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Group Psychoeducation for Anxiety Symptoms in Youth: Systematic Review and Meta-analysis

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ABSTRACT

This systematic review and meta-analysis aims to provide a comprehensive evaluation of randomized controlled trials of psychoeducational group interventions targeting anxiety symptoms in youths. We systematically searched for articles and located twelve studies that collectively included 1132 subjects. Analyses showed an overall effect of –0.47 (95% CI –0.75 to –0.19) on the Standardized Mean Difference (SMD) scale, suggesting that psychoeducation effectively reduces anxiety symptoms in children and adolescents. However, the I^2 index was 86.4% revealing the presence of substantial heterogeneity. These results suggest that psychoeducation may be a promising alternative for the prevention and/or treatment of anxiety disorders in youths.

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KEYWORDS
Meta-analysis; anxiety symptoms; psychoeducational groups; children and adolescents

Introduction

Youth Anxiety

Anxiety is a common emotion in childhood, the management and coping of which assists in the process of cognitive maturation (Donnelly & Rhoads, 2012). A challenge clinicians and researchers face regarding diagnosing anxiety disorders in children and adolescents is that it is difficult to distinguish from normal fears and worries (Donnelly & Rhoads, 2012; James et al., 2013; Warren & Sroufe, 2004). As a result, it is not uncommon for anxiety disorders in children and adolescents to be underdiagnosed and be left untreated (Costello et al., 2004; Davis et al., 2011; Donovan & Spence, 2000; Egger & Burns, 2004; Schneier et al., 1992). Nevertheless, anxiety disorders are considered the most common child and adolescent psychological problems (Donnelly & Rhoads, 2012) with numerous adverse consequences in many life domains, such as academic performance and social interactions with family and peers (Bennett et al., 2016; Crowe & McKay, 2017; Donovan & Spence, 2000; James et al., 2013; Warwick et al., 2017). Finally, anxiety disorders pose a longitudinal threat for children and place them at a higher risk of developing a mental disorder in adolescence and/or adulthood (Bennett et al., 2016; In-Albon & Schneider, 2007; Last et al., 1997; Warwick et al., 2017).

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Cognitive-Behavioral Therapy for Youth Anxiety

The most prevalent treatment for youth anxiety disorders appears to be cognitive-behavioral therapy (CBT) (Reynolds et al., 2012), a psychotherapeutic approach that applies techniques such as psychoeducation, problem-solving and coping skills development, cognitive restructuring, and exposure in order to change a person's maladaptive thoughts (Compton et al., 2004; Crowe & McKay, 2017; James et al., 2013). Over the past two decades, several systematic reviews, including meta-analyses, have examined CBT's effectiveness on the prevention and treatment of various anxiety disorders in children and adolescents (e.g., Cartwright-Hatton et al., 2004; Compton et al., 2004; Crowe & McKay, 2017; Davis et al., 2011; In-Albon & Schneider, 2007; Ishikawa et al., 2007; James et al., 2013; Neil & Christensen, 2009; Reynolds et al., 2012; Scaini et al., 2016; Silverman et al., 2008; Spielmans et al., 2007; Werner-Seidler et al., 2017). Generally, this line of research shows that CBT, regardless of its format (i.e., group or individual) and the participants' characteristics (e.g., sex and age) is effective for treating anxiety disorders in youth (e.g., Bennett et al., 2016; Butler et al., 2006; Compton et al., 2004; Crowe & McKay, 2017; Davis et al., 2011; James et al., 2013). Nevertheless, several meta-analyses examining CBT effectiveness for children and adolescents' anxiety suggest that even though CBT reduces anxiety symptoms, it is no better than other active treatments (James et al., 2013; Spielmans et al., 2007). For example, some meta-analyses found lower effect sizes (ES) for CBT when compared to active control groups than when compared to non-active control groups (Crowe & McKay, 2017; Ishikawa et al., 2007; Reynolds et al., 2012), suggesting that other treatment modalities might also be an effective alternative.

Psychoeducational Groups

Since the 1990s, the Association for Specialists in Group Work (ASGW) has recognized four distinct types of groups: task and work groups, psychoeducational, counseling, and psychotherapy groups (Association for Specialists in Group Work [ASGW], 1990). Ten years later, and after much criticism, ASGW supplemented and elucidated the definitions of the four group types (ASGW, 2000). The enhanced definition clarified that psychoeducational groups use "group based educational and developmental strategies" to "promote personal and interpersonal growth and development and the prevention of future difficulties among people who may be at risk for the development of personal or interpersonal problems or who seek enhancement of personal qualities and abilities" (ASGW, 2000, p. 3), thus underlining the educative and preventive aspects of psychoeducational groups. Psychoeducational groups are highly structured and are habitually conducted with generally well-functioning people (Shechtman et al., 1997). Therefore, they differ from counseling or psychotherapy groups since they focus primarily in educating their members about a psychological concept or topic (Brown, 2011). In the literature, the term "psychoeducational" is frequently used as a general term that encompasses different types of group treatment modalities, such as cognitive-behavioral groups (e.g., MacPherson et al., 2014), social skills training groups (e.g., Gerrity & DeLucia-Waack, 2006), narrative therapy groups (e.g., Leahy & Harrigan, 2006), etc. However, not all such group interventions (e.g., cognitive-behavioral, social skills training, narrative) are psychoeducational since they fall under the definitions of counseling and psychotherapy groups provided by

ASGW (2000). Since many researchers do not clarify the specific group type they implement according to the ASGW standards, a thorough inspection of the intervention's description may elucidate this issue. Interventions that are based on educating and training group members regarding a topic can therefore be identified as psychoeducational.

Psychoeducational groups are commonly conducted in large groups, such as classes (Shechtman et al., 1997), and they are used in schools for prevention or as a treatment for at-risk children and adolescents (Gerrity & DeLucia-Waack, 2006). Research so far indicates that psychoeducational groups are effective in preventing and treating behavioral and psychological difficulties in children and adolescents, as well as improving school and home behaviors, self-control, social skills, and self-esteem (e.g., Brown, 2011; DeLucia-Waack, 2006; Gerrity & DeLucia-Waack, 2006; Wu et al., 2014; Yeo & Choi, 2011; Yildiz & Duy, 2013). Several psychoeducational groups that aim at preventing or treating various anxiety disorders in children and adolescents have been designed. Psychoeducational groups have shown effectiveness in treating social anxiety (e.g., Gallagher et al., 2004; Herbert et al., 2009; Öst et al., 2015; Vassilopoulos et al., 2013), panic disorder (e.g., Gallo et al., 2012), and generalized anxiety disorder (e.g., Lau et al., 2010) in youths.

Purpose of the Study

Based on the literature review summarized above, even though CBT is considered the treatment of choice for youth anxiety disorders, it appears that other therapeutic approaches might be equally effective (In-Albon & Schneider, 2007; James et al., 2013; Spielmans et al., 2007). In-Albon and Schneider (2007) in particular found that psychoeducation produces comparable results with CBT, thus creating the need to examine the effectiveness of psychoeducational interventions. The main purpose of this systematic review and meta-analysis is to examine the effectiveness of group interventions that are based on psychoeducation and aim to reduce anxiety symptoms in children and adolescents.

Most meta-analytic studies examine both individual and group psychotherapeutic approaches in the treatment of youth anxiety (In-Albon & Schneider, 2007; Ishikawa et al., 2007; James et al., 2013; Reynolds et al., 2012). Therefore, meta-analyses that focus specifically on group interventions for children and adolescents with anxiety are lacking. Moreover, several previous meta-analyses include studies with children and adolescents who have received an anxiety disorder diagnosis (e.g., In-Albon & Schneider, 2007; James et al., 2013), thus ignoring studies that include youth with an anxiety problem that has not been diagnosed, or studies that focus on the prevention of anxiety in children and adolescents. However, anxiety disorders in youth are often underdiagnosed and untreated (e.g., Costello et al., 2004; Davis et al., 2011). Finally, previous meta-analyses have examined the moderating effects of parental involvement, participant age, and treatment duration on treatment outcomes of CBT for youth anxiety (e.g., In-Albon & Schneider, 2007; Reynolds et al., 2012; Scaini et al., 2016; Werner-Seidler et al., 2017).

This meta-analysis has two main aims: (a) to examine the effectiveness of group psychoeducational interventions for youth anxiety, and (b) to investigate the moderating effect of parental involvement, participant age, treatment duration, and the existence of a primary anxiety diagnosis on psychoeducational treatment outcomes.

Method

Types of Studies and Outcomes

We considered controlled trials that included children and adolescents and compared a psychoeducation group to a control group, either wait-list or active control. More specifically, for the purposes of this meta-analysis we defined group psychoeducational interventions for youth anxiety according to the definition of psychoeducational groups provided by ASGW (2000). Specifically, we considered for inclusion any kind of psychological intervention delivered in a group format that is designed to educate and train the participating children or adolescents with the purpose of preventing or alleviating anxiety symptoms. The primary outcome was reduction in anxiety symptoms using standardized tests (e.g., the Revised Children's Manifest Anxiety Scale (RCMAS), the Social Phobia and Anxiety Inventory for Children (SPAI-C), the Multidimensional Anxiety Scale for Children (MASC), etc.).

Review Inclusion/Exclusion Criteria

We considered the following eligibility criteria: (1) published in English in the peer-reviewed literature since the year 2000, (2) included population aged 18 or younger, (3) described a psychoeducational group intervention [studies reporting other types of group interventions were included if the description of the intervention fell under ASGW's definition of psychoeducational groups (ASGW, 2000) provided above], (4) included a control group, (5) outcomes reported included anxiety symptom scores, (6) sufficient statistical information was provided to calculate effect sizes, (7) the group intervention aimed at reducing anxiety in group members.

Literature Search and Data Extraction

We searched the following online databases, PubMed, PsycINFO, and Scopus, from the beginning of 2000 until 1st of May 2019, in order to identify articles describing group psychoeducational interventions for anxiety in children and adolescents. The identification of relevant articles began with a computer search of the databases using combinations of the following keywords: *psychoeducat**, *adolescent**, *child**, *anxiety*, *group**. The literature search included articles that were published after 2000 because it is then that ASGW clarified the definition of psychoeducational groups (ASGW, 2000). Moreover, we hand searched the reference lists of recent reviews and meta-analyses for relevant articles.

We reviewed abstracts of 2979 identified articles and located 289 satisfying the eligibility criteria. We, then, retrieved those papers and read them in full in order to conclusively determine whether they should be included. The referent lists of eligible articles were also reviewed in order to detect any article that might also fit inclusion criteria. Three of the authors (VCB, EV, and CB) separately inspected all potential references to ensure reliability. Any disagreement concerning study eligibility was discussed among all review authors. A flow diagram of the procedure followed in this study for the identification and inclusion of articles is presented in Figure 1. The final sample comprised 12 studies that collectively included 1132 participants.

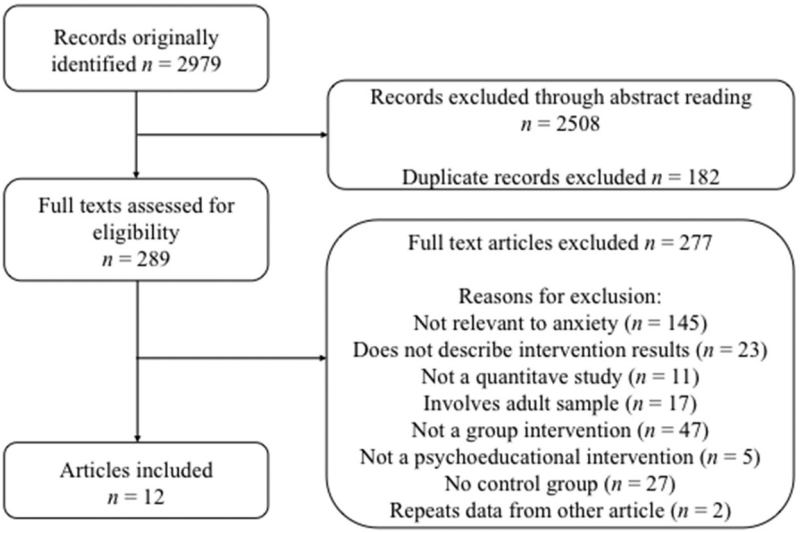

Figure 1. Flowchart of study selection.

Three of the authors (VCB, EV, and CB) independently extracted and coded all variables according to a coding book that was developed a priori and included information regarding study and sample characteristics (e.g., sample size, geographical location of research), treatment conditions (e.g., number and duration of sessions), and therapist characteristics (e.g., therapist degree) (Erford et al., 2010). In cases of disagreement, consensus was reached through discussion.

Assessment of Risk of Bias in Included Studies

Three review authors (VCB, EV, and CB) independently assessed Risk of Bias (RoB) for each of the studies included in the meta-analysis based on the Cochrane risk of bias criteria described in the Cochrane Handbook for Systematic Reviews of Interventions, with ratings of "low risk," "high risk," and "unclear risk" for the six domains of the tool; (1) sequence generation (selection bias), (2) allocation concealment (selection bias), (3) blinding of participants and personnel (performance bias), (4) incomplete outcome data (attrition bias), (5) selective outcome reporting (reporting bias), and (6) blinding of outcome assessment (detection bias) (Higgins et al., 2011). Disagreements were discussed with the other review authors until full consensus was reached.

Studies with low risk of selection bias adequately described the sequence generation and the concealment of treatment group allocation. Due to the psychological nature of the interventions, blinding of either participants or personnel delivering the treatments was not possible in most of the studies, thus leading to the high risk of performance bias observed. Detection bias was not assessed in this meta-analysis as outcome assessments in almost all studies were conducted through the participants' self-reports. The assessment of attrition bias was based on whether the involved studies thoroughly described withdrawals and dropouts (Table 1).

Table 1. Risk of bias (RoB) assessment for the six RoB domains.

	(1) Sequence generation	(2) Allocation concealment	(3) Blinding of participants and personnel	(4) Incomplete outcome data	(5) Selective outcome reporting
Bouchard et al. (2013)	Unclear	Unclear	High	Unclear	Low
Braden et al. (2015)	High	High	High	Low	Low
Cummings and Fristad (2012)	Unclear	Unclear	High	Unclear	Low
Gallagher et al. (2004)	Unclear	Unclear	High	Low	Low
Gallo et al. (2012)	Unclear	Unclear	High	Low	Low
Grootenhuis et al. (2009)	High	High	High	Unclear	High
Lau et al. (2010)	Unclear	Unclear	High	Unclear	Low
Li et al. (2007)	Unclear	Unclear	High	Low	Low
Monga et al. (2015)	Unclear	Unclear	High	Unclear	Unclear
Öst et al. (2015)	Low	Low	High	Unclear	Low
Setoodeh et al. (2010)	Unclear	Unclear	High	Low	Low
Tomba et al. (2010)	Unclear	Unclear	High	Unclear	Low

Analyses

To conduct this systematic review, we followed the steps of a systematic review as presented in the Cochrane Handbook (Higgins et al., 2020) and briefly outlined in Erford et al. (2010). We calculated the standardized mean difference between intervention and control groups using Cohen's *d* estimate. An effect size smaller than 0.20 is considered small, 0.20–0.50 represents a medium effect, and larger than 0.80 a large effect (Cohen, 1992).

We used a random effects model, which is preferable and more realistic to fixed effects model when heterogeneity is expected (Nikolakopoulou et al., 2014), which was the case in this study. We used the I^2 index to express the proportion of variability that is due to heterogeneity rather than sampling error, with values larger than 50% indicating the presence of heterogeneity. In all our analyses we used Stata 13 (StataCorp, 2013) and more specifically the metan command (Chaimani et al., 2014; Harris et al., 2008).

Results

Study and Sample Characteristics

Data from 12 studies were included in this meta-analysis (see Table 2). All studies investigated the efficacy of a group intervention aiming to decrease the anxiety of participating children and adolescents. All interventions targeted a subtype of anxiety and could be described as psychoeducational based on ASGW's definition of psychoeducational groups (ASGW, 2000); however, only three of them were described as psychoeducational interventions by their authors, five were characterized as cognitive-behavioral, one as a therapeutic play intervention, one as a social skills training intervention, one as well-being therapy, and one as a book-supported intervention. Only three studies compared a psychoeducational modality with an active control group, while the others used wait-list and treatment as usual controls.

All studies used an anxiety scale completed either by the participants (eleven) and/or their parents (six studies). Four studies used more than one tool to assess anxiety and we used the mean outcome across these scales with its pooled standard deviation. A total of 13 different anxiety questionnaires and two interview schedules were used in the studies involved.

Table 2. Characteristics of individual studies included in the meta-analysis.

Study	Country	Treatment type	Type of anxiety	Diagnosis	*N*	Age	% girls	Outcome measure	SMD [95% Conf. Interval]
Bouchard et al. (2013)	Canada	Book-supported primary prevention program	Anxiety disorders	No (Participants with high scores in Child Behavior Checklist and Screen for Child Anxiety Related Emotional Disorders were chosen)	46 (24 intervention group, 22 wait-list control group)	*M* = 10.7 years for the intervention group and *M* = 10.1 years for the control group	50%	Multidimensional Anxiety Scale for Children (MASC)	−0.479 [−1.067 0.108]
Braden et al. (2015)	Australia	Cognitive behavioral (CB) group-delivered intervention	Music performance anxiety	No	62 (30 intervention group, 32 wait-list control group)	*M* = 13.7 years for the intervention group and *M* = 13.87 years for the control group	100%	Music Performance Anxiety Inventory for Adolescents (MPAI-A)	−0.225 [−0.724 0.275]
Cummings and Fristad (2012)	USA	Multi-Family Psychoeducational Psychotherapy	Mood disorders with comorbid anxiety	Yes (Children's Interview for Psychiatric Syndromes – Child and Parent Forms)	165 (78 intervention group, 87 wait-list control group)	8–11 years old (*M* = 9.9, *SD* = 1.3)	27%	Children's Interview for Psychiatric Syndromes – Child and Parent Forms (ChIPSand P-ChIPS)	−0.042 [−0.347 0.264]
Gallagher et al. (2004)	USA	cognitive-behavioral group intervention	Social phobia	Yes (Anxiety Disorders Interview Schedule for Children)	23 (12 intervention group, 11 wait-list control group)	8–11 years old	52%	Social Phobia and Anxiety Inventory for Children (SPAI-C), Social Anxiety Scale for Children – Revised (SASC-R), Revised Children's Manifest Anxiety Scale (RCMAS), & Child Behavior Checklist-Anxiety (CBCL)	−0.154 [−0.564 0.256]
Gallo et al. (2012)	USA	8-day intensive treatment	Panic disorder with or without agoraphobia	Yes (Anxiety Disorders Interview Schedule–Child and Parent Versions)	55 (39 intervention group, 16 wait-list control group)	12–17 years old (*M* = 15.10, *SD* = 1.71)	60%	Anxiety Disorders Interview Schedule–Child and Parent Versions (ADIS-IV-C/P)	−1.003 [−1.436–0.571]
Grootenhuis et al. (2009)	Netherlands	Psychoeducational group intervention	Coping with inflammatory bowel disease	No	40 (22 intervention group, 18 wait-list control group)	*M* = 15.7 (*SD* 1.5) years for the intervention group and *M* = 15.4 (*SD* 1.4) years for the control group	53%	Dutch version of State-Trait Inventory for Children (ZBV-K)	−0.600 [−1.315 0.115]
Lau et al. (2010)	Hong Kong	Anxiety group cognitive-behavioral treatment program	Anxiety disorders	Yes (Kiddie-schedule for affective disorders and schizophrenia)	45 (24 intervention group, 21 wait-list control group)	6–11 years old (*M* = 8 years and 7 months, *SD* = 14 months)	47%	Spence's Children's Anxiety Scale (Child and Parent versions) (SCAS)	−0.961 [−1.399–0.523]
Li et al. (2007)	China	Therapeutic play intervention	Preparation of children for surgery	No	203 (97 intervention group, 106 treatment as usual control group)	7–12 years old (*M* = 9.55, *SD* = 1.41 years for the intervention group, *M* = 9.41, *SD* = 1.40 years for the control group)	31%	State Anxiety Scale for Children (CSAS-C)	−0.509 [−0.789–0.230]

(*Continued*)

Table 2. (Continued).

Study	Country	Treatment type	Type of anxiety	Diagnosis	*N*	Age	% girls	Outcome measure	SMD [95% Conf. Interval]
Monga et al. (2015)	Canada	Parent only and Parent-Child Cognitive-Behavioral Therapy Programs	Anxiety disorders	Yes (Anxiety Disorders Interview Schedule for DSM-IV: Parent Version)	77 (45 Parent-Child intervention group, 32 parent only group)	5–7 years old (M = 6.8, SD = 0.8)	62%	Screen for Child Anxiety Related Emotional Disorders – Parent Version (SCARED), & Revised Conners' Parent Rating Scale: Long Version – subscale D (anxious/shy) (CPRS- R:L)	−0.075 [−0.395 0.246]
Öst et al. (2015)	Sweden	Social skills training	Social phobia	Yes (Anxiety Disorders Interview Schedule for DSM-IV: Child and Parent versions)	55 (16 child treatment only group, 16 child treatment and parent training group and 23 wait-list control group)	8–14 years old (M = 11.60, SD = 1.99)	62%	Social Phobia and Anxiety Inventory for Children (Child and Parent Versions) (SPAI-C), & Multidimensional Anxiety Scale for Children (MASC)	−0.564 [−0.852–0.276]
Setoodeh et al. (2010)	Iran	Psychoeducational intervention	Post-operative anxiety and pain	No	199 (100 intervention group, 99 treatment as usual control group)	9–12 years old (M = 10.26, SD = 1.14 years for the intervention group, M = 10.39, SD = 1.24 years for the control group)	53%	Speilberger State Anxiety Inventory for children (SSAI)	−1.274 [−1.580–0.969]
Tomba et al. (2010)	Italy	Well-Being Therapy and Anxiety Management	Psychological distress	No	162 (82 well-being intervention, and 80 anxiety management intervention)	mean age = 11.41 years; SD = 0.56).	58%	Kellner's Symptom Questionnaire (anxiety subscale) (SQ), & Revised Children's Manifest Anxiety Scale (RCMAS)	0.121 [−0.097 0.339]

A total of 1132 children and adolescents participated in the studies (583 in intervention groups and 549 in control groups). All interventions targeted children and adolescents five to 17 years old, with most of them involving preadolescents (9–13 years old; eight studies). Eleven of the studies involved both boys and girls, while one study targeted only girls. Nine studies involved mostly Caucasian participants. In half of the studies, the participants involved had received an anxiety disorder diagnosis through a psychiatric interview schedule, one study included participants with high anxiety symptom scores and the rest targeted youth without any formal diagnosis, aiming mostly at prevention.

Treatment Conditions and Therapist Characteristics

All the interventions were short, with the length of therapy ranging from one to twelve sessions, with each session lasting from one to six hours (see Table 3). Only eight studies provided information regarding group size, indicating that each group involved four to nine group members. In six studies, parents were not involved at all in the treatment, and in the other six they were involved in either the same group with the children-adolescents (four studies), or in another group (two studies). The interventions were conducted in diverse settings, including schools, hospitals, and other centers.

The group facilitators that led the interventions came from diverse backgrounds (e.g., doctoral or master students, clinical psychologists, researchers). Three studies did not provide any information regarding the group facilitators. Eight studies did not specify whether group facilitators had received any training before implementing the intervention and eleven studies did not disclose any information regarding supervision.

Effect of Psychoeducation on Anxiety

Data analysis from the twelve included studies revealed a medium, statistically significant effect size (SMD = −0.47, 95% CI −0.75 to −0.19, $\tau^2 = 0.20$, $z = 3.32$, $p = .001$), suggesting that psychoeducation is effective in the reduction of anxiety symptoms (Figure 2). The level of heterogeneity was substantial ($I^2 = 86.2\%$), as also seen from the forest plot in Figure 3 and the heterogeneity variance estimate ($\tau^2 = 0.20$). The 95% predictive interval is −0.47 (95% CI −1.39 to 0.45) suggesting that a future study may be in either direction.

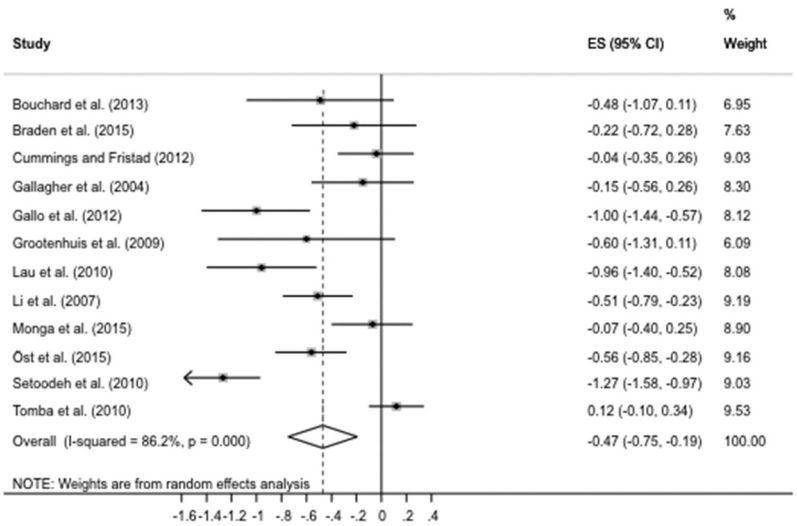

Figure 2. Forest plot showing the study results and the random-effects meta-analysis results.

Table 3. Treatment conditions and therapist characteristics of individual studies included in the meta-analysis.

Study	Treatment duration	Parental involvement	Setting	Group facilitators' characteristics
Bouchard et al. (2013)	10 75-minute sessions	None	School	Seven leaders (one doctoral student in psychology, master's degree students or licensed professionals in psychoeducation). They all received training in the use of the program.
Braden et al. (2015)	8 sessions	None	School	Two female school psychologists
Cummings and Fristad (2012)	8 90-minute sessions	Sessions began and ended with parents and children together – Separate groups for parents	University medical center	Two group leaders per group: a main leader (a post-doctoral trainee or advanced level graduate student) and a co-leader (an advanced level graduate student)
Gallagher et al. (2004)	3 3-hour sessions	None	(no information)	(no information)
Gallo et al. (2012)	8 daily 2-to-6-hour sessions (20 hours of treatment in total)	None	(no information)	(no information)
Grootenhuis et al. (2009)	6 sessions	None	Hospital	(no information)
Lau et al. (2010)	9 2-hour sessions	Parents were invited to meet with one of the CBT co-leaders and to learn coaching techniques by observing treatment sessions	Community clinics	Two clinical psychologists per group. All women. At least one group leader in each group had some expertise in group CBT for children
Li et al. (2007)	1 1-hour session	Parents were invited to participate	Hospital	One leader (researcher) who had received training on how to implement therapeutic play interventions for hospitalized children
Monga et al. (2015)	11 1-hour sessions	Separate groups for parents	Urban/suburban sites	Two therapists (e.g., child psychiatrists, clinical psychologists, and social workers with >5 years of therapeutic experience) led each group
Öst et al. (2015)	12 sessions	Separate groups for parents	(no information)	Two leaders per group (Four female clinical psychologists with 1–5 years of clinical experience) All had treated at least two pilot cases with the employed treatment beforehand. They received supervision once a week.
Setoodeh et al. (2010)	1 1-hour session	Parents participated with their children	Hospital	One researcher
Tomba et al. (2010)	6 2-hour sessions	None	School	Two clinical psychologists with previous experience with the specific intervention

A sensitivity analysis was conducted excluding studies with 95% confidence intervals that did not overlap with the 95% confidence interval for the pooled effect size. Only one study was excluded (Setoodeh et al., 2010) which led to a slightly improved level of heterogeneity in comparison to the previous analysis (I^2 = 77.7%). The effect size remained medium but significant (SMD = −0.38, 95% CI −0.62 to −0.15, z = 3.21, p = .001).

Publication Bias and Small Study Effects

Small study effects (smaller studies showing systematically larger effects compared to large studies) were investigated in the study through a funnel plot, which revealed that the studies were symmetrically distributed; therefore, there is no indication of small study effects (Figure 3). Small-study effects are typically used as a proxy for publication bias (Mavridis & Salanti, 2014).

Moderator Analyses

A subgroup analysis was conducted to examine the impact of treatment duration on outcomes in accordance with the process presented by Thompson and Higgins (2002). Specifically, studies that included five or less sessions were compared to those consisting of six or more sessions. There was no statistically significant effect of treatment duration on the effectiveness of psychoeducation (Figure 4). Similarly, parental involvement did not significantly affect outcomes, even though in studies where the parents were involved in treatment the standardized mean difference appeared to be slightly larger (Figure 5). Finally, the existence of a primary anxiety diagnosis did not have a significant effect on outcome (Figure 6). There were very few studies to investigate the effect of facilitator characteristics, group size, and participants' age on outcomes; therefore, these variables were not examined.

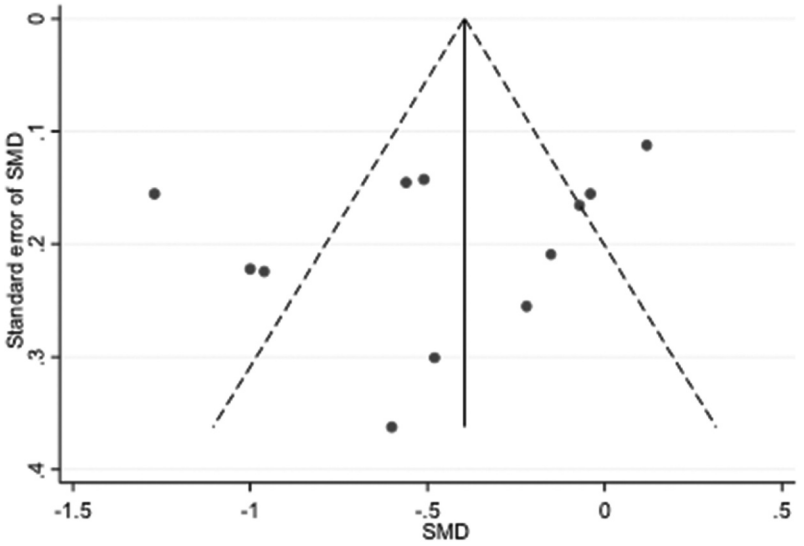

Figure 3. Funnel plot (effect size vs inverse standard error).

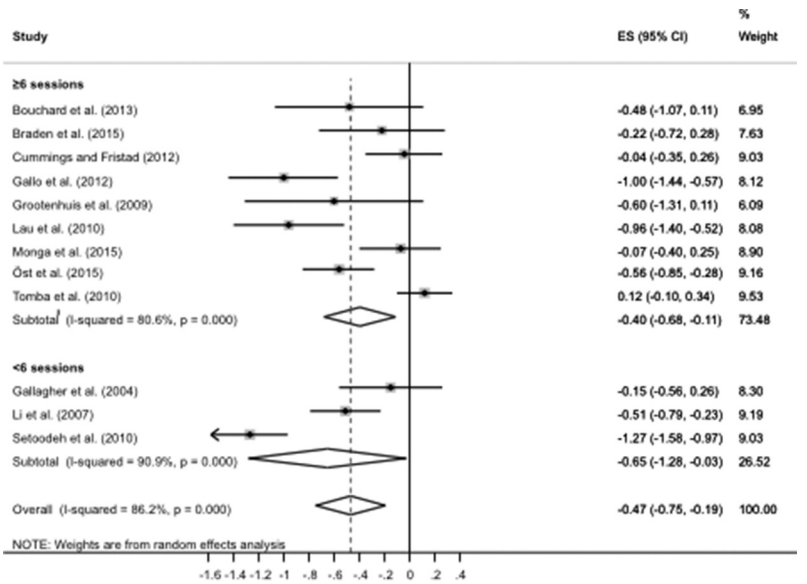

Figure 4. Forest plot showing the results of subgroup analysis based on treatment duration.

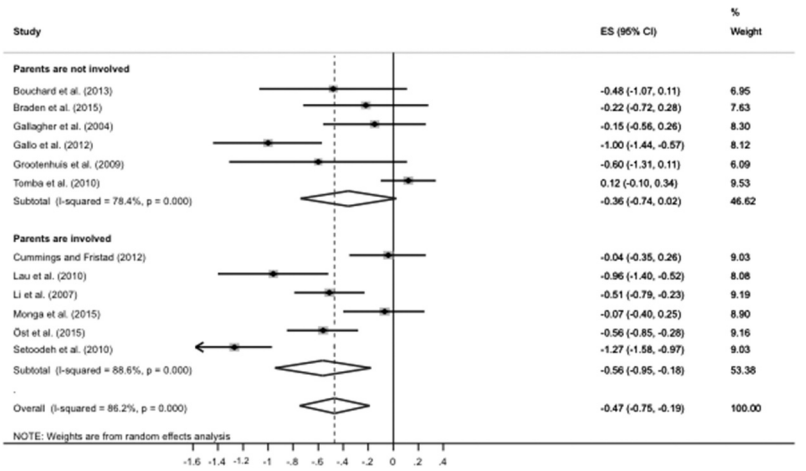

Figure 5. Forest plot showing the results of subgroup analysis based on parental involvement.

Discussion

Psychoeducation is considered a cost-effective method that allows treating a large number of participants at once (DeLucia-Waack, 2000) and has been found effective in both treatment and prevention of various psychological and emotional difficulties (Brown, 2011; DeLucia-Waack, 2006). Until now, CBT, a psychotherapeutic approach that relies on techniques such as psychoeducation, development of problem-solving and coping skills, cognitive restructuring, and exposure (Compton et al., 2004; Crowe & McKay, 2017; James et al., 2013) is considered the treatment of choice for the prevention and treatment of youth

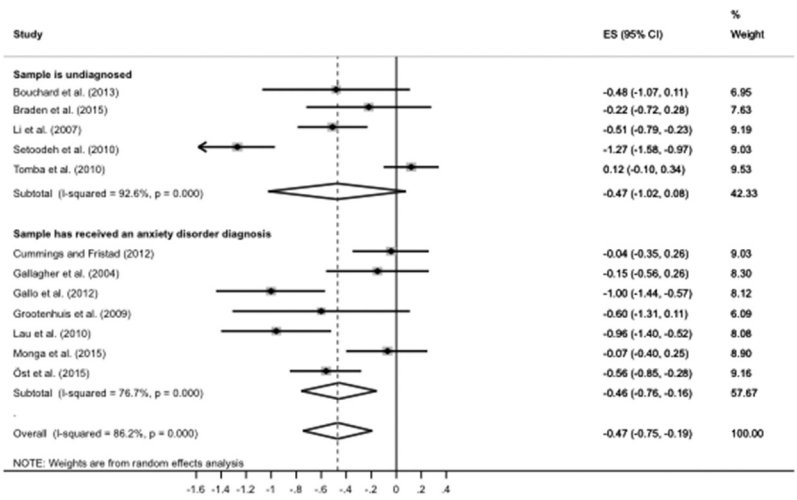

Figure 6. Forest plot showing the results of subgroup analysis based on the existence of a primary anxiety diagnosis.

anxiety disorders (e.g., Cartwright-Hatton et al., 2004; Compton et al., 2004; Crowe & McKay, 2017; Davis et al., 2011; In-Albon & Schneider, 2007; Ishikawa et al., 2007; James et al., 2013; Neil & Christensen, 2009; Reynolds et al., 2012; Scaini et al., 2016; Silverman et al., 2008; Spielmans et al., 2007; Werner-Seidler et al., 2017). However, there is evidence that other active treatments, including psychoeducation, might be equally effective (Crowe & McKay, 2017; Ishikawa et al., 2007; Reynolds et al., 2012). The results of this meta-analysis show that treatment modalities that are based on psychoeducation are potentially an effective alternative for the treatment of anxiety symptoms in children and adolescents.

More specifically, the main objective of the current meta-analysis was to examine the effectiveness of psychoeducational group interventions in reducing anxiety in children and adolescents. Evidence collected from twelve studies led to a small but significant effect size, indicating that psychoeducation consists an effective alternative in the treatment of anxiety symptoms in youth. This is a noteworthy finding with important implications for prevention and therapy of anxiety disorders in different settings. Since psychoeducational groups can be brief and include many participants, they form a cost-effective alternative that has been applied in various settings (e.g., community, school, clinics) targeting various psychological problems (Gerrity & DeLucia-Waack, 2006; Haeberli et al., 2008; MacPherson et al., 2014; Rund et al., 1994; Svoren et al., 2003).

A secondary objective was to evaluate the moderating effect of several variables on treatment outcomes. However, the small number of studies allowed only the examination of treatment duration, parental involvement, and diagnosis and our analyses revealed that none of these variables affected treatment effectiveness. The finding that targeting participants with or without a primary anxiety diagnosis did not affect outcome effectiveness suggests that psychoeducational modalities can be an effective means to reduce anxiety symptoms in children and adolescents with an existing psychopathology, as well as a valuable preventive intervention for youth who have not yet developed anxiety symptoms. Our results complement those of other meta-analyses that show that parental involvement

does not significantly affect treatment effectiveness (In-Albon & Schneider, 2007; Ishikawa et al., 2007; James et al., 2013; Reynolds et al., 2012; Scaini et al., 2016; Silverman et al., 2008) and neither does session number (Ishikawa et al., 2007).

Limitations

The results of the current meta-analysis should be viewed within its limitations. First, our analyses suggest the presence of substantial heterogeneity, which challenges the interpretation of the summary estimate. The predictive interval also suggests that the results from this meta-analysis are not conclusive and cannot easily be generalized. The results considering the moderating effect of the variables studied should also be treated with caution as with only 12 studies we lack power to detect moderators of effectiveness.

The meta-analysis examined results up to the end of therapy. Even though several studies reported follow-up data, these were often not compared to a control group. This choice is ethically justified, but limits our knowledge regarding the long-term effectiveness of interventions. This limitation has also been observed in other meta-analyses investigating CBT effectiveness for youth anxiety (Crowe & McKay, 2017; James et al., 2013), thus consisting a serious limitation of the literature.

The current meta-analysis is also limited by the robustness of the search method followed. Even though the researchers conducted a thorough electronic search using broad parameters, only published articles in English, peer-reviewed journals were examined. This means that unpublished trials with negative results were omitted. Moreover, our search strategy included articles published from 2000 up to May 2019. Since ASGW clarified its definition of psychoeducational groups in 2000 (ASGW, 2000) and the earlier study we located was published in 2004, we believe that our search did not miss earlier studies. Nevertheless, there could be more recent studies that were not included. To this effect, a relevant limitation that warrants caution in interpreting the results of the current meta-analysis, especially regarding moderator analyses, is the small number of studies included. Similarly, though not detected, the problem of publication bias is well known in psychology and we cannot exclude the possibility of publication bias in this case as well.

Another issue lies within the definition of treatment modalities by researchers. We found only three studies that were described as "psychoeducational." However, nine more studies that were included could be cited as "psychoeducational" based on the interventions' descriptions provided. Specifically, these nine interventions used group-based educational strategies to educate group members regarding anxiety and train them in anxiety-management skills, in order to promote personal growth and prevent future difficulties, thus falling into the definition of psychoeducational groups (ASGW, 2000). Because of this issue, it is possible that other studies describing group interventions that were not defined as psychoeducational by their authors could have been overlooked.

Several issues pertaining to the quality of the included studies and methodological issues also need to be addressed when considering the findings. The meta-analysis included 12 studies that involved a significant number of participants (1132 children and adolescents) and led to a small but statistically significant effect size showing that psychoeducation effectively reduces anxiety symptoms in youth. No study was excluded based on their quality. However, this poses a potential limitation since most of these studies were noted to have several methodological shortfalls, particularly regarding selection and performance.

More specifically, most studies did not adequately describe the randomization and allocation processes followed. Moreover, due to the nature of the interventions investigated, it was not possible to blind the participants, which led to the high-performance bias observed. Most of the studies were found to have a low risk of reporting bias, and attrition bias was also low or unclear since many of the studies either had no non-completers or provided evidence regarding their drop-outs. These deficits consist a serious concern for future research since the quality of studies should be improved in order to be able to draw clearer conclusions about the efficacy of psychoeducation on symptom reduction.

The significant heterogeneity found between the included studies poses a further limitation in interpreting and generalizing the results of the meta-analysis. The large number of different rating scales used, as well as methodological inconsistencies across the included studies were the main sources of heterogeneity. We counted 13 different anxiety questionnaires and two interview schedules in twelve studies.

Moreover, the included studies used diverse psychoeducation interventions to target different types of anxiety and included participants with varying levels of symptom severity. These variables should be taken into account when attempting to interpret and generalize the results. A future replication of the current meta-analysis including more studies will provide us insight regarding the potential moderating effect of variables. Finally, the meta-analysis included studies from different countries, which may pose an issue regarding the applicability of the mentioned interventions in different cultures.

Implications for Research

Several implications for future research arise based on the results of this study. The implementation and thorough evaluation of more psychoeducational programs in various settings and in different cultures will help us to validate the conclusions of this meta-analysis. Furthermore, since most of the included studies examined the effectiveness of psychoeducation versus waiting-list controls, future studies should also test psychoeducation's effectiveness in comparison to other active treatments, such as CBT, in order to ascertain whether it is an equally effective alternative, as another meta-analysis has cautiously suggested (In-Albon & Schneider, 2007). Researchers are also recommended to conduct controlled, long-term follow-up measurements in order to examine the long-term effectiveness of psychoeducational interventions and to provide more thorough information concerning randomization methods used and drop-outs. Also, we encourage researchers to use fewer, but more standardized, scales measuring anxiety, a recommendation that was also noted by James et al. (2013). Future studies should also not limit themselves in using exclusively self-report measures.

Another recommendation involves the fact that many studies do not clearly define the treatment modalities they apply. Future researchers are therefore encouraged to clarify the type of group intervention they implement according to ASGW standards in order to facilitate research regarding the effectiveness of different group type modalities.

Finally, intervention attributes, such as facilitator characteristics (i.e., training, education, and supervision), group membership sizes, and parental involvement may play an important role in treatment effectiveness (Henggeler et al., 2002; Herschell et al., 2010; Vocisano et al., 2004; Werner-Seidler et al., 2017). It is therefore recommended that future studies are more forthcoming on such information. Moreover, researchers are encouraged to

investigate the components and mechanisms of psychoeducation that contribute to its effectiveness, so that future interventions take advantage of them in order to augment their efficacy and perhaps develop briefer and more targeted interventions.

Implications for Practice

This meta-analysis has important implications for the implementation of psychoeducational group interventions targeting youth anxiety. Since anxiety disorders in children and adolescents may be underdiagnosed and untreated (Costello et al., 2004; Davis et al., 2011; Donovan & Spence, 2000; Egger & Burns, 2004; Schneier et al., 1992), implementing efficacious and cost-effective interventions might provide a well-founded option for preventing and/or treating anxiety symptoms in youth. Based on our results, even short interventions involving less than five sessions can lead to significant improvements in anxiety symptom reduction. Also, psychoeducation appears to be effective both to youths with a primary anxiety disorder diagnosis and to those who at risk for developing anxiety symptoms.

Moreover, our results suggest that psychoeducational groups for youths can be applied in various settings, such as schools, community clinics, and hospitals, with beneficial results. This recommendation is further supported by other meta-analyses and reviews showing that school-based prevention programs are affective in reducing depression and anxiety symptoms in children and adolescents (Herzig-Anderson et al., 2012; Neil & Christensen, 2009; Werner-Seidler et al., 2017). Also, practitioners in hospitals could administer short group psychoeducational interventions to reduce the feeling of anxiety in youths undergoing surgery (e.g., Li et al., 2007) or in young patients of serious diseases (e.g., Grootenhuis et al., 2009). Moreover, group psychoeducation could be applied in various medical settings to treat various anxiety disorders in a cost-effective way (e.g., Cummings & Fristad, 2012). We recommend that practitioners in such settings develop specific intervention protocols based on group psychoeducation and investigate their effectiveness.

Finally, an important issue when working with youths is their parents' involvement in the treatment. Our results showed that, even though parental involvement does not significantly affect treatment outcomes, when parents take an active role in the treatment this leads to a slightly larger standardized mean difference. Group workers are therefore encouraged to involve their young patients' parents in therapy. This involvement can take different forms, such as actual participation in the youths' group (e.g., Li et al., 2007), forming a parallel parents' group (Monga et al., 2015), or learning how to apply various techniques by observing their children's sessions (Lau et al., 2010).

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