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Comparing outcomes for children with different anxiety disorders following cognitive behavioural therapy



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ABSTRACT

Objective: The purpose of this study was to compare treatment outcomes following a group family-based cognitive behavioural therapy for children with different anxiety disorders (social anxiety disorder, separation anxiety disorder, generalised anxiety disorder, specific phobia and obsessive compulsive disorder).

Method: This study utilised a clinical sample of 842 children and adolescents (aged between 6 and 18 years) and assessed outcome using diagnostic interview, parent-report and child-report.

Results: Based on diagnostic data and parent-reported symptoms, results revealed that children with a diagnosis of social anxiety disorder experienced a slower rate of change and poorer diagnostic outcomes at post treatment and follow-up than children with other anxiety disorders. Children with GAD showed better response to this broad-based intervention and children with OCD showed better response on one measure.

Conclusions: This study provides evidence for differential response to broad-based CBT for children, based on type of anxiety diagnoses.

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Cognitive behavioural therapy (CBT) for children with anxiety disorders is efficacious in reducing the presence of anxiety disorders and symptoms (Rapee, Schniering, & Hudson, 2009). Results from systematic reviews demonstrate recovery rates of approximately 60% (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; James, Soler, & Weatherall, 2005). Typically, clinical trials have utilised heterogeneous groups of anxious children with primary diagnoses of Generalised Anxiety Disorder (GAD), Separation Anxiety Disorder (SAD), and Social Anxiety Disorder (SoAD; e.g., Barrett, Dadds, & Rapee, 1996; Hudson et al., 2009; Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008). This is largely due to the high rates of comorbidity between anxiety disorders in childhood. Although separate anxiety disorders can be differentiated in childhood, it is generally agreed that there is an underlying construct of anxiety that can be treated within a broad-based protocol. Thus, many treatment studies in the field provide information about the efficacy of CBT for anxiety disorders in general rather than specific disorders. The differential

recovery rates of anxious children with specific disorders receiving standard CBT protocols are less clear (Scharfstein & Beidel, 2011).

An increasing number of randomised controlled trials have emerged that target specific anxiety conditions and provide information about the response of specific anxiety disorders to these targeted CBT protocols (Barrett, Healy-Farrell, & March, 2004; Beidel, Turner, & Morris, 2000; Ollendick et al., 2015; Spence, Donovan, & Brechman-Toussaint, 2000). For example, Spence et al. (2000) randomised 7–14 year old children with SoAD ($n = 50$) to either a waitlist condition or cognitive behavioural treatment (with or without parental involvement). Both CBT conditions demonstrated significant improvements over time compared to the waitlist condition. Similarly, a number of other disorder-specific studies have shown significant reductions in anxiety symptoms following targeted CBT in children with Obsessive Compulsive Disorder (OCD; e.g., Barrett et al., 2004; Bolton & Perrin, 2008), SoAD (e.g., Beidel, et al., 2000), Specific Phobia (Ollendick et al., 2009) and Post-Traumatic Stress Disorder (PTSD; e.g., Smith et al., 2007). Together these studies demonstrate that treatments targeting specific disorders are efficacious in reducing anxiety symptoms, yet they provide limited knowledge about the comparative efficacy of children presenting with different anxiety disorders.

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That is, do children with particular anxiety disorders respond more poorly to psychological treatment than children with other anxiety disorders?

Findings within the adult literature provide information about likely differential response to CBT for specific childhood anxiety disorders. Adult treatment research in the anxiety disorders is predominantly disorder specific; treatments are targeted to specific anxiety disorders. In a meta-analysis comparing effect sizes across adult studies, CBT was efficacious for all of the anxiety disorders, yet individuals with SoAD had poorer outcomes than individuals with GAD and Panic Disorder (PD) (Norton & Price, 2007). In a similar meta-analysis, the effect sizes for OCD and Acute Stress Disorder were the largest, while the lowest effect sizes were for PD (Hofmann & Smits, 2008). In this study, the effect sizes for GAD, PTSD, SoAD and PD were significantly lower than the effect sizes for Acute Stress Disorder. These results suggest differential response to CBT for adults with anxiety disorders.

Within the child literature the disorder heterogeneity typical of clinical trials provides a unique opportunity to study the comparative efficacy of standard CBT protocols across anxiety disorders. Historically, such analyses have not been feasible because of the small sample sizes typically utilised in clinical trials of child anxiety. In one study however, Crawley, Beidas, Benjamin, Martin, and Kendall (2008) examined outcomes for children with and without a primary diagnosis of SoAD in a sample of 166 children aged from 7 to 17 years. In this study, children with primary SoAD ($n = 48$) were less likely to be free of their anxiety diagnosis at post treatment compared to children with GAD or SAD. When children with comorbid mood disorders were removed from the analysis (approximately 6 children), the difference between children with and without SoAD was no longer significant, suggesting that the presence of mood disorders may have accounted for the differences in CBT response between children with and without SoAD. Nevertheless, this study provides some evidence that children with GAD and SAD have better outcomes following CBT than children with SoAD.

Manassis et al. (2002) also found that mothers of children with GAD reported greater reduction in anxiety symptoms over time compared to mothers of children with phobic disorders (SAD, SoAD, Specific Phobia [SPEC] and PD). While this finding demonstrates that a diagnosis of GAD may lead to better outcomes following CBT compared to other anxiety disorders, the effect was not consistent across measures; a difference was shown on maternal reports but not child or clinician measures of outcome. In a multi-site study of CBT and medication, the odds of remission for children with GAD and SAD were 2.5 times greater than children with SoAD immediately after treatment (Compton et al., 2014; Ginsburg et al., 2011). This study provides the clearest evidence to date regarding differential impact of treatment on different child anxiety disorders and point to the poorer responsiveness of children with a diagnosis of SoAD. However, comorbid depression was not included as a covariate in these analyses and children in this study received one of four treatments, only two of which included CBT, limiting the conclusions about the degree to which children with SoAD respond specifically to CBT. Also, the absence of a follow-up period beyond immediate post-treatment assessment prevented conclusions about whether children with social anxiety may simply require more time to develop the skills and may “catch up” in the longer term. Thus, the impact of different primary anxiety diagnoses on cognitive behavioural treatment outcomes in children has yet to be comprehensively evaluated.

In summary, there is preliminary evidence that children with SoAD may be less responsive to CBT than children with other anxiety disorders, although this difference may be accounted for by comorbidity with depression. On the other hand, children with

GAD may respond better to CBT than children with other anxiety disorders. Importantly, there has been limited focus on disorders other than GAD, SAD and SoAD. In particular, the comparative efficacy of broad-based CB treatments for OCD in children is unknown. Very few treatment studies for anxiety disorders include children with primary OCD due to some considerations that OCD may be underscored by different processes than the anxiety disorders, and hence requires OCD specific treatment. This view has recently been formalised by changes to the current version of the DSM (APA, 2013). The current study combines data from several clinical trials resulting in a large sample of children and adolescents (aged 6–18 years) with primary anxiety disorders (and including OCD). We compared treatment outcomes for children with SoAD, GAD, SPEC, SAD, and OCD. These diagnoses were examined as a primary diagnosis. Small numbers did not allow examination of PTSD or PD. Treatment outcome was examined using a multi-method and multi-informant approach. It was hypothesised that children with a primary diagnosis of SoAD would do worse than children with other primary anxiety diagnoses. It was tentatively hypothesised that children with a primary diagnosis of GAD would do better than children with other primary anxiety disorders. Both remission rates and symptom change were examined at post and follow-up treatment.

1. Method

1.1. Participants

Participants in the study were 842 children and adolescents (aged between 6 and 18 years) who met criteria for a primary diagnosis of an anxiety disorder (according to DSM-IV; APA, 1994) and received a manual based treatment program at the Macquarie University's Centre for Emotional Health between 2000 and 2011. Diagnoses were assigned based on a structured diagnostic interview (described below). Table 1 presents demographic characteristics and frequency of disorders in the sample. Approximately 65% of participants were included in randomised clinical trials conducted at the Centre (Hudson et al., 2009) $n = 82$; (Rapee, Abbott, & Lyneham, 2006) $n = 58$; (Hudson, Newall, et al., 2014) $n = 198$; current unpublished randomised clinical trials, $n = 213$). Exclusion criteria for treatment trials included psychoses, severe suicidal ideation, severe oppositional defiant disorder across more than one setting, intellectual disability and concurrent psychological treatment. Children with comorbid mood and externalising disorders were included. Thirty five per cent (291/842 of participants in this study were not part of a randomised clinical trial. All participants received 9–12 sessions of CBT group based family treatment. In addition, 54 received an integrated depression management program; 99 parents received 5 additional parent anxiety management sessions.¹

1.2. Measures

1.2.1. Structured interview

All children and parents were interviewed using the Anxiety Disorders Interview Schedule for DSM-IV, Parent and Child Versions (ADIS-IV-C/P; Silverman & Albano, 1996). Diagnoses and clinician severity ratings (CSRs; on a scale of 0–8) were assigned by graduate students in clinical psychology or qualified clinical psychologists based on composite parent and child report. A severity rating of 4 or above was indicative of clinically impairing symptoms. Using

¹ Note there were no enhanced benefits for children whose parents received additional parent management (Hudson, Newall, et al., 2014).

Table 1
Demographic data and diagnoses.

Demographic		N = 842
Gender	% Female	47.7
Age in years		M = 10.21 SD = 2.57
Parents' marital status	% Married	86.2
Ethnicity ^a		
% Australian/Oceanic		63.3
% Asian		4.8
% European		12.0
% Other		4.6
Family type	% Two parent	83.8
Primary diagnoses (%)		
GAD		425 (50.5)
SoAD		179 (21.3)
SAD		116 (13.8)
OCD		49 (5.8)
SPEC		57 (6.8)
PTSD		3 (.4)
PD		11 (1.3)
ADNOS		2 (.2)
Comorbid diagnoses (%)		
None		75 (8.9)
Anxiety		735 (87.3)
Externalizing disorders		159 (18.9)
Mood disorders		140 (16.6)
Sleep comorbidity		60 (7.1)
Other ^b		22 (2.6)

Note. GAD = Generalised Anxiety Disorder. SAD = Social Anxiety Disorder. SoAD = Separation Anxiety Disorder. OCD = Obsessive Compulsive Disorder. SPEC = Specific Phobia. PTSD = Post-Traumatic Stress Disorder. ADNOS = Anxiety Disorder Not Otherwise Specified.

^a Parents are asked to record their ethnicity in an open – ended question. The majority of our clients identify as 'Australian'. A smaller proportion of families identified with North-West, Southern or Eastern European (e.g., Italian, Croatian-Australian) or South-East, North-East, Southern or Central Asian (Thai, Chinese-Australian) or Other (American, Middle Eastern, African) heritage. Missing data on ethnicity (15.3%).

^b Other disorders include Selective Mutism, Enuresis.

participants from the current sample ($n = 175$), our clinic has demonstrated excellent inter-rater reliability across diagnostic subtypes (e.g., Lyneham, Abbott, & Rapee, 2007).

1.2.2. Anxiety symptoms

The Spence Children's Anxiety Scale (SCAS; Spence, 1998) was used to assess child and mother-reported anxiety symptoms. This measure contains 38 items that load on a single factor (range from 0 to 114). Internal consistency and retest reliability are good (Nauta et al., 2004; Spence, 1998). The measure distinguishes anxious and nonclinical children (Nauta et al., 2004) and has adequate convergent and discriminant validity (Spence, 1998).

1.2.3. Group CBT

The Cool Kids program (Lyneham, Abbott, Wignall, & Rapee, 2003; Rapee, Lyneham, et al., 2006) as reported in previous trials (Hudson et al., 2009; Rapee, Abbott, et al., 2006) is a manualised program designed for the management of broad-based childhood anxiety disorders and includes affect recognition, cognitive restructuring, child management, social skills training, assertiveness, and gradual exposure. Exposure tasks are therapist-designed in collaboration with the family to be specific to the child's needs. With the exception of one therapist assisted group session of in-vivo exposure, children complete gradual exposure under the direction of their parents for homework. The therapist monitors between session practice at the beginning of each session. During randomised clinical trials, adherence to treatment protocol was assessed via audio recordings: treatment integrity was maintained. Each group contained between 4 and 8 children with a range of different anxiety disorders. Both parents were encouraged to attend each session but when this was not possible, we encouraged the primary caregiver to be present.

1.3. Procedures

Following a brief telephone screen, parents signed consent forms at the assessment and children under 14 years of age provided verbal assent (children 14 and above also provided signed consent). Children who met criteria for inclusion and agreed to participate were allocated to a group based on the child's age. Families completed post-treatment and follow-up assessments (ADIS-IV-C/P and symptom measures) and were encouraged to wait until after the follow-up assessment before seeking additional treatment. Across trials, the timing of follow-up assessments differed. Children received post treatment assessments typically one week after completing therapy and follow-up periods ranged from three to 12 months following treatment across the treatment trials. For families receiving more than one follow-up assessment, the most recent follow-up point was used in the analyses. For those children involved in randomised clinical trials, diagnosticians masked to condition conducted the interviews. During periods when no trial was running, only one treatment (standard Cool Kids group treatment program) was offered and hence no masking was possible. All diagnoses present at pre treatment were assigned a CSR at post and follow-up (0–8). Post and follow-up diagnoses with a CSR less than 4 were considered remitted.

2. Results

2.1. Analyses and missing data

A total of 664 participants (78.9%) completed treatment (i.e., completed 8 or more sessions). The degree of missing data is as follows: ADIS (pre = 0%; post = 12.7%; follow-up = 30.3%); SCAS-Mother report (pre = 2.1%; post = 25.7%; follow-up = 41.7%); SCAS-Child report (pre = 4.8%; post = 26.1%; follow-up = 44.1%).

Table 2
Differences in demographics and comorbidity between Primary diagnosis groups.

	SoAD (n = 179)	GAD (n = 426)	SAD (n = 117)	SPEC (n = 57)	OCD (n = 49)
Age	10.8 (2.77)	10.04 (2.49)	9.71 (2.16)	9.35 (2.38)	10.9 (2.40)
Gender (% female)	46.4	46.9	54.7	50.9	38.8
Ethnicity (% Australian)	75.2	73.9	75.9	74.5	74.4
Family structure (% two parent)	83.2	86.1	81.6	87.7	85.4
Presence of comorbid anxiety (% present)	84.9	88.3	88.0	87.7	85.7
Presence of comorbid behaviour disorder (% present)	19.0	21.4	13.7	10.5	16.3
Presence of comorbid mood disorder (% present)	26.3	16.2	6.8	5.3	14.3

Note: SoAD = Social Anxiety Disorder, GAD = Generalised Anxiety Disorder, SAD = Separation Anxiety Disorder, SPEC = Specific Phobia, OCD = Obsessive Compulsive Disorder.

Missing data were handled using the last-point-carried-forward method. We examined whether there were any differences in the likelihood of missing data at post and follow-up across the primary diagnoses. There was no significant difference in the presence of missing data across the different primary diagnoses at follow-up ($p > .05$), yet significant differences were evident at the post-assessment, $\chi^2(4, N = 826) = 11.16, p = .025$. Although the overall chi-squared was significant, none of the standardised residuals for the primary diagnoses were above 1.96. The degree of missing data for each primary diagnosis were as follows: SoAD 15.1%; GAD 8.9%; SAD 14.7%; SPEC 3.5%; OCD 6.1%.²

Hypotheses were tested separately using diagnostic and symptom outcome data. Diagnostic outcome data was examined through chi-squared analyses and symptom data was examined using mixed model procedures. Pre-treatment disorders were examined as a primary diagnosis (SoAD, GAD, SAD, SPEC, OCD). Remission was examined as the absence of the primary diagnosis as well as absence of all anxiety diagnoses at post-treatment and follow-up.

Mixed models, containing random factors for subject and fixed effects for diagnostic status (5 levels) and time (including two-way interactions), were fitted to measures of clinician-rated diagnostic severity (primary), child-, and mother-reported anxiety symptoms. Analyses were also conducted controlling for variables that differed across diagnostic groups at pre-treatment. When differences emerged these are noted in the corresponding table.

2.2. Preliminary analyses

As this sample included participants from a number of different studies, mixed model analysis (with age and pre-test scores as covariates) was conducted to determine whether 'study' was a significant source of variation on the main outcome variables (Brown & Prescott, 2006). It was important to determine whether treatment effects differed from one study to another. These analyses indicated that study was not a significant source of variance in treatment outcome and could be disregarded.

Table 2 shows differences between children with different primary anxiety diagnoses on age, gender, presence of comorbid disorders. The groups showed a significant difference by age, $F(4, 823) = 6.77, p < .001$, with SoAD being older than GAD, SAD and SPEC. Also there was a significant difference across groups in the presence of comorbid mood disorder $\chi^2(4, N = 828) = 26.07, p < .001$. Children with SoAD were more likely to have a comorbid mood disorder and children with SAD and SPEC less likely to have a comorbid mood disorder. No significant differences between primary anxiety diagnoses were observed on gender, ethnicity, family

² We conducted sensitivity analyses comparing outcomes across primary diagnoses for only children who provided data at the post period to ensure that the findings were not a result of using the last data point carried forward. The same pattern of significance was observed using the LDCF method and excluding the cases with missing data.

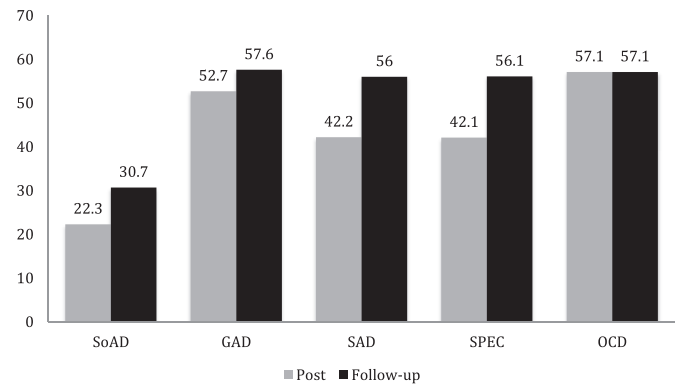


Fig. 1. Proportion of children no longer meeting criteria for the primary anxiety diagnosis at post and follow-up in the intent to treat sample across different primary anxiety diagnoses.

structure, presence of comorbid anxiety or externalising disorders ($p > .05$).

2.3. Remission of primary diagnoses

Remission rates were compared for children across different anxiety diagnoses (see Fig. 1). There were significant differences in remission of primary diagnosis at post based on the type of primary anxiety disorder, $\chi^2(4, N = 828) = 50.74, p < .001$, and at follow-up $\chi^2(4, N = 828) = 39.42, p < .001$. At post treatment, the standardised residuals were significant for children with SoAD (Remission: -4.4 ; No remission: 3.9) and GAD (Remission: 2.6 ; No remission: -2.4) indicating that SoAD leads to poorer remission rates and GAD leads to better rates of remission. At follow-up, the standardised residuals were significant for children with SoAD (Remission: -3.9 ; No remission: 4.0) indicating that SoAD leads to poorer remission rates.

As age and presence of comorbid mood disorders differed across the diagnostic groups, a logistic regression was conducted to determine whether primary anxiety diagnosis contributed to remission rates after accounting for age and comorbid mood. Primary diagnosis remained a significant predictor of remission of primary anxiety disorder after controlling for age and comorbid mood disorders, at post, $B = .20, SE = .07, p < .01$, and at follow-up, $B = .22, SE = .07, p < .01$.³

2.4. Remission of all anxiety diagnoses

There were significant differences in remission of all anxiety

³ Given the emergence of differential response for children with SoAD, outcomes were examined in children with and without a diagnosis of SoAD anywhere in the diagnostic profile and similar results emerged (See Supplementary information).

diagnoses at post based on the type of primary anxiety disorder, $\chi^2(4, N = 828) = 16.61, p < .01$, and at follow-up $\chi^2(4, N = 828) = 11.17, p < .05$ (See Fig. 2). At post treatment, the standardised residuals were significant for children remitting with SoAD (Remission: -2.7) indicating that SoAD leads to poorer remission rates. At follow-up, the standardised residuals were significant for children remitting with SoAD (Remission: -2.2) indicating that SoAD leads to poorer remission rates. After controlling for age and comorbid mood disorders, primary anxiety disorder did not predict remission of all anxiety diagnoses at post, $B = .06, SE = .07, p > .05$, or at follow-up, $B = .06, SE = .07, p > .05$.

2.5. Primary diagnostic severity

There was a significant interaction between time and diagnosis on diagnostic severity (see Table 3). A significant difference in the slope (that is, the rate of change) between the diagnostic groups from pre to post and pre to follow-up showed that children with SoAD demonstrated less change in severity of their primary diagnosis over time than children with GAD (pre to post, $t(1642) = 7.17, p < .001$; pre to follow-up, $t(1642) = 6.57, p < .001$), SAD (pre to post, $t(1642) = 4.84, p < .001$; pre to follow-up, $t(1642) = 5.42, p < .001$), SPEC (pre to post, $t(1642) = 5.10, p < .001$; pre to follow-up, $t(1642) = 6.57, p < .001$), and OCD (pre to post, $t(1642) = 5.87, p < .001$; pre to follow-up, $t(1642) = 4.39, p < .001$). Further follow-up comparisons revealed that there were also slope differences from pre to post treatment indicating that children with OCD showed more rapid change in severity over time than children with GAD, $t(1643) = -2.04, p = .04$, and SAD, $t(1642) = -2.17, p = .03$. The same effects were also observed when controlling for age and comorbid mood.

2.6. Child-reported anxiety symptoms

There was a significant main effect for time but no significant main effect for diagnosis and no significant interaction between time and diagnosis on child reported symptoms (see Table 3). All children reported a significant reduction in symptoms over time from pre to post, $t(1588) = 10.32, p < .001$, and pre to follow-up $t(1586) = 8.54, p < .001$. After controlling for age and mood, a significant diagnosis main effect emerged (See Table 3). Follow-up comparisons revealed that children with SAD reported higher symptoms than children with SoAD, GAD and OCD ($p < .05$).

2.7. Mother-reported anxiety symptoms

There was a significant main effect of time and diagnosis on

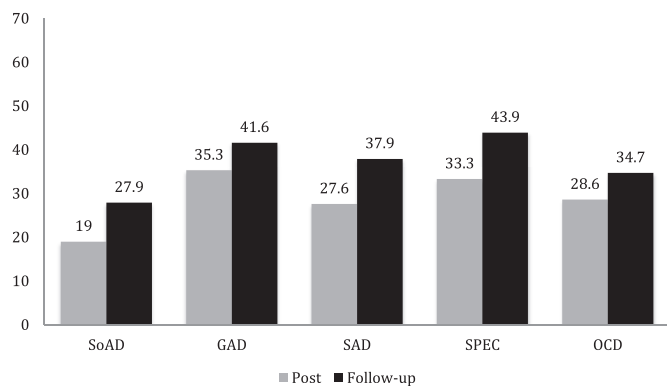


Fig. 2. Proportion of children no longer meeting criteria for all anxiety diagnosis at post and follow-up in the intent to treat sample across different primary anxiety diagnoses.

mother-reported anxiety symptoms (see Table 3). The interaction between time and diagnosis approached significance ($p = .056$). A significant difference in the slopes (that is, the rate of change) between diagnostic groups from pre to post and pre to follow-up was observed showing that children with a primary diagnosis of SoAD demonstrated slower change in mother reported anxiety symptoms over time than children with GAD (pre to post, $t(1613) = 2.81, p < .01$; pre to follow-up, $t(1613) = 2.94, p < .01$), and SAD (pre to post, $t(1614) = 2.59, p < .01$; pre to follow-up, $t(1614) = 2.13, p < .05$). No significant slope differences between diagnoses were observed between children with SoAD and children with either OCD or SPEC. No slope differences were observed between the post and follow-up period. The same effects were also observed when controlling for age and comorbid mood.

3. Discussion

This study made use of a large combined sample to examine the impact of type of anxiety diagnosis on response to group-based family CBT for child anxiety disorders. According to both diagnostic data and maternal-reported symptom data, the presence of a diagnosis of social anxiety disorder at pre-treatment led to a significantly slower rate of change and poorer diagnostic outcomes at post treatment and follow-up than children with other anxiety disorders. Importantly, these results were mostly retained after controlling for the child's age and the presence of comorbid depression. This finding was not supported by child-reported symptom data. When social anxiety disorder occurs anywhere in the diagnostic profile, a similar pattern of poorer outcome emerges in data collected by diagnostic interview (diagnostic data and clinical severity).

In contrast, children with a primary diagnosis of generalised anxiety disorder at pre-treatment were more likely to experience remission of their primary diagnosis immediately following treatment and, compared to social anxiety disorder, showed a greater reduction in diagnostic severity and mother-reported symptoms at both post treatment and follow-up. When the effects of a primary diagnosis of generalised anxiety disorder were assessed by changes in child reported symptom reports, this pattern was not supported. Children with a primary diagnosis of obsessive compulsive disorder showed better outcome on clinician-rated diagnostic severity compared to children with social, separation and generalised anxiety disorders at post treatment, and social anxiety at follow-up. Primary obsessive compulsive disorder did not differentiate outcome according to diagnostic remission and child or mother-reported symptom change.

The poorer response to broad-based CBT for children with social anxiety disorder support and extend results found in previous child studies (Crawley et al., 2008; Ginsburg et al., 2011) and within the adult literature (Hofmann & Smits, 2008; Norton & Price, 2007). While the results from previous studies may have been confounded by comorbid mood disorders and low power, our findings demonstrate the impact of social anxiety over and above any influence from age or comorbid depression. There are a number of possible explanations why children with SoAD respond less favourably to broad-based CBT than children with other anxiety disorders. First it is possible that the group nature of the treatment delivery is more aversive for children with social anxiety disorder. Although this may contribute to reduced efficacy for this subsample, it is unlikely to provide a comprehensive explanation of the findings, given poorer outcomes have also been demonstrated in studies delivering individual therapy (Ginsburg et al., 2011). Second, the long standing nature of the diagnosis may also impact on responsiveness to change; children with SoAD often report shy and inhibited behaviours since infancy (Essex, Klein, Slattery,

Table 3

Estimated marginal means and standard errors across pre, post and follow-up for children across primary diagnoses.

Measure	Pre	Post	Follow-up	F
	M (SE)	M (SE)	M (SE)	
Primary diagnostic severity (CSR)				
SoAD	6.53 (.13)	4.88 (.13)	4.46 (.13)	Time $F(2, 1642) = 716.03^{**}$ Diagnosis $F(4, 821) = 14.96^{**}$ Time \times Diagnosis $F(8, 1642) = 10.44^{**}$
GAD	6.46 (.08)	3.59 (.08)	3.27 (.08)	
SAD	6.49 (.16)	3.73 (.16)	3.18 (.16)	
SPEC	6.81 (.23)	3.67 (.23)	3.46 (.23)	
OCD	6.53 (.25)	3.06 (.25)	3.02 (.25)	
Child-reported anxiety symptoms (SCAS)				
SoAD	32.58 (1.26)	24.05 (1.25)	22.27 (1.25)	Time $F(2, 1586) = 162.84^{**}$ Diagnosis $F(4, 806) = 1.43^a$ Time \times Diagnosis $F(8, 1587) = 1.49$
GAD	34.22 (.81)	24.97 (.81)	22.08 (.81)	
SAD	37.46 (1.57)	27.93 (1.57)	25.09 (1.56)	
SPEC	33.44 (2.24)	22.31 (2.23)	21.73 (2.23)	
OCD	31.50 (2.41)	26.54 (2.38)	24.81 (2.38)	
Mother-reported anxiety symptoms (SCAS)				
SoAD	34.10 (1.58)	25.96 (1.57)	24.03 (1.57)	Time $F(2, 1613) = 290.25^{**}$ Diagnosis $F(4, 810) = 3.14^a$ Time \times Diagnosis $F(8, 1613) = 1.90^a$
GAD	36.06 (1.33)	24.99 (1.33)	22.91 (1.33)	
SAD	41.70 (1.79)	30.58 (1.79)	28.00 (1.78)	
SPEC	34.42 (2.25)	25.77 (2.25)	23.61 (2.25)	
OCD	38.80 (2.38)	27.91 (2.38)	24.59 (2.38)	

Note. CSR = Clinician severity rating. SoAD = Social Anxiety Disorder. GAD = Generalised Anxiety Disorder. SAD = Separation Anxiety Disorder. SPEC = Specific Phobia. OCD = Obsessive Compulsive Disorder. SCAS = Spence Children's Anxiety Scale.

⁺ $p < .10$, $p < .05$, $^{**}p < .01$.

^a When the covariates are included in this analysis the diagnosis main effect becomes significant, $F(4,792) = 2.50$, $p = .04$.

Goldsmith, & Kalin, 2010) and hence may be more resistant to change. A longer treatment program may be required to enhance outcomes for socially anxious children. Children who have been inhibited from infancy may require a longer treatment program with a greater number of sessions devoted to gradual exposure than was examined in the current treatment protocol. Importantly, in this study, we were able to examine whether children with social anxiety simply required more time to develop the skills learned in the program. This was not the case. Even 3–12 months after the program, children with social anxiety were doing worse than children with other anxiety diagnoses, suggesting that just allowing these children more time to practice their skills is not sufficient.

Another possibility is that the presence of social anxiety may result in more challenging conditions for the development of a strong therapeutic relationship between the child and therapist (e.g., less disclosure, less eye contact, heightened anxiety meeting a stranger – the therapist). There is some evidence that children with social anxiety are less liked than other children (Barrow, Baker, & Hudson, 2011; Verduin & Kendall, 2008) and this lower liking may impact on the development of a therapeutic bond. As a positive therapeutic relationship is related to a more positive response to CBT (Hudson, Kendall, et al., 2014), it is possible that lower therapeutic alliance may explain the current findings.

Impaired interpersonal interactions may also impact on the successful execution of exposure tasks for children with social anxiety. When socially anxious children conduct exposure tasks they may be more likely to experience negative feedback from others due to their self-focussed attention, use of safety behaviours (e.g., averted eye contact) or a history of victimisation. Thus rather than learning that the feared expectation is unfounded, the exposure may lead to a strengthening of the fear belief (e.g., 'people don't like me', or 'people will think I am stupid.') Hence a consistent and specific focus within treatment on reducing self-focussed attention during social interactions and reducing the use of safety behaviours may increase the efficacy of interventions for children with social anxiety disorder (Rapee, Gaston, & Abbott, 2009).

Another related possible explanation is that it may simply be harder to achieve disconfirmation of fear expectancies in social situations. For example, if a child talks to a group of peers, it is not clear afterwards whether they liked or disliked them. The negative

interpretation biases shown by young people with social anxiety would contribute to this difficulty (Vassilopoulos & Banerjee, 2008). Evidence from the adult literature has shown that specific additions to broad, general CBT, that address these particular characteristics, enhance effects for adults with social anxiety (Rapee, Gaston, et al., 2009). If this is the case, then treatment that includes specific strategies to help disconfirm beliefs would be essential.

The findings from this study provide clear evidence that children with social anxiety disorder have poorer outcomes following family group treatment for broad-based anxiety disorders. There is some evidence from a recent meta analysis (Reynolds, Wilson, Austin, & Hooper, 2012) that, based on child-report, disorder specific treatments show stronger effect sizes for child anxiety, although the different outcome measures make this a difficult comparison. Perhaps the broad and general program examined here may not adequately address the specific characteristics associated with social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997). Hence, a more tailored program that helps children to disconfirm their negative social expectations may increase the efficacy of CBT for socially anxious children. Such strategies may include adequately equipping children with social skills prior to exposure, increasing their attentional focus to the "task at hand", and providing veridical feedback about the existence of negative evaluation. In line with this, a recent Norwegian study utilising a clinical sample of adolescents with social anxiety disorder demonstrated that a disorder-specific treatment targeting the cognitive elements of social anxiety demonstrated enhanced outcomes in comparison to the Coping Cat, a program designed to be transdiagnostic (Ingul, Aune, & Nordahl, 2013). The enhanced benefits of an alternative or supplementary treatment have yet to be empirically examined in pre-adolescent children with social anxiety disorder.

In contrast to the poorer response shown by children with social anxiety, there was evidence that children with generalised anxiety showed a better response to treatment than children with other anxiety disorders. This result is consistent with a small indication from previous research (Manassis et al., 2002). It was also especially interesting to note that children with OCD did not do worse than children with anxiety disorders and on at least one measure, showed

especially strong improvements. Reasons for the better response among children with GAD and perhaps OCD are not clear, but they are particularly notable given widespread clinical perspectives of the difficulty in treating these disorders. The consistent improvement among children with OCD is also notable given the recent changes in the DSM-5 that separated OCD from the anxiety disorders. Clearly, children with OCD respond very well to the general treatment components that influence children with anxiety disorders. Although treatment response does not indicate cause, and although there may be other factors that discriminate OCD from the anxiety disorders, this study provides at least some evidence demonstrating the marked similarity and overlap between these disorders.

The results of this study have important implications for transdiagnostic treatments (Ehrenreich-May & Chu, 2013). Our current findings provide preliminary support for the notion that while broad-based or transdiagnostic 'group' approaches appear to work for disorders like GAD, SAD, OCD, and Specific Phobia, such an approach is leading to less satisfactory outcomes for children with either a primary or comorbid social anxiety disorder. Randomised clinical trials comparing disorder-specific versus transdiagnostic approaches are necessary. Although some research has already indicated that transdiagnostic approaches to adult anxiety result in comparable efficacy to disorder-specific approaches (Norton & Barrera, 2012), there are also clear indications from studies with adolescents and adults that enhanced treatments designed specifically to target cognitive features of social anxiety disorder lead to better outcomes for individuals with social anxiety disorder (Clark et al., 2006; Ingul et al., 2013; Rapee, Gaston, et al., 2009).

The study has a number of notable strengths and limitations. This is the largest study to examine whether treatment outcomes vary between the specific anxiety disorders following family group treatment for broad-based anxiety disorders. The inclusion of both end point diagnoses as well as change trajectories and post and follow-up assessments allows for a comprehensive examination of response to CBT. The inclusion of several trials from the same centre using the same treatment protocol and procedures is also a significant strength as it leads to less inconsistency than multi-site studies although it may lead to results that are protocol specific. The combination of research trials resulted in some minor variations in protocols such as duration of follow-up period and session numbers that weaken the design. Another limitation of our study is that the majority of children had a primary diagnosis of SAD, SoAD or GAD with fewer children diagnosed with primary OCD (5.8%; $n = 49$) and Specific Phobia (6.8%; $n = 57$). Further, although our diagnostic assessments focused on the severity of specific disorders, we did not include disorder specific questionnaire measures such as the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; Scahill et al., 1997) or the Social Phobia Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995) and thus our questionnaire assessments may be likely to capture generalised improvement in anxiety. Finally, the sample represents predominantly white middle class Australian families, thus limiting generalisability outside this sample.

In summary, the findings of this study show that children with a diagnosis of social anxiety do not respond to broad-based CBT as favourably as children with other anxiety diagnoses. Although some possible explanations have been offered here, it is imperative that we empirically examine why children with social anxiety disorder demonstrate differential response to CBT. On the other hand, children with GAD showed better response to this broad-based intervention and children with OCD showed better response on one measure. The results provide preliminary support for the use of transdiagnostic approaches in the treatment of disorders like GAD, SAD, OCD, and Specific Phobia. Randomised clinical trials comparing transdiagnostic versus disorder specific

treatments are required, as are empirical investigations assessing whether the length of therapy, or the method of therapy delivery (individual or group) alter the outcomes for children with social anxiety. Given preliminary evidence that treatments tailored specifically for children with social anxiety disorder improve outcomes (Reynolds et al., 2012), this seems like a sensible next step. Incorporating treatment components that have proven beneficial for adults with social anxiety disorder, such as video feedback and attention training, may also improve CBT response for children with social anxiety.

Conflicts of interest

Rapee, Wuthrich, Schniering, Hudson and Lyneham are authors of the Cool Kids program, but receive no direct payments from it.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.brat.2015.06.007>.

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