

Research paper

Comparative randomized trial addressing childhood emotional problems: Computerized vs. traditional transdiagnostic Super Skills program

Teresa Galán-Luque^{a,*}, Esteban Cabello^b, Mireia Orgilés^a^a Child and Adolescence Research Center, Miguel Hernández University of Elche, Alicante, Spain^b Centre of Operations Research, Miguel Hernández University of Elche, Alicante, Spain

ARTICLE INFO

Keywords:

Children
Emotional problems
Indicated prevention
Computerized intervention
Comparative efficacy randomized trial
Super Skills for Life

ABSTRACT

Background: Super Skills for Life is a structured intervention rooted in cognitive-behavioral therapy and a transdiagnostic approach, aimed at preventing childhood emotional problems. Over the past decade, it has demonstrated positive outcomes in various formats and countries. This study evaluated the comparative effectiveness of two individual modalities: the computerized and the traditional version enriched with multimedia content, through a comparative randomized effectiveness trial.

Method: 109 children (55.24 % female) aged 8–12 years participated, randomly assigned to either the traditional ($n = 54$) or computerized ($n = 51$) groups. Pre- and post-intervention assessments involved emotional problem measures completed by children and parents.

Results: Both groups exhibited significant reductions in all outcomes according to parent reports, including depression, anxiety, and anxiety-related life interference. Children's self-reports indicated improvements across all general measures. Generalized Estimating Equations indicated marginally better improvements in the traditional group.

Limitations: Limitations included the absence of follow-up assessment, variability in participant regions across Spain, and input from other informants like teachers.

Conclusions: This study pioneers the examination of short-term effects of the program in both a fully computerized format supervised by a specialized therapist and an enriched traditional individual format, and the promising results suggest their potential for indicated prevention of childhood emotional problems.

1. Introduction

Anxiety and depression disorders, both categorized as emotional disorders (Goldberg et al., 2009), are common psychological problems in children during school years (Bitsko et al., 2022; Canals et al., 2019; Orgilés et al., 2023), and have negative effects on children's quality of life, including challenges in individual, social, and academic areas of their lives. The onset of anxiety disorders typically occurs early in childhood, peaking around 5.5 years old, just before the commencement of the school years (Solmi et al., 2022). In the case of depression, despite their typical onset occurring later, with a peak age at 20.5 years, 11.5 % of cases manifest before the age of 14 (Solmi et al., 2022). They often co-occur, and research indicates rates of 73–82 % of children exhibiting depression when they have a prior anxiety disorder and 17–32 % for anxiety when a previous depressive disorder is present (Acosta et al.,

2010; Ghandour et al., 2019; Kovess-Masfety et al., 2016; Melero et al., 2021; Muris et al., 2017). This comorbidity exacerbates symptom severity and chronicity, diminishes treatment response, and elevates the risk of additional problems in adulthood (Aebi et al., 2014; Benjamin et al., 2013; Cullins and Mian, 2015; Essau et al., 2014; Melton et al., 2016). Hence, it is essential to ensure early identification and intervention, as symptoms tend to persist in the absence of treatment (Broeren et al., 2013; Keenan et al., 2009; Long et al., 2018).

Emotional problems tend to co-occur because they share common mechanisms such as avoidance, negative affect, and attentional and interpretative bias (Cummings et al., 2014; Essau et al., 2012; Garber et al., 2016; García-Escalera et al., 2017; Muris et al., 2017; Orgilés et al., 2023). However, traditional gold-standard treatments for these problems (i.e., cognitive-behavioral therapy [CBT]) often neglect these common mechanisms (Orgilés et al., 2023), resulting in moderate

* Corresponding author at: Child and Adolescence Research Centre, Miguel Hernández University of Elche, Altamira Building, Avda. de la Universidad s/n, Elche 03202, Alicante (Spain)

E-mail addresses: tgalan@umh.es (T. Galán-Luque), ecabello@umh.es (E. Cabello), morgiles@umh.es (M. Orgilés).

<https://doi.org/10.1016/j.jad.2024.08.081>

Received 14 March 2024; Received in revised form 12 August 2024; Accepted 13 August 2024

Available online 14 August 2024

0165-0327/© 2024 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

success rates of only 50–70 % (Essau et al., 2012; Seligman and Ollendick, 2011). Consequently, transdiagnostic approaches rooted in CBT have emerged to tackle comorbidity by directing attention to shared underlying mechanisms (Ehrenreich-May and Chu, 2014; Lawrence et al., 2017). These interventions offer significant benefits by providing adaptive strategies that target the improvement of common risk factors, making them particularly valuable when used as indicated prevention programs to prevent the development of clinical symptoms in children presenting subclinical levels of symptomatology (Essau et al., 2014; Martinsen et al., 2019; Stockings et al., 2016). Recognized for their efficacy and cost-effectiveness, transdiagnostic interventions offer an alternative for treating comorbid emotional disorders in schoolchildren through unified protocols (Cummings et al., 2014; Essau et al., 2014; García-Escalera et al., 2017). When applied early, as symptoms first emerge, their benefits can be maximized (Beardslee et al., 2013; Solmi et al., 2022).

Super Skills for Life (SSL) program, a transdiagnostic protocol based on CBT, was developed to address emotional problems in schoolchildren (Essau and Ollendick, 2013). It has demonstrated efficacy in reducing symptoms of anxiety and depression across diverse formats in Spanish samples, including group (Fernández-Martínez et al., 2020b, 2019; Orgilés et al., 2019a) and individual applications (Melero et al., 2021), and in an online self-applied format with parents as cotherapists (Orgilés et al., 2023). Moreover, SSL has produced positive outcomes in children

diagnosed with anxiety and related conditions (Diego-Castaño et al., 2023). Beyond conventional components, SSL introduces innovative strategies, such as video feedback with cognitive preparation, a technique aimed at correcting negative self-perceptions and improving anxiety-related behaviors during social interactions, behavioral activation, or social skills training (Essau et al., 2019, 2014; Fernández-Martínez et al., 2020b).

Specifically, the individual face-to-face program has demonstrated efficacy in addressing children's emotional symptoms (Melero et al., 2021). However, the previous study lacked specific video materials that could potentially enhance treatment outcomes. Subsequently, SSL underwent adaptation into a computerized format, becoming an internet-based intervention. This digital protocol, tested in a randomized controlled trial, was the first of its kind for targeting anxiety and depression symptoms in Spanish schoolchildren, aiming to increase accessibility and reduce waiting times for treatment initiation (Orgilés et al., 2023). It was designed for self-application by the child at home, with parents acting as cotherapists guided by written instructions, and the session duration was reduced to 35 min (from around 60 min in the face-to-face program) (Orgilés et al., 2023). While showing positive outcomes, a notable 36.4 % of families discontinued intervention (Orgilés et al., 2023).

This study aimed to investigate the implementation of computerized SSL by a therapist in a clinical setting, aiming to address high dropout

Table 1
Sociodemographic characteristics of participants.

Baseline characteristic	Traditional program		Computerized program		Total		χ^2	p-Value
	n	%	n	%	n	%		
Gender								
Male	24	44.44	23	45.01	47	44.76	0.005	.946
Female	30	55.56	28	54.90	58	55.24		
Respondent								
Father	13	24.07	5	9.80	18	17.14	3.76	.052
Mother	41	75.93	46	90.29	87	82.86		
Marital status								
Married/partnered	40	74.08	42	82.35	82	78.095	1.750	.626
Separated/divorced	8	14.82	6	11.77	14	13.333		
Single	5	9.26	3	5.88	8	7.619		
Widowed	1	1.85	0	0	1	0.952		
Parent age (years)								
25 to 34	4	7.41	2	2	6	5.714	3.422	.331
35 to 44	26	48.15	31	31	57	54.286		
45 to 54	22	40.74	18	18	40	38.095		
55 to 65	2	3.70	0	0	2	1.905		
Educational level								
Primary education	5	9.26	6	11.77	11	10.476	1.573	.666
Secondary education	23	42.60	16	31.37	39	37.143		
Higher education	20	37.04	21	41.18	41	39.048		
Masters' or PhD	6	11.11	8	15.69	14	13.333		
Employment								
Full time	33	61.11	27	52.94	60	57.143	10.876	.054
Part-time	2	3.70	12	23.53	14	13.333		
Self-employed	8	14.82	7	13.73	15	14.286		
Student	1	1.85	0	0	1	0.952		
Public employee	1	1.85	0	0	1	0.952		
Unemployed	9	16.67	5	9.80	14	13.333		
Laboral sector								
Education/professional	13	24.07	14	27.45	27	25.714	3.87	.568
Financial/administrative/real estate	15	27.78	12	23.53	27	25.714		
Health/social services	7	12.96	12	23.53	19	18.095		
Trade/transport/storage	8	14.82	8	15.68	16	15.238		
Manufacturing/energy/building	4	7.41	2	3.92	6	5.714		
Information/communication/hospitality	7	12.96	3	5.88	10	9.524		
Income (euros)								
Up to 499	1	1.85	0	0	1	0.952	4.681	.585
500–999	6	11.11	2	3.92	8	7.619		
1000–1999	12	22.22	11	21.57	23	21.905		
2000–2999	13	24.07	17	33.33	30	28.571		
3000–4999	14	25.93	15	29.41	29	27.619		
5000 or more	1	1.85	2	3.92	3	2.857		
Prefer not to answer	7	12.96	4	7.84	11	10.476		

rates and potentially enhance cost- and time-effectiveness compared to the traditional format. Thus, the primary aim was to explore potential differential efficacy between both modalities through a comparative efficacy randomized trial. The objectives of this study were (1) to analyze the impact of the intervention in reducing symptoms of anxiety and depression in both modalities from children's and parents' reports analyzed post-intervention; and (2) to explore possible differences in intervention outcomes between the two modalities.

2. Method

2.1. Participants

Table 1 presents an overview of participant characteristics and establishes pretest equivalence in sociodemographic variables for both groups. Among the total participants ($N = 105$; $M_{\text{age}} = 9.57$, $SD = 1.44$), approximately half were female (55.24 %). All participants resided in Spain, and the number of siblings ranged from 0 to 3. Most respondents were mothers (82.86 %), were married (78.10 %), and fell within the age ranges of 35 to 44 (54.29 %) and 45 to 54 years (38.10 %). Educational backgrounds varied, with a majority having secondary (37.14 %) and higher education (39.05 %). In terms of employment, they reported having full-time jobs (57.14 %), followed by similar proportions of part-time jobs, self-employment, or unemployment. The most common sectors of employment included education (25.71 %), finances/administration/real estate (25.71 %), health/social services (18.10 %), and trade/transport/storage (15.24 %). Family income exhibited variability, with similar proportions of families in ranges from 1000 to 1999 (21.91 %), 2000 to 2999 (28.57 %), and 3000 to 4999 euros (27.62 %).

2.2. Measures

2.2.1. Sociodemographic variables

Data were collected on age, gender, number of siblings, respondent of the questionnaires, marital status, parent age, parental educational level, employment status and sector, and family income.

2.2.2. Self-reported

2.2.2.1. Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995). The SMFQ is a 13-item self-report scale designed to assess depressive symptoms in children aged 6–17 years. Children rate their feelings and behaviors over the previous 2 weeks on a 3-point Likert-type scale (0 = not true, 1 = somewhat true, and 2 = true). The total depression score is calculated by summing all items (score range: 0–26), with higher scores indicating more severe symptoms. The Spanish version of SMFQ has demonstrated good reliability and validity (Espada et al., 2022). In this sample, the ordinal α was 0.92.

2.2.2.2. Spence Children's Anxiety Scale (SCAS; Spence, 1998). The SCAS is a 44-item self-report scale designed to evaluate anxiety symptoms in children aged 7–17 years. Children rate the frequency of their symptoms on a 4-point Likert-type scale (0 = never, 1 = sometimes, 2 = often, and 3 = always). The total anxiety measure is obtained by summing 38 items (6 items are included to reduce response negative bias) reflecting specific symptoms of anxiety (score range: 0–114), with higher scores indicating more severe symptoms. The scale comprises six subscales: panic attack/agoraphobia (PA), separation anxiety (SEP), social anxiety (SOC), obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), and physical injury fears (PIF). In a recent review, it was concluded that SCAS is a valid and reliable instrument, affirming its utility to measure anxiety symptoms in children and adolescents (Galán-Luque et al., 2023). In this sample, the ordinal α for the total score was 0.91 and ranged from 0.70 to 0.78 for the subscales. The ordinal α for the PIF subscale was 0.32.

2.2.2.3. Children's Anxiety Life Interference Scale (CALIS; Lyneham et al., 2013). The CALIS-P is a 9-item self-report scale designed to measure the impact of anxiety in the academic, social, and home/family daily functioning in children aged 6–17 years. Children rate the impact of fears and preoccupations in different areas on a 5-point Likert-type scale (0 = not at all, 1 = only a little, 2 = sometimes, 3 = quite a lot, and 4 = a great deal). The total anxiety interference is obtained by summing all items (score range: 0–36), with higher scores indicating more severe impairment. The scale comprises two subscales: outside home and at home interference. The Spanish version of the CALIS has demonstrated excellent internal consistency coefficients (Orgilés et al., 2019b). In the current sample, the ordinal α for the total score was 0.87, 0.82 for the outside home interference subscale, and 0.72 for the at home interference subscale.

2.2.3. Parent-reported

2.2.3.1. Mood and Feelings Questionnaire – Parent Version (MFQ-P; Angold et al., 1995). The MFQ-P, the long parent version of the SMFQ-P, comprises 34 items. The MFQ-P has demonstrated good criterion validity, high internal consistency, and test–retest reliability in original studies (Daviss et al., 2006) and with Spanish children (Fernández-Martínez et al., 2020a). In this sample, the ordinal α was 0.93.

2.2.3.2. Spence Children's Anxiety Scale – Parent Version (SCAS-P; Spence, 1998). The SCAS-P, mirroring the SCAS, consists of 38 items. The Spanish version of SCAS-P has demonstrated high reliability ($\alpha = 0.91$) and good convergent and divergent validity (Orgilés et al., 2019c). In this sample, the ordinal α for the total score was 0.91 and ranged from 0.68 to 0.90 for the subscales.

2.2.3.3. Children's Anxiety Life Interference Scale – Parent Version (CALIS-P; Lyneham et al., 2013). The CALIS-P, the parent version of the CALIS, comprises 16 items. It encompasses the same two subscales as the children's version, with an additional parent life interference subscale. The Spanish version of the CALIS-P has demonstrated excellent internal consistency coefficients (Orgilés et al., 2022). In the current sample, the ordinal α ranged from 0.77 to 0.92.

2.3. Procedure

First, the comparative efficacy randomized trial was registered in [ClinicalTrials.gov](https://clinicaltrials.gov) (Identifier: NCT05574491) and received approval from the ethical committee of the authors' institution and the Institute of Health and Biomedical Research of the authors' region.

This study specifically targeted Spanish-speaking children aged 8–12 years who exhibited emotional symptomatology, consistent with previous investigations on the SSL program (Melero et al., 2021). The inclusion criteria were (1) being 8–12 years old, (2) residing in Spain and being proficient in Spanish, (3) not currently undergoing psychological or pharmacological treatment for anxiety and/or depression, and (4) presenting subclinical levels of anxiety and/or depression based on parental reports. The selection process involved assessing individuals against specific thresholds, requiring a score equal to or higher than 25 on the SCAS-P (Spence, 1998) and/or a score equal to or higher than 20 on the MFQ-P (Lyneham et al., 2013), indicating the presence of subclinical levels of anxiety and/or depression symptomatology.

The dissemination of information was conducted through various channels, engaging stakeholders such as schools, social media, organizations, university networks, and personal connections of the research team. A comprehensive letter detailing the study's information was distributed to school headmasters or included in advertisements. An online form was made available for parents to voluntarily participate and complete a set of questionnaires related to their child to assess inclusion criteria. Families who did not meet the criteria received an email

notification. For eligible children, telephonic contact was initiated to provide additional information about the program, address any queries, and, upon obtaining consent, children were randomly assigned to either the traditional or computerized group. Simple randomization was performed using an Excel file, while the sample size was determined based on beta strength and clinical need. Neither parents nor children received any compensation for their participation in this study. Children, whose parents agreed to participate, completed the pretest questionnaire before the commencement of the first session.

The intervention was administered in a clinical setting at the authors' institution. Children underwent two program sessions weekly, completing the entire program over four weeks. All children completed the eight program sessions. After program completion, parents and children were requested to complete the posttest evaluation, and a comprehensive report outlining the changes in their child was sent to each family.

2.4. Interventions

Both modalities consisted of eight one-to-one individual sessions and shared program content and objectives, but the methodologies differed. For a comprehensive description of the program's sessions and contents, refer to Orgilés et al. (Orgilés et al., 2019a). The traditional version of the program mirrored the face-to-face individual traditional SSL version (Melero et al., 2021) but was enhanced with video content to bolster activities. The computerized SSL utilized the same platform as in the self-applied SSL study (Orgilés et al., 2023), but was implemented in the clinical setting under therapist supervision. In the in-person format, the session duration was extended from 35 to 45 min to afford therapists more time to clarify content if necessary. Table 2 outlines the distinctions in program delivery formats. The program facilitators, consisting of 11 psychologists (both genders), were drawn from the research group

Table 2
Primary distinctions between both modalities of Super Skills for Life.

	Traditional program	Computerized program
Session duration	60 min	45 min
Materials for application	<ul style="list-style-type: none"> - Computer to play video content from Super Skills platform. - Camera to record videos for videofeedback with cognitive preparation activities. - Paper handouts for the sessions. - Extra material (e.g., emotion cards, cardboard with scripts for role-playing activities, etc.). - Printed “Well done!” Sheet, Supertask, Summary of the session. Parent’s information. - Reinforcers: stickers, stamps, badges, bookmarks. 	<ul style="list-style-type: none"> - Computer for children to complete all activities. - Printed “Well done!” Sheet, Supertask, Summary of the session, Parent’s information. - Reinforcers: stickers, stamps, badges, bookmarks.
Methodology	Activities include watching videos, readings, written activities. Role-playings and card games.	All activities were adapted to a computerized format where two digital characters serving as coping models, guiding each session, and providing information about the tasks that the participant should perform.
Videofeedback with cognitive preparation	Repeated three times throughout the program (sessions 1, 6 and 8).	Repeated only at the beginning and the end of the program (sessions 1 and 8).
Contents and components	All components were included in the program (a detailed description can be found in Orgilés et al. 2019).	

or were master's students affiliated with the author's institution. Selection involved interviews to assess their academic qualifications and therapeutic expertise in working with children. The facilitators underwent training at the author's institution and regular meetings were conducted to address queries or concerns, provide materials, and ensure proper program implementation. Post each session, children were assigned homework (*Supertask*) to practice and reinforce acquired skills (e.g., initiating a conversation at school), while parents received handouts about session contents and guidelines for reinforcing learnt concepts at home.

2.5. Statistical analyses

The data underwent coding and analysis using R Studio (R Core Team, 2023). Analysis included all cases with both pretest and posttest evaluations. To assess pretest equivalence in sociodemographic and outcome variables between the two groups, *t*-Student (for quantitative variables) and Cross-table (for qualitative variables) analyses were employed. Attrition analyses were conducted to identify differences between completers and dropouts, considering both sociodemographic and outcome variables. The differences in the short-term effects of the program in both intervention groups were evaluated using generalized estimating equations (GEE), adjusting for the baseline measure of the outcome, age, and gender. GEE, a preferred method for randomized controlled trials, effectively controls correlations among responses even with a modest sample size (Liang and Zeger, 1986). Each variable was independently tested, with subjects serving as the randomization units. Preliminary analyses to assess within-group differences between pre and posttest levels of symptomatology were computed for each intervention group, employing Student's *t*-test for paired-samples or the Wilcoxon signed-rank test. Effect sizes were determined using Cohen's *d* (Cohen, 1988) and the matched rank biserial correlation (r_b). Interpretation criteria were as follows: small ($d = 0.20–0.49$), medium ($d = 0.50–0.79$), and large effects ($d \geq 0.80$); and small ($r_b = 0.10–0.29$), medium ($r_b = 0.30–0.49$), and large effects ($r_b \geq 0.50$) (López-Martín and Ardura, 2023).

3. Results

3.1. Attrition

The flow of participants is shown in Fig. 1. Analyses revealed a significant difference in dropout rates between traditional and computerized versions (0 % vs. 7.27 %; $p = .043$). Dropout rates were not associated with children's age, sex, number of siblings, respondent of the questionnaires, family situation, parental education, employment status and sector, parent age, or family income ($p > .05$). The only difference was observed in the total score of self-report SMFQ ($p = .039$). Completers exhibited lower depressive symptoms in the pretest ($M = 8.12$; $SD = 5.41$) than dropouts ($M = 14.00$; $SD = 8.37$). No significant differences were found in the remaining outcome measures at pretest ($p > .05$).

3.2. Baseline equivalence

The traditional and computerized groups demonstrated pretest equivalence in sociodemographic and outcome variables, both in self and parent-reports ($p > .05$).

3.3. Preliminary analyses: within-group differences

Table 3 displays pretest and posttest means and standard deviations, for the outcomes in both intervention groups, the results of Student's *t*-test and the Wilcoxon signed-rank test analyses, *p*-values, and effect sizes. Fig. 2 illustrates normalized pretest and posttest main outcome scores for MFQ, SCAS, and CALIS, providing within-group comparisons



CONSORT 2010 Flow Diagram

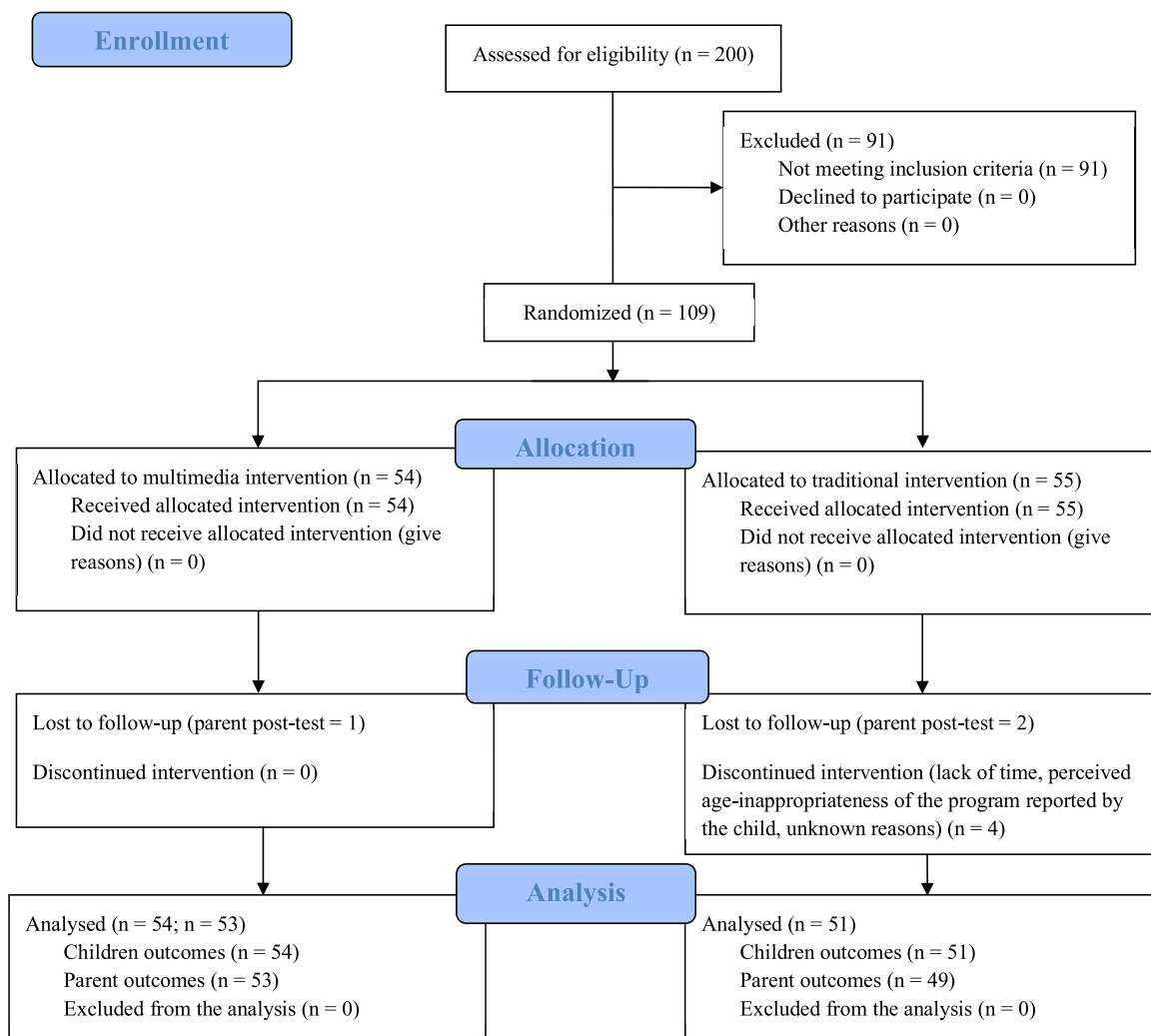


Fig. 1. Flow diagram of participants.

for each condition, as reported by children and parents.

The traditional SSL demonstrated a statistically significant effect in all 23 outcome comparisons between pretest and posttest. Depression and anxiety levels significantly decreased at posttest, as reported by both children and parents ($p < .001$), with large effect sizes. All anxiety subscale scores demonstrated a significant decrease at posttest ($p < .005$), with effect sizes ranging from medium to large. In relation to anxiety life interference, all analyses indicated statistically significant differences between pretest and posttest ($p < .001$), accompanied by moderate to large effect sizes.

The computerized SSL exhibited a statistically significant effect in 18 out of the 23 outcome comparisons between pretest and posttest. Depression and anxiety levels significantly decreased at posttest,

reported by both children and parents ($p < .001$), with medium to large effect sizes. SEP, GAD, and OCD subscales demonstrated a significant decrease at posttest as reported by children, each with a level of significance of $p = .005, < .001, < .05$, respectively, and effect sizes from small to moderate. All anxiety subscale scores reported by parents showed a significant decrease at posttest ($p \leq .001$), with effect sizes ranging from medium to large. As reported by children, the anxiety interference within the house subscale exhibited statistically significant differences between pretest and posttest ($p = .002$), with a medium effect size. As reported by parents, all analyses indicated statistically significant differences between pretest and posttest of anxiety interference measures ($p < .001$), with moderate size effects. The outcome comparisons between pretest and posttest that did not exhibit statistically

Table 3

Pre and posttest means, standard deviations, *t*-test results, statistical significance, and effect sizes by treatment condition.

	Traditional program				Computerized program					
	Pre <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)	<i>t</i> (53)/ <i>z</i>	<i>p</i> - Value	Effect size	Pre <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)	<i>t</i> (50)/ <i>z</i>	<i>p</i> - Value	Effect size
Child's report	(n = 54)					(n = 51)				
Depression (SMFQ total score)	8.06 (5.85)	3.96 (3.91)	6.216	<.001	0.846	8.20 (4.95)	5.28 (4.42)	4.625	<.001	0.648
			5.153	<.001	0.846			3.999	<.001	0.677
Anxiety (SCAS total score)	35.26 (15.26)	24.85 (13.34)	6.150	<.001	0.837	33.61 (13.12)	27.75 (13.76)	3.443	.001	0.482
			5.082	<.001	0.810			3.369	<.001	0.547
Panic/agoraphobia	4.11 (3.93)	2.15 (2.72)	4.438	<.001	0.604	3.28 (3.51)	2.71 (2.30)	1.619	.112	0.227
			3.892	<.001	0.674			1.443	.147	0.269
Separation anxiety	7.43 (3.97)	5.67 (3.64)	4.089	<.001	0.556	7.31 (2.87)	6.04 (3.38)	2.962	.005	0.415
			3.629	<.001	0.621			2.795	.005	0.489
Social anxiety	6.17 (3.08)	3.98 (2.53)	4.931	<.001	0.671	6.08 (3.64)	5.10 (3.65)	1.968	.055	0.276
			4.223	<.001	0.693			2.137	.032	0.374
Generalized anxiety	7.87 (3.55)	5.78 (3.36)	5.636	<.001	0.767	7.35 (3.01)	5.82 (3.06)	3.756	<.001	0.526
			4.750	<.001	0.822			3.577	<.001	0.619
Physical injury fears	4.98 (2.64)	3.57 (2.06)	4.354	<.001	0.593	4.96 (2.46)	4.47 (2.66)	1.533	.132	0.215
			3.822	<.001	0.662			1.765	.076	0.333
OCD symptoms	4.70 (3.53)	3.70 (3.69)	2.936	.005	0.400	4.63 (3.16)	3.61 (3.06)	2.813	.007	0.394
			2.788	.005	0.494			2.572	.010	0.461
Anxiety interference (CALIS total score)	10.85 (8.23)	6.19 (6.94)	4.881	<.001	0.664	9.04 (6.71)	7.10 (6.68)	1.869	.067	0.262
			4.394	<.001	0.700			1.890	.059	0.320
Child outside home	5.09 (4.81)	2.76 (4.27)	3.713	<.001	0.505	4.14 (4.11)	3.59 (4.49)	0.759	.451	0.106
			3.513	<.001	0.595			0.739	.463	0.132
Child at home	5.76 (4.12)	3.43 (3.43)	4.698	<.001	0.639	4.90 (3.29)	3.51 (2.93)	3.256	.002	0.456
			4.241	<.001	0.703			2.940	.003	0.515
Parent's report	(n = 53)					(n = 49)				
Depression (MFQ total score)	17.19 (9.79)	5.70 (5.53)	8.781	<.001	1.206	16.71 (10.51)	6.12 (7.10)	6.878	<.001	0.983
			6.161	<.001	0.982			5.429	<.001	0.910
Anxiety (SCAS total score)	36.64 (15.99)	22.15 (9.25)	7.738	<.001	1.063	37.43 (11.52)	24.65 (13.00)	6.452	<.001	0.922
			5.778	<.001	0.921			4.913	<.001	0.815
Panic/agoraphobia	3.74 (4.64)	1.30 (1.80)	4.122	<.001	0.566	4.14 (3.80)	1.51 (2.27)	5.795	<.001	0.828
			4.637	<.001	0.841			4.870	<.001	0.863
Separation anxiety	8.09 (3.85)	5.21 (3.28)	7.720	<.001	1.060	8.02 (3.03)	5.92 (3.36)	4.557	<.001	0.651
			5.318	<.001	0.882			3.868	<.001	0.648
Social anxiety	8.21 (3.89)	5.15 (2.96)	5.920	<.001	0.813	8.20 (3.34)	5.78 (3.40)	4.925	<.001	0.704
			4.736	<.001	0.793			4.422	<.001	0.726
Generalized anxiety	7.59 (3.03)	4.98 (2.32)	7.119	<.001	0.978	7.70 (2.84)	5.16 (2.65)	5.379	<.001	0.768
			5.304	<.001	0.918			4.385	<.001	0.751
Physical injury fears	5.55 (3.14)	3.57 (2.52)	5.917	<.001	0.813	5.63 (3.13)	3.94 (2.76)	4.959	<.001	0.708
			4.933	<.001	0.818			4.014	<.001	0.711
OCD symptoms	3.47 (2.84)	1.94 (1.61)	4.395	<.001	0.604	3.63 (2.78)	2.35 (3.00)	2.907	.006	0.415
			4.250	<.001	0.744			3.242	.001	0.568
Anxiety interference (CALIS total score)	21.45 (11.74)	13.11 (9.65)	6.080	<.001	0.835	23.90 (12.06)	16.02 (10.51)	4.759	<.001	0.680
			4.798	<.001	0.758			3.894	<.001	0.652
Child outside home	5.79 (4.68)	3.09 (3.25)	4.574	<.001	0.628	6.96 (4.59)	4.41 (4.41)	3.764	<.001	0.538
			3.911	<.001	0.662			3.668	<.001	0.628
Child at home	6.91 (3.28)	4.55 (2.85)	5.984	<.001	0.822	7.69 (3.65)	5.55 (2.99)	4.657	<.001	0.665
			4.672	<.001	0.783			3.927	<.001	0.680
Parent life	8.76 (5.70)	5.47 (4.87)	4.662	<.001	0.640	9.25 (5.92)	6.06 (5.25)	3.907	<.001	0.558
			3.972	<.001	0.645			3.411	<.001	0.597

Note. *M* = mean; *SD* = standard deviation; MFQ = Mood and Feelings Questionnaire; SCAS = Spence's Children Anxiety Scale; OCD = obsessive-compulsive disorder; CALIS = Child Anxiety Life Interference. For the Student *t*-test, effect size is given by Cohen's *d*. For the Wilcoxon test, effect size is given by the matched rank biserial correlation.

significant effects ($p > .05$) were the PA, SOC, and PIF subscales, as well as the overall measure of anxiety interference and the anxiety interference outside home subscale.

3.4. GEE analyses: comparative efficacy between groups

Table 4 presents the immediate results derived from generalized linear model-based estimates with 95 % confidence intervals (CI) and significance tests, evaluating the impact of the intervention on outcomes as reported by children and parents. GEE analysis did not reveal statistically significant differences in posttest outcomes across both intervention groups for 20 out of 23 outcomes. The traditional SSL intervention showed a significant effect in reducing PA, SOC, and PIF symptoms as reported by children ($p < .05$), with small effect sizes. Additionally, main outcomes reported by children (i.e., anxiety and

depression) approached significance ($p = .051$ and $p = .061$, respectively). Fig. 3 illustrates the main outcomes at posttest for comparing both intervention groups, as reported by children and parents.

4. Discussion

The primary objective of this comparative efficacy randomized trial was to evaluate, for the first time, the immediate effects of the computerized SSL intervention, delivered by a therapist in a clinical setting, compared to the traditional version, among children aged 8–12 years. Targeting children with initial emotional symptoms, the study aimed to evaluate the programs' impact on anxiety and depression, specific anxiety disorders, and anxiety interference in children's lives. Key findings indicated: (a) symptom reductions in both program versions, confirming evidence from previous studies, and (b) similar levels

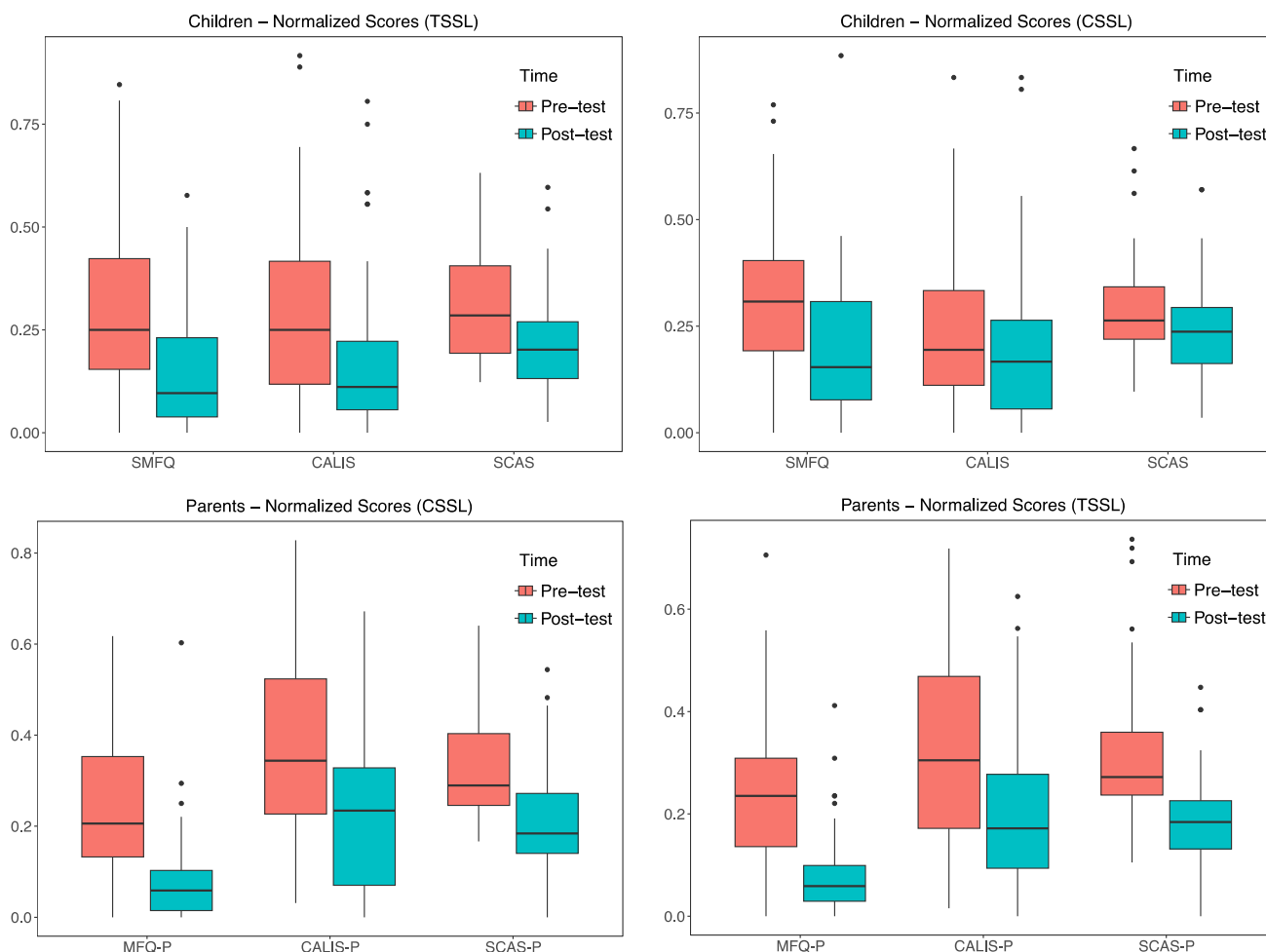


Fig. 2. Normalized pre and posttest outcome scores for within-group comparisons for each treatment condition: children's and parents' reports. Note. TSS = Traditional Super Skills for Life; CSSL = Computerized Super Skills for Life.

of symptomatology change between traditional and computerized modalities, with a slight trend towards better outcomes with the traditional SSL program, especially noted in children's reports.

Regarding the preliminary within-group analyses, it is noteworthy that each group, tested individually, showed promising results in reducing the levels of all assessed measures. These findings align with previous literature examining the efficacy of different versions of the SSL program, particularly its individual traditional face-to-face format (Melero et al., 2021) and the self-applied computerized version (Orgilés et al., 2023). The traditional face-to-face format was enhanced with additional video content, and the digital characters guiding the program were refined and updated from the previous study (Melero et al., 2021). These modifications aimed to provide more relatable role models for children and may have surpassed results observed in our prior study, where no effects were seen in variables such as the general child's anxiety interference, PIF, OCD, and anxiety life interference outside the home subscales (Melero et al., 2021). Notably, the enriched format of the face-to-face traditional version could have made it more appealing to children, leveraging interactive and age-appropriate content, especially considering their familiarity with technology as digital natives. Additionally, in the case of the fully computerized SSL, its application guided by a therapist in a clinical setting significantly improved adherence compared to the self-applied at-home version, increasing continuation rates from 63.60 % to 92.73 %. Within the clinical context, improvements surpassed those observed in the at-home version, indicating enhancements in the general anxiety measure reported by children, which were not observed in the self-applied version of the program (Orgilés

et al., 2023). The authors attribute this improvement to the therapist's real-time assistance in addressing concerns, augmenting the level of specialized supervision provided by parents alone.

Our primary aim in this study was to evaluate the differential efficacy of both interventions through a comparative efficacy randomized trial, using GEE analyses. The findings indicated that post-treatment symptomatology levels were comparably low for both interventions in most outcomes at posttest, suggesting promising outcomes in addressing emotional problems in school-aged children. However, it is noteworthy that treatment efficacy was lower in the SOC, PA, and PIF subscales as rated by children in the computerized group. The lack of significant pre-to-post differences in social anxiety scores, despite the inclusion of videofeedback and a specific session for social abilities in the SSL program, warrants further discussion. One possible explanation for this finding is that the traditional format requires children to engage more intensively in social skills practice through role-playing activities with the therapist, whereas the computerized format primarily involves activities where the child identifies socially appropriate behaviors without the need for active practice on the computer. Additionally, regarding the specific component of videofeedback with cognitive preparation, the level of child involvement in the traditional format is higher during the three sessions that include it (first, sixth, and eighth). In the computerized format, the child sits in front of the laptop, follows written guidance on the screen, and delivers the speech for the recording, whereas in the traditional format, children must stand and observe their entire body during the assessment, leading to a higher level of exposure. This increased exposure may have contributed to the greater reduction in

Table 4
Generalized linear model-based estimates 95 % confidence intervals (CI) and *p*-values for intervention effect on the outcomes.

	Traditional - Computerized		Cohen's <i>d</i>
	Estimates (95 % CI)	<i>p</i> -Value	
Child's report			
Depression (SMFQ total score)	1.274 (−0.007, 2.560)	.051	0.32
Anxiety (SCAS total score)	3.826 (−0.183, 7.840)	.061	0.21
Panic/agoraphobia	0.958 (0.143, 1.770)	.021	0.22
Separation anxiety	0.430 (−0.611, 1.470)	.418	–
Social anxiety	1.162 (0.131, 2.190)	.027	0.36
Generalized anxiety	0.356 (−0.564, 1.280)	.448	–
Physical injury fears	0.909 (0.166, 1.650)	.016	0.38
OCD symptoms	−0.039 (−0.934, 0.854)	.930	–
Anxiety interference (CALIS total score)	1.764 (−0.371, 3.900)	.105	–
Child outside home	1.214 (−0.266, 2.690)	.108	–
Child at home	0.488 (−0.469, 1.45)	.317	–
Parent's report			
Depression (MFQ total score)	0.522 (−1.830, 2.87)	.664	–
Anxiety (SCAS total score)	2.30 (−1.580, 6.180)	.245	–
Panic/agoraphobia	0.124 (−0.549, 0.797)	.718	–
Separation anxiety	0.772 (−0.208, 1.750)	.123	–
Social anxiety	0.642 (−0.420, 1.700)	.236	–
Generalized anxiety	0.124 (−0.762, 1.01)	.783	–
Physical injury fears	0.336 (−0.416, 1.090)	.381	–
OCD symptoms	0.349 (−0.469, 1.170)	.403	–
Anxiety interference (CALIS total score)	1.83 (−1.500, 5.160)	.282	–
Child outside home	0.914 (−0.446, 2.270)	.188	–
Child at home	0.635 (−0.310, 1.580)	.188	–
Parent life	0.355 (−1.300, 2.010)	.675	–

Note. MFQ = Mood and Feelings Questionnaire; SCAS = Spence's Children Anxiety Scale; OCD = obsessive-compulsive disorder; CALIS = Child Anxiety Life Interference.

social anxiety. Indeed, another study evaluating secondary outcome measures found differences in the efficacy of addressing social worries (Galán-Luque et al., 2024), with the traditional format surpassing the benefits of the computerized version and supporting this result.

Regarding the PA and PIF subscales, the differences may be attributed to similar factors as those affecting the near-significance of the main measures (total SCAS and SFMQ scores) reported by children. Factors such as longer session duration, allowing for deeper content exploration, and a more flexible therapeutic environment compared to the computer-led sessions of the computerized SSL, may have contributed to the observed differences. The traditional version may offer a more positive therapeutic experience for children, as child therapists can establish a closer, more adaptable, and playful relationship with children, aspects associated with more favorable therapeutic outcomes (Hawley and Weisz, 2005; Karver et al., 2018; Nuñez et al., 2022). Additionally, this format allows for a more flexible environment in which more specific examples of children's fears can be addressed (e.g., fear of traveling in specific transportation, small closed places, darkness,

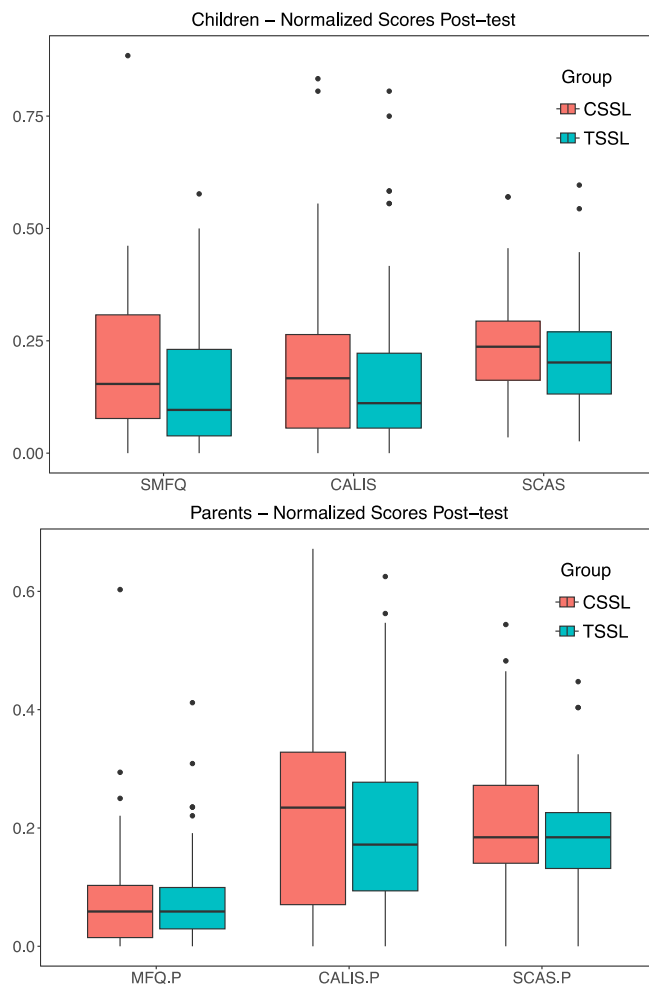


Fig. 3. Normalized posttest outcome scores for between-group comparisons: children's and parents' reports.
Note. TSSL = Traditional Super Skills for Life; CSSL = Computerized Super Skills for Life.

dogs, doctors, dentists), potentially enhancing outcomes. This approach emphasizes the child's interests and incorporates greater diversity in activity formats, such as therapist-led or child-led readings, video tasks, and interactive role-playing scenarios, without relying solely on computerized activities.

The study findings indicate promise in both intervention modalities for addressing childhood anxiety and depression. While suggestive of a potential slight superiority of the traditional version over the computerized, both versions offer evidence of reducing emotional symptoms and could be valuable tools for clinical practice. Thus, we propose various factors that may guide the selection of one modality over the other, including the expertise of therapists, resource availability, and setting characteristics. The computerized format may offer advantages in resource-constrained settings or when time is limited, due to its reduced duration and material requirements, improving cost-effectiveness compared to the traditional version. It enables the treatment of a larger number of children with consistent content while simultaneously reducing reliance on extensive printed materials. Additionally, the structured nature of the computerized version may be advantageous in environments with therapists in training or where a standardized approach is necessary. Conversely, settings with ample resources and expertise may favor the enriched traditional format, offering flexibility and individualization that align with children's needs and potentially enhancing the child-therapist relationship for improved therapeutic outcomes (Hawley and Weisz, 2005; Karver et al., 2018;

Nuñez et al., 2022). Importantly, the traditional format has been more extensively studied and validated to date, suggesting its potential as the gold standard for the individual modality of SSL.

Despite the promising results, further work is anticipated, including long-term evaluations to comprehensively understand the trajectory of symptomatology across groups, particularly considering that, according to parent reports, both programs yielded similar results. Understanding the durability of intervention effects is critical for informed clinical decision-making and ensuring sustained benefits for children undergoing the fully computerized intervention. Furthermore, future directions will explore if specific profiles of children may benefit more from one modality of SSL over the other, considering demographic factors such as age or gender, as well as the severity or comorbidity of anxiety and depressive symptoms.

4.1. Limitations

This study has some limitations. Firstly, the sample size was small and confined to a specific area within the Valencian community, making it potentially non-representative of other regions in Spain. Secondly, it exclusively focused on the immediate effects of the SSL program; therefore, it is necessary to investigate the long-term maintenance of these improvements. Third, while parents provide valuable insights into their children's psychopathology, they may not always be reliable informants of changes in all contexts (e.g., school). Hence, it is recommended that future studies involve teachers in the multi-informant assessment (Andrade Palos and Betancourt Ocampo, 2012; Van Roy et al., 2010). Finally, this study relied solely on self-report measures by the parent and the child, without including behavioral measures in the outcome assessment. Future research should incorporate these measures to provide a more comprehensive evaluation of the intervention's effectiveness.

5. Conclusions

This study represents the first exploration of the short-term effects of the SSL program in a fully computerized format supervised by a specialized therapist, alongside the enriched traditional individual format of SSL, through an comparative efficacy randomized trial, aimed at reducing anxiety and depression symptoms in a Spanish sample, as reported by both children and parents. Despite acknowledged limitations, the promising outcomes of this comparative efficacy randomized trial provide valuable insights, suggesting that these transdiagnostic CBT interventions could emerge as clinically useful tools for the indicated prevention of children's emotional problems. The computerized format offers enhanced cost-effectiveness with shorter application times and streamlined program materials, while the traditional version potentially fosters a more flexible environment and could impact the child-therapist bond, affecting its short-term effectiveness from the child's perspective. Both modalities incorporate digital components, making them engaging for children, who are digital natives and have surpassed benefits from other applications. Further research analyzing the intervention's effectiveness with longitudinal data is warranted to establish evidence for sustained benefits over time.

Funding source

This work was supported by the Ministry of Universities under Grant FPU20/00893; the European Regional Development Fund (ERDF) under Grant PSI2017-85493-P/AEI/10.13039/501100011033; and the Department of Education, Universities and Employment of Generalitat Valenciana under Grant PROMETEO-2021-63.

The funding sources were not involved in the study design; in the collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit the article for publication.

CRedit authorship contribution statement

Teresa Galán-Luque: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Esteban Cabello:** Writing – original draft, Visualization, Software, Methodology, Formal analysis, Data curation. **Mireia Orgilés:** Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

None.

Acknowledