therapeutische behandeling in de GCGT conditie. Analyse van deze gegevens werd echter bemoeilijkt door een succesvolle implementatie van het behandelprogramma en door de overwegend goede band tussen de therapeuten en de kinderen; de niveaus van therapeutische alliantie en 'adherence' waren over het algemeen hoog met weinig variantie waardoor een verminderde 'power' ontstond om een voorspellende waarde van deze variabele te vinden.

Het onderzoek richtte zich op verschillende voorspellers van het resultaat van een cognitief-gedragsmatige behandeling, een onderwerp waar tot op heden weinig over bekend was bij kinderen met angststoornissen. Een van de sterke punten van het huidige onderzoek is de inclusie van de visie op behandeluitkomst zowel van de clinicus, als van de ouders en het kind zelf. Daarnaast werd in het onderzoek een groot aantal klinisch verwezen en behandelde kinderen opgenomen wat heeft geleid tot voldoende aantallen kinderen om verfijndere statistische analyses mee uit te voeren. Behandeluitkomst werd niet alleen gedefinieerd in termen van statistische significantie maar ook in termen van klinisch betekenisvolle verandering. Het onderzoek kent ook enkele beperkingen. Er werd geen placebo-conditie opgenomen en er werden geen specifieke mediator/moderator analyses uitgevoerd. Bovendien, door in te gaan op het 'voor wie' de behandeling geschikt is werd slechts een gedeelte van de vraag 'wat werkt voor wie' behandeld. Door voorspellers (of risicofactoren) te identificeren ontstaat de verleiding te suggereren dat we deze risicofactoren eerst aan moeten pakken en daarop onze behandeling afstemmen. Daarmee gaan we voorbij aan de mechanismen waarlangs deze risicofactoren de behandeling beïnvloeden.

Curriculum Vitae



Juliette Liber was born on June 26th 1976, in Krimpen, The Netherlands. She graduated in 1994 from high-school at the Krimpenerwaard College. After graduation (VWO) she started an internship as a surgical nurse at the Zuiderziekenhuis (currently the Medisch Centrum Rijnmond Zuid (MCRZ)/ Medical Center Rijnmond Zuid) in Rotterdam, The Netherlands. From 1998 to 2002 she studied Pedagogy at the University of Amsterdam. She conducted her clinical training at a child psychiatry centre in Goes (the Netherlands) in 2001-2002, participating in a team specialized in the assessment and treatment of children with Autism Spectrum Disorders. At the same time, she worked on her master-thesis together with Doreen List, supervised by doctor Sabina Kef. A thesis titled 'Burns between the ears' was completed on September the 15th. After graduating cum laude in 2002 Juliette started as a PhD-student at Curium, the Department of Child and Adolescent Psychiatry of Leiden University Medical Center. She participated in a large treatment outcome study titled 'Cognitive Behavioral Treatment (CBT) of Childhood and Adolescent Anxiety Disorders: An optimal match between treatment modalities and client characteristics'. This study was conducted in collaboration with the Department of Child and Adolescent Psychiatry of Sophia Children's Hospital/ ErasmusMC and supervised by professor Philip Treffers, doctor Robert Ferdinand en doctor Lisbeth Utens. Juliette's research focused on the investigation of predictors for treatment outcome of CBT for childhood anxiety disorders, of which the results are presented in this thesis. From October 2007 until September 2008 Juliette worked as a teacher at the University of Utrecht. Since May 2008 she participates as a post-doctoral fellow at the University of Amsterdam in a randomized clinical trial investigating the treatment of oppositional and aggressive behavior in a school-based population.

