The state of psychological treatments for social anxiety disorder in children and adolescents: An Umbrella Review

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Abstract

Social Anxiety Disorder (SAD) is a very common disorder in childhood and adolescence. Many studies have examined various types of Cognitive Behavioral Therapy (CBT), meaning there is a need for a study exploring the efficacy of CBT. The objectives of this study are to determine what treatments and factors can improve treatment outcomes for SAD. We performed an umbrella review of the effectiveness of psychological interventions in treating SAD in children and adolescents. Nine databases were searched using a combination of keywords. Risk of bias was assessed using AMSTAR-2. Six systematic reviews and meta-analysis were selected and reported. All of those studies assessed the efficacy of CBT in children and adolescents with SAD, demonstrating its short- and long-term effectiveness. The components that seem to be most effective are exposure in any modality and social skills training. Other considerations to take into account are addressed in the discussion.

Keywords: children; adolescents; therapy; social phobia; efficacy.

The state of psychological treatments for social anxiety disorder in children and adolescents: An Umbrella Review

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Social Anxiety Disorder (SAD) has been defined as intense fear or anxiety in one or more social situations in which the person is exposed to possible scrutiny by other people (American Psychiatric Association, 2013). SAD is one of the most common anxiety disorders worldwide (Stein et al., 2017), with an estimated prevalence between 5-10% (Garcia-Lopez et al., 2014; Kessler et al., 2012; Olivares et al., 2005) and a lifetime prevalence of 1.8% in children and adolescents (Mohammadi et al., 2020). Moreover, prevalence increases during adolescence (Wright et al., 2020).

A variety of treatments have been developed for SAD. One of the most well-developed and widely-tested therapies in children and adolescents is Cognitive Behavioral Therapy (CBT) (Beidel et al., 2000; Turner & Morris, 2000; Kley et al., 2012, Spence et al., 2000, Donovan & Brechman-Toussaint, 2000). This type of intervention involves sessions with practical discussion, homework, and the therapist playing an active role. The efficacy of CBT has been shown in the child-juvenile population with SAD (Khalid-Khan et al., 2007), including long-term effects (Stein & Stein, 2008). The main components that have proven effective in CBT are exposure, relaxation, cognitive restructuring, and social skills training (Cuipers et al., 2016; Evans et al., 2021).

Another type of component that is widely used with CBT is parent training. These types of sessions are included based on the hypothesis that if parents manage their own anxiety, they will improve certain types of skills such as communication or problem solving, which will lead to greater therapeutic progress for the children (Spence et al., 2000).
There are also more recent types of programs such as Cognitive Bias Modification Training (CBMT). The aim of CBMT is for the patient to learn to divert attention from important information that could lead them to maintain negative interpretations of ambiguous social situations (Amir et al., 2010). This type of intervention has not been shown to be completely effective in children and adolescents with anxiety problems (Cristea et al., 2015). There are two main types of CBMT program: Cognitive Bias Modification Training to target attention biases (CBMT-A) and Cognitive Bias Modification Training to target interpretation biases (CBMT-I) or they may be used in combination. CBMT-A uses a dot-probe task to systematically redirect attention away from threatening stimuli, while CBMT-I consists of presenting participants with emotionally ambiguous scenarios that are resolved when a word fragment at the end is completed to convey meaning.

Due to this variety, the question for our umbrella review was whether SAD treatments were effective and what treatment components or characteristics made for the most effective treatment for SAD in children and adolescents. To our knowledge, there are currently no systematic reviews of systematic reviews about the effectiveness of psychological interventions for SAD in children and adolescents. The objectives for this study are: 1) determine which treatments are the most effective for SAD in the child-juvenile population, 2) identify what factors can lead to SAD treatment being more effective.

Methods

Search procedures

This systematic review was conducted by following the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) statement (Moher et al., 2009). It was also registered in the Open Science Framework (doi:10.17605/OSF.IO/VTM32) in August 2022. Prior to the literature search, we established inclusion and exclusion criteria, which were:

- **Population:** the participants were children and adolescents (under 18 years old).
- **Intervention:** psychological treatment with the aim of treating SAD.
- **Diagnosis:** the diagnosis of the participants should have been made with diagnostic interviews or questionnaires previously validated for SAD.
- **Study design:** systematic reviews with suitable methodology following the PRISMA criteria.

Systematic reviews or meta-analyses were excluded if they did not evaluate the efficacy of a treatment or evaluate a pharmacological treatment for SAD. They were also excluded if they did not show participant data. There were no language or date restrictions.

The database search was conducted independently by two of the authors (MMDC and JAM) during July 2022. Nine databases were used for the literature search: PsycInfo, Psychology Database/ProQuest, MEDLINE/PubMED, CHOCRANE, Database of Abstracts of Reviews of Effects (DARE), Scopus, Web of Science, Epistemonikos and Prospero. The databases were searched using Boolean operators to link the search terms and phrases, using the following terms: (“social anxiety*” OR “social phobia*”) AND (“child*” OR “adolescent*” OR “youth*” OR “adolescence*” OR “young*”) AND (“treatment*” OR “intervention*” OR “therapy”). Once the search was complete, the same researchers each independently screened titles and abstracts to identify articles that met the inclusion criteria. The full texts were then independently assessed by three reviewers (MMDC, LEF and LJGL). Disagreements between reviewers were resolved by JAM (intercoder reliability: Cohen’s Kappa coefficient = 0.75-0.88).

Subsequently, the same reviewers extracted the relevant information to be analyzed, producing a summary table in order for all reviewers in this phase (MMDC, LEF and LJGL) to have the same format.

Figure 1. PRISMA flow-chart diagram.
Quality assessment

The methodological quality of all of the selected studies was evaluated. Three authors (MMDC, LEF and JAM) independently rated the risk of bias using A Measurement Tool to Assess Systematic Reviews (AMSTAR-2). Disagreements were resolved through discussion.

Results

Identification of articles

A total of 2748 records were initially identified, although 11 were removed because they were duplicates. Following the analysis of titles and abstracts (2737 records) to determine whether articles would be included or excluded and 155 full text was analyzed. After applied the inclusion/exclusion criteria, 9 systematic reviews were selected and assessed for risk of bias. Ultimately, 6 reviews remained for qualitative summary (see Fig.1 for more details).

Study characteristics

Table 1 gives more detail about the characteristics of the studies covered. The selected systematic reviews evaluated a total of 129 studies, of which 83 were randomized clinical trials, with a total of 6109 participants aged between 4 and 18 years old.

Characteristics of psychological interventions

All of the selected reviews aimed to evaluate the efficacy of some treatment for SAD in the child and adolescent population and all included some kind of CBT.

In terms of delivery format, two systematic reviews analyzed internet-based interventions (Biagianti et al., 2020; Cordier et al., 2021), five included individual and group interventions (Biagianti et al., 2020; Cordier et al., 2021; Olivares et al., 2003; Rosa-Alcazar et al., 2009; Silverman et al., 2008) and only one study included group intervention alone (Scaini et al., 2016). The number of sessions ranged from 1 to 40, with the mean number of sessions being 12.48. The mean treatment duration was 9.92 weeks, ranging between 1 and 24 weeks.

The main evaluation tool for SAD was ADIS (Silverman & Albano, 1996), in various versions, since it appeared in all the selected systematic reviews. Other questionnaires also appeared in all of the selected reviews, such as SPAI (Turner et al., 1988), SPAI-C (Beidel et al., 2000), and SAS-A (La Greca & Lopez, 1998). Other widely used tools included SCARED (Birmaher et al., 1997), BFNE-R (Leary, 1983), and RCMAS (Reynolds & Richmond, 1985).

