Meta Analysis of Childhood Anxiety Treatment: An Evaluation of Overall Effectiveness

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Abstract

This poster presents the findings from a current meta-analysis of childhood anxiety treatment outcome studies, reflecting advancements in methodology and reporting. Included in this study are 25 primary outcome studies (N = 1, 725) and six follow-up studies. Previous researchers (e.g., In-Albon & Schneider, 2007; Ishikawa, Okajima, Matsuoka, & Sakano, 2007; Soler & Weatherall, 2007) have recently conducted meta-analyses examining the efficacy of treatments for childhood anxiety disorders. The current meta-analysis was done to reflect some advances in methodology that were not apparent across all of these studies (e.g., inclusion/exclusion criteria, the calculation of unconventional effect sizes, insufficient descriptive statistics). Furthermore, this study used both conventional and updated strategies for conducting meta-analyses, reflecting and extending research in the child depression area (Weisz, McCarty, & Valeri, 2006). One purposse was to facilitate more accurate comparisons across different meta-analyses examining the treatment of anxiety disorders for both children and adults (e.g., Ghahramanlou, 2003) and the treatment of other childhood, and adult, disorders such as depression (e.g., Weisz et al., 2006). In addition to presenting both traditional and updated between group effect sizes, a number of other effect sizes were also calculated: within-group effect sizes, follow-up effect sizes, and proportional effect sizes (for diagnosis outcome). Additionally, based on heterogeneity within the sample of studies, a number of moderator analyses are to be conducted

to examine potential sources of variance.

Introduction

Anxiety disorders are the most commonly diagnosed group of psychological diagnoses in children (Cartwright-Hutton et al., 2006) and adolescents (Roberts et al., 2007).

Negative Effects of Anxiety Disorders in Youth:

- School refusal, poor academic performance, poor psychosocial adjustment, developmental delays, difficulties in relationships, & continued problems into adulthood.

Three recent meta-analyses have established the effectiveness of treatment for childhood anxiety disorders (see In-Albon & Schneider, 2007; Ishikawa et al., 2007; Soler & Weatherall, 2007).

This study attempted to extend these studies in these areas:

- Inclusion Criteria;
- Greater descriptive statistics;
- Calculating conventional and conservative effect sizes; and
- Assessments based on broader outcomes.

The aims of this research were to:

- Compare treatment and control groups on pertinent outcomes (e.g., diagnosis outcome, multiple symptoms of the diagnosis, as well as symptoms of comorbid diagnoses);
- Determine if treatment gains were maintained following treatment;
- Determine whether children were returned to within normative ranges;
- Enhance comparability across meta-analyses.

Method

Inclusion Criteria (see also Weisz et al., 1995):

1. Interventions met the definition of psychotherapy;
2. The study was published between 1970 and 2007;
3. The participants were diagnosed with an anxiety disorder using DSM criteria;
4. The focus of the study was the treatment of anxiety disorders in children;
5. The participants were randomly assigned to groups;
6. The design included a comparison control group;
7. Measures were administered at pretreatment and posttreatment; &
8. Statistics were reported from which effect sizes could be calculated.

Search Outcome

Thirty-one studies were identified for this meta-analysis.7 Twenty-five of the 31 studies were treatment outcome studies and six were long-term follow-up studies. Given that these follow-up studies related to earlier studies, though they were included, the sample was considered to be N = 25. See Table 1 and 2 for a summary of the participant and study characteristics, respectively.

Outcomes of Interest.

Three primary outcomes were assessed

1. Diagnosis Outcome
2. Symptoms of the Primary Diagnosis
3. Comorbid Symptoms

Additional Analyses Carried Out:

1. File Drawer Analysis
2. Homogeneity Analysis
3. Moderator Analysis
4. Clinical Significance Evaluation

Table 1: Summary of study participants

Characteristic	Percentage	*M*	*SD*	Range
% Male	47.74			16.67-62%
Age		11.19	2.64	4-18
Ethnicity				
Caucasian	65.55%			
African American	16.67%			
Hispanic	8.71%			
Asian	0.54%			
Other	2.36%			
Total ethnic minority	34.39%			
Primary diagnosis				
Social phobia	25.10%			
Simple phobia	18.38%			
GAD	17.51%			
SAD	13.80%			
OAD	10.20%			
OCD	5.85%			
Avoidant disorder	1.62%			
PTSD	1.39%			
Agoraphobia	0.41%			
Panic disorder	0.35%			
Co-morbid Diagnoses	62.00			22-89%
Sample medicated	35.85			

Table 2: Summary of included studies

Characteristic	Frequency	Percentage[a]	*M*	*SD*	Range
Treatment approach					
CBT	21	84.0			
Behaviour therapy	2	8.0			
Play therapy	1	4.0			
Emotive therapy	1	4.0			
Treatment conditions	37				1-3
Group (child)	12	32.43			
Individual (child)	11	29.73			
Therapist Supported Bibliotherapy	6	16.22			
Family group	4	10.81			
Family	3	8.11			
Child group treatment partially delivered via the internet	1	2.70			
Treatment sessions					
Number			11.42	5.11	1-24
Length (minutes)			79.13	40.50	40-180
Control comparison	25	100.00			
Waitlist	18	72.00			
Attention placebo	6	24.00			
No treatment	1	4.00			
Therapists			4.37		1-11
Clinical psychologists	9	36.00			
Graduate students	9	36.00			
Doctoral candidates	4	16.00			
Mastered level Psychologist	1	4.00			
Post doctoral fellow	1	4.00			
Clinical Intern	1	4.00			
Psychiatric Social Worker	1	4.00			
Treatment Characteristics					
Manualized	25	100.00			
Included Family	12	48.00			
Included Teachers	3	12.00			
Included Homework	20	80.00			
Included Booster Sessions	6	24.00			

Table 3: Posttreatment and follow up RCI and normative comparisons for treatment conditions on the CBCL-I

Study	Treatment Condition	RCI Post	RCI FU	Normative Comparison Post	Normative Comparison FU
Barrett, 1998	Group CBT	*	*	Equivalent	Equivalent
	Group Family CBT	*	*	Equivalent	Equivalent
Barrett et al., 1996	Individual CBT	*	*	Different	Equivalent
	Family CBT		*	Different	Equivalent
Flannery-Schroeder & Kendall, 2000	Individual CBT	*	*	Equivalent	Equivalent
	Group CBT	*	*	Different	Equivalent
Kendall, 1994	Individual CBT	*	*	Different	Different
Kendall et al., 1997	Individual CBT	*	*	Different	Equivalent
Shortt et al., 2001	Family CBT		n/a		n/a
Silverman et al., 1999a	Family BT			Equivalent	Equivalent
	Family CBT			Equivalent	Equivalent
Silverman et al., 1999b	Group CBT	*	n/a	Different	n/a
Beidel et al., 2000	Group CBT		n/a	Different	n/a
Gallagher et al., 2004	Group CBT			n/a	n/a
Lyneham & Rapee, 2006	Bibliotherapy A	*	n/a	Different	n/a
	Bibliotherapy B		n/a	Different	n/a
	Bibliotherapy C		n/a	Different	n/a
Rapee et al., 2006	Bibliotherapy		*	Different	Different
	Group CBT		*	Different	Equivalent
Spence et al., 2006	Group CBT	*	*	Different	Equivalent
	CBT partially delivered via NET		*	Different	Different

Results

Completion Rate

There was an overall completion rate of 83.07%. This was significantly different for those participants assigned to an active treatment condition (82.52%) versus a control condition (86.45%).

Diagnosis Outcome

The log odds ratio for each study ranged from 0.62 to 5.35 (see Figure 1). The overall weighed mean effect size comparing control and treatment groups post-treatment on diagnosis outcome was 1.97 (*SE* = .15; 95% *CI* 1.68 – 2.26, p < .001).

This indicated that significantly more participants assigned to an active treatment condition were free of their primary diagnosis (64.98%; n = 373) when compared to participants assigned to a control condition (15.84%; n = 51).

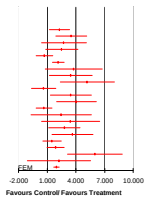

Figure 1: Forrest plot of effect sizes for all studies on Diagnostic Outcome

A homogeneity analysis revealed that there was more variation amongst effect sizes than would have been expected by sampling error alone, Q (20) = 52.94, p < .001. The following moderator variables were found to be significant categorical variables: homogeneity of the sample, treatment modality, type of control group, methodological quality, and treatment duration. However, none of these variables was found to account for a significant proportion of the excess variability found within the effect size distribution.

Results (cont)

Symptoms of the Primary Diagnosis

Of the various effect sizes, calculated, we reported the most conservative, Glass' corrected delta (see accompanying summary for more information). The mean effect sizes for each study ranged from 0.43 to 4.00 (see Figure 2). The overall weighted mean effect size comparing control and treatment groups post-treatm the primary diagnoses v)5% *CI* 0.79 – 1.05, p < .001).

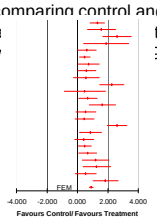

Figure 2: Forrest plot of effect sizes for all studies on Symptoms of the Primary Diagnosis

To reduce this effect to a medium size (.50) and a small size (.20), 20 and 86 studies with an effect size of zero would be needed, respectively.

A homogeneity analysis revealed that there was more variation amongst effect sizes than would have been expected by sampling error alone, Q (23) = 86.47, p < .001. The following moderator variables were found to be significant categorical variables: gender, age, homogeneity of the sample, treatment modality, treatment duration, treatment setting, and recruitment type. However, none of these variables was found to account for a significant proportion of the excess variability found within the effect size distribution.

Comorbid Symptoms

The overall weighted mean effect size comparing control and treatment groups post-treatment on depression measures was .50 (*SE* = .08; 95% *CI* .34 - .66, p < .001). This result was maintained over the follow-up periods.

The overall weighted mean effect size comparing control and treatment groups post-treatment on internalizing measures was .74 (*SE* = .08; 95% *CI* .58 - .90, p < .001). This result continued to improve over the follow-up periods.

The overall weighted mean effect size comparing control and treatment groups post-treatment on internalizing measures was .46 (*SE* = .10; 95% *CI* .25 - .66, p < .001). This result continued to improve over the follow-up periods.

Clinical Significance (see Table 3)

Ten of 21 (47.62%) treatment conditions showed a clinically significant change at post-treatment and 12 of 14 (85.71%) treatment conditions showed a clinically significant change at follow-up (as measured via the CBCL-I).

Five of 20 conditions (25.00%) showed clinical equivalency at post-treatment and 11 of 14 (78.57%) conditions showed clinical equivalency at follow-up

Discussion

Future Directions:

- As the majority of studies were carried out in university clinics, the transportability of treatment findings to real-world conditions are unclear. One promising finding of the current study that is related is the positive results found for therapist-supported bibliotherapy.
- As within the adult literature, youth researchers should increase the specificity of their research questions, particularly in relation to specific anxiety syndromes and specific moderators/mediators of outcome, including active ingredients.
- As many primary researchers within the childhood trauma literature have conducted randomised controlled trials on children with PTSD symptoms (but not diagnosis), a meta-analysis of treatment outcomes for children with PTSD symptoms would be beneficial.