Effectiveness of psychological interventions

Table 2 summarizes the main results regarding treatment effectiveness. All of the reviews reported the efficacy of CBT for SAD in children and adolescents. This type of intervention was even shown to be
<table>
<thead>
<tr>
<th>Study</th>
<th>Overview of the Interventions</th>
<th>Characteristics of the Interventions</th>
<th>Overall Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cordier et al., (2021)</td>
<td>Provide an overview of the interventions for shy children, describe the characteristics of the interventions and determine their overall effectiveness.</td>
<td>a) CINAHL, Embase, Eric, PsycINFO and PubMed. b) Social anxiety, inhibition, social isolation, effect size statistical, efficiency, intervention, program evaluation, treatment, evaluation. c) Not indicated.</td>
<td>N = 25 RCTs and quasi-experimental studies. a) 1895 child and adolescents. b) 9.1 (4-18 years). c) Australia (n = 4), Canada (n = 2), China (n = 3), England (n = 1), Ireland (n = 2), Nigeria (n = 1), South Korea (n = 1), Spain (n = 1), USA (n = 9).</td>
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<tr>
<td>Olivares et al., (2003)</td>
<td>Analyze the efficacy of psychological and pharmacological interventions used in the treatment of social phobia in children and/or adolescents.</td>
<td>a) PsycLIT, CISIC (ISOC), MEDLINE and Dissertation Abstracts Online. b) social anxiety, adolescent*, treatment, child*. c) Hand searching.</td>
<td>N = 25 RCTs (only report the data from the studies focused on psychological treatment) a) N = 488 children and adolescents. b) 14.23 (8-17 years). c) USA (n = 12), Spain (n = 10) and Australia (N = 4).</td>
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</table>

The effectiveness of the interventions was evaluated using various measures:

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  - Therapist ADIS-IV, Séneca Fondation, proyect PI-54/00864/FS/01
  - SPSI, SAS, STAI, CDI, EA.
<table>
<thead>
<tr>
<th>Study</th>
<th>Analyze the efficacy of treatment for SAD in children and adolescents</th>
<th>Sample Size</th>
<th>Intervention Details</th>
<th>Outcome Measures</th>
<th>Supported by</th>
<th>Funded by</th>
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<tr>
<td>Scaini et al., (2016)</td>
<td>Analyze the effectiveness of the CBT approach for SAD taking into account the similarities and differences between programs.</td>
<td>N = 13</td>
<td>RCTs</td>
<td>CBT, CBGT-A, IAFS, SET-A, SET-C, SASS</td>
<td>Not indicated</td>
<td>Supported in part by the CARIPLO Foundation ‘Human Talents’ Grant for Academic Centres Of Excellence in Post-Graduate Teaching</td>
</tr>
<tr>
<td>Silverman et al., (2008)</td>
<td>Reviews psychosocial treatments for anxiety disorders in youth.</td>
<td>N = 32</td>
<td>Not indicated</td>
<td>Doctoral students, psychologists and psychiatrists</td>
<td>NIMH RO1 # 63997</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>First author (year of publication)</th>
<th>Risk of bias</th>
<th>Main findings</th>
<th>Effect estimates (if meta-analysis was performed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biagianti et al., (2020)</td>
<td>Not detailed</td>
<td>CBMT-I treatment currently does not appear to be a very beneficial tool for the treatment of SAD in adolescents. The CBMT-I appears to be slightly more effective, but further study is needed to determine whether improvements in interpretation bias can serve as a switch mechanism to reduce SAD symptoms in adolescents.</td>
<td>Not meta-analysis.</td>
</tr>
<tr>
<td>Cordier et al., (2021)</td>
<td>17 articles were rated as “strong methodological quality”, with all others rated to have “good” methodological quality.</td>
<td>The interventions studied are effective in treating shyness and social anxiety. But it is more effective to work in the school environment, since it is where situations conducive to developing more shyness/SAD occur. Treatment with children/adolescents that is only applied to parents or to a combination of both is more effective. There are no significant differences in the size of the effect in the application of a group or individual intervention.</td>
<td>Effect of shyness interventions: Of the 20 studies included 75% (n = 15) produced a large effect size and 15% (n = 3) produced a moderate effect. An effect size of &lt; 0.2 was measured in 10% (n = 2) of the studies. The overall intervention effect was large and statistically significant (z(20) = 7.03, p &lt; .001, Hedge’s g = 1.21, 95% CI = 0.87–1.54). Effect size as a function of intervention characteristics: Interventions delivered clinic: z(9) = 10.50, p &lt; .001, Hedge’s g = 1.38, 95% CI = 1.12–1.63 Interventions delivered online: z(1) = 4.36, p &lt; .001, Hedge’s g = 1.21, 95% CI = 0.67–1.76 Interventions delivered in schools: z(9) = 3.91, p &lt; .001, Hedge’s g = 1.03, 95% CI = 0.51–1.55 Interventions focused on the children alone: z(13) = 5.93, p &lt; .001, Hedge’s g = 1.33, 95% CI = 0.89–1.78 Interventions that focused on both parents and children: z(3) = 1.67, p = 0.1, Hedge’s g = 0.73, 95% CI = 0.13–1.59 Combination of both individual and group sessions: z(6) = 5.29, p &lt; .001 Hedge’s g = 1.6, 95% CI = 0.88–1.5</td>
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<td>Olivares et al., (2003)</td>
<td>The methodological quality of the studies was medium-high.</td>
<td>It shows the overall efficacy of SAD treatments and their consequent improvement in follow-up, as well as in social skills, depression and self-esteem, although with differentiated effects. It was observed that the combination of audiovisual and live presentation techniques was more effective when both group and individual sessions were carried out in educational contexts. The treatment is more effective when a distributed practice is applied or the therapist is experienced. The most effective treatment for generalized SAD is IAFS followed by SASS.</td>
<td>Efficacy of treatment for SAD: Intervention group: Postest: d = 1.52; 95% CI = 1.34–1.71 Follow up: d = 1.68; 95% CI = 1.41–1.95 Control group: Postest: d = 0.25; 95% CI = 0.02–0.53 Follow up: d = 0.57; 95% CI = 0.10–1.24 Depending on the treatment: IAFS: d = 1.90; 95% CI = 1.58–2.21 CBGT: d = 1.12, 95% CI = -0.05–2.29 SASS: d = 1.78, 95% CI = -2.78–6.35 CBT (with or without parents): d = 1.10, 95% CI = -1.86–4.07 SET-A: d = 2.13, 95% CI = 1.04–3.22 SET-C: d = 1.07, 95% CI = 0.85–1.28</td>
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<tr>
<td>Study</td>
<td>Methodological Quality</td>
<td>Findings</td>
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<tr>
<td>Rosa-Alcázar et al., (2009)</td>
<td>Not detailed</td>
<td>Treatment for SAD effective even after follow-up and less effective for other problems such as social skills, self-esteem and depression. Exposure is the component that most shows its effectiveness in any of its modalities.</td>
<td></td>
</tr>
<tr>
<td>Scaini et al., (2016)</td>
<td>The methodological quality of the studies was medium-high.</td>
<td>The efficacy of CBT in reducing SAD symptoms is shown even after follow-up. The interventions are effective both in clinical and school settings, although the latter appear to be more effective. Also support the claim that the addition of SST but there is no support for the UST component.</td>
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<td>Silverman et al., (2008)</td>
<td>Metodological robust (n = 22) and metodological fairly rigorous (n = 10).</td>
<td>CBT is effective for the treatment of SAD even for other symptoms such as depression and internalizing and externalizing behavior problems. Individual and group treatment seem to have similar results. Involving parents in treatment does not seem to be effective in both individual and group treatment for SAD but it seems to be effective in reducing other symptoms such as depression and internalizing and externalizing behavior problems.</td>
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Efficacy treatment pre-post design: ES of 0.99 (SE: 0.15, p < 0.001, Test of Null (2-Tail): z-value = 6.40, 95% CI=0.68–1.29)
Active treatment vs. waiting-list control condition: ES of 0.71(SE:0.14, p < 0.001, Test of Null (2-Tail): z-value 5.20, 95% CI=0.45–0.98)
Follow-up from 6 to 12 months: ES of 1.18 (SE:0.18, p < 0.001, Test of Null (2-Tail): z-value 6.43, 95% CI=0.82–1.54.)

Number of parental involvement sessions: b point estimate = -0.02, SE= 0.05, p = 0.71, z-value = -0.37, 95% CI = -0.13–0.09
Total minutes of parental involvement: b point estimate= 0.00, SE= 0.00, p = 0.87, z-value = -0.16, 95% CI = 0.00–0.00
Studies with SST: ES: g = 1.02, p < 0.001, 95% CI=0.67–1.37
Studies without SST: ES: g = 0.87, p = 0.006, 95% CI=0.24–1.49
Studies with UST: ES: g = 1.01, p < 0.001, 95% CI=0.64–1.38
Studies without UST: ES: g = 0.98, p < 0.001, 95% CI=0.52–1.43
Clinical treatments: g = 0.67, p < 0.001, 95% CI=0.41–0.92
School interventions: g = 1.55, p < 0.001, 95% CI=1.04–2.06
effective in follow-ups after 6 months and up to 5 years. Specific treatments for SAD have also been shown to be effective in reducing other types of symptoms related to the disorder such as poor self-esteem, social skills (Olivares et al., 2003, Rosa-Alcazar et al., 2009 and Silverman et al., 2008), and internalizing and externalizing problems (Silverman et al., 2008). Two reviews found that the most commonly-used and most effective component was exposure in any of its modalities (Olivares et al., 2003 and Rosa-Alcazar et al., 2009). Another review showed that social skills training was also effective (Scaini et al., 2016).

The most effective intervention program appeared to be IAFS (Garcia-Lopez, 2000), followed by SASS (Masia et al., 2001), according to Olivares et al. (2003). Moreover, it seems that in terms of intervention programs focused on cognitive bias, CBMT-I is useful, whereas CBMT-A does not seem to be very beneficial (Biagianti et al., 2020).

Among other important results, three reviews indicated that applying CBT was more beneficial in the school setting (Cordier et al., 2021; Olivares et al., 2003; Scaini et al., 2016). Three other reviews concluded that interventions for SAD were more effective if they did not include the parental component (Cordier et al., 2021; Scaini et al., 2016; Silverman et al., 2008). Three reviews reported no differences in terms of efficacy between individual or group session (Cordier et al., 2021; Olivares et al., 2003; Silverman et al., 2008), although a combination of these two types seems to be more effective (Cordier et al., 2021; Olivares et al., 2003). Finally, two reviews indicated that sessions spread over a longer period of time were more effective than longer sessions delivered over a shorter period of time (Olivares et al., 2003; Scaini et al., 2016).

**Risk of bias**

Table 3 shows the methodological quality and risk of bias. Of the 9 studies selected initially, 3 were eliminated (Caletti et al., 2022; Davis III et al., 2011; Segool & Carlson (2008) following the quality analysis because they were assessed as having critically low levels of reliability.

**Discussion**

Through this umbrella review, we examined and summarized systematic reviews and meta-analyses about the efficacy of psychological treatments for SAD in children and adolescents. We found that CBT is one of the most widely-used treatments in this type of population, which is in line with data from the National Institute for Health and Care Excellence (NICE, 2013). This is clearly so, since all of the reviews we analyzed included CBT as a treatment program and attempted to determine its efficacy for treating SAD in adolescents and children. Perhaps one of the reasons why CBT is so widely used is that it teaches cognitive and behavioral competences that are useful in everyday life (Caletti et al., 2022) or because it works on the disorder's etiology and maintenance factors.

What almost all the selected systematic reviews have in common is that CBT is a generally effective type of intervention for addressing SAD in the child-adolescent population (Cordier et al., 2021; Olivares et al., 2003; Rosa-Alcazar et al., 2009; Scaini et al., 2016 & Silverman et al., 2008) even at follow-up (Olivares et al., 2003; Rosa-Alcazar et al., 2009; Scaini et al., 2016). Furthermore, the data indicate that not only are SAD symptoms reduced but there are also improvements in other symptoms such as social skills, depression (Olivares et al., 2003, Rosa-Alcazar et al., 2009; Silverman et al., 2008), and internalizing and externalizing problems (Silverman et al., 2008), although all the studies show that there are smaller reductions in these symptoms, unsurprisingly since the programs are specific for SAD. However, Scaini et al., (2016) found no reduction in symptoms of depression, showing that more studies are needed on the effects of SAD interventions on secondary symptoms. Olivares et al., (2003) indicates that the most effective of the treatment programs analyzed is IAFS (Garcia-Lopez, 2000), followed by SASS (Masia et al., 2001). The efficacy of SAD treatments can be explained in part by the program components, since it seems that one very effective component for SAD treatment is exposure, either in audiovisual or live formats (Olivares et al., 2003; Rosa-Alcazar et al., 2009), something that is supported by other studies (Antona & Garcia-Lopez, 2008; Ballesteros & Labrador, 2018).

Another widely-studied component is Social Skills Training (SST). This was examined in detail in Scaini et al., (2016), indicating that this type of session could improve the efficacy of treatment for SAD in children and adolescents, and suggesting that the social skills component rather than exposure to the social group is what should be included in CBT for SAD due to its effectiveness in this population. This is consistent with another finding from the analysis of reviews, since there seem to be no significant differences in terms of efficacy between treatment programs with individual sessions or programs with group sessions (Cordier et al., 2021; Olivares et al., 2003; Silverman et al., 2008). Cordier et al., (2021) and Olivares et al., (2003) found that combinations of group and individual sessions were more effective. Those authors explained this result by indicating that group sessions cause subjects to be exposed to stimuli that cause fear, so they are exposed to the stimulus and have to face it directly. This means they will put what they have learned into practice, there will be habituation, and therefore reduction in SAD. However, in individual sessions, the therapist focuses on the subject's needs, working specifically on their weak areas, and there would be more patient involvement. This means that a combination of both types of sessions will be more beneficial.

Parental sessions do not seem to be effective in terms of reducing symptoms for SAD in children and adolescents (Cordier et al., 2021; Scaini et al., 2016; Silverman et al., 2008). This is supported by previous studies (Barret et al., 1996), especially when working with
older children (Kendall et al., 2008). However, Silverman et al., (2008) found that although these types of sessions were not beneficial for SAD, they did seem to be effective in reducing other types of symptoms associated with SAD, such as depression, and internalizing and externalizing problems. This is in contrast to the recommendations from Mychialszyn et al., (2010) and the study by Garcia-Lopez et al., (2014), who found that reducing Expressed Emotion (EE) by parents of adolescents with SAD produced greater benefits for those children. This may mean that other components that could affect children’s SAD, such as EE, must be worked on with parents. Hence, there is a need to study the family component in interventions for SAD in children and adolescents.

The studies we examined suggest that the best setting for interventions is in schools (Cordier et al., 2021; Olivares et al., 2003; Scaini et al., 2016), which other authors also recommend (Crozier, 2014; Mychialszyn et al., 2010). There are a number of advantages to this setting, such as reducing the fear of being “labeled” and even children and adolescents being able to practice the skills they learn, promoting generalization (Garcia-Lopez et al., 2006), or these positive results could be due to the better environment. The review suggests that it is better for sessions to be spread over time (Olivares et al., 2003; Scaini et al., 2016), and that interventions should be carried out by experienced therapists (Olivares et al., 2003).

Finally, it is important to highlight the results from Biagianti et al., (2020), which focused on working on CBMT. They found that CBMT-A was not an effective tool but that CBMT-I was effective. Those authors indicate that CBMT is useful when the objective for the treatment of SAD is interpretation biases that people with this disorder may have, hypothesizing that these biases are an etiological and maintaining factor for this disorder (Biagianti et al., 2020) since people with SAD are especially sensitive to stimuli that suggest the possibility of a negative evaluation by other people (Bublatzky & Alpers, 2017).

Limitations

The first limitation of the study is the small number of articles selected and this warrants caution in interpreting the results. The limitation is because we found many studies in which the objective was to determine the efficacy of treatment for anxiety, implying that children and adolescents were treated collectively without taking into account the disorder they presented. This led to those articles being excluded, examples include Baker et al., (2021) and Carlucci et al., (2021). Due in part to the small number of studies, another limitation was that the present study only covers CBT-type interventions for SAD. It was not possible to include any studies on “third wave” therapies.

Finally, another limitation of the study was in evaluating risk of bias. We used the AMSTAR-2 tool, which had to be modified in certain items, since it is a medicine-focused tool, and in certain aspects it is not suited to psychology. To address this, the authors made a series of agreements to be able to correctly assess risk of bias.

Future directions

Protective factors are fundamental for children to overcome shyness in adolescence and early adulthood, this means that research needs to continue into the effectiveness of interventions and the components that work best. It is also essential to determine the long-term effectiveness of SAD interventions for example, into adulthood. In addition there need to be systematic reviews of treatment for-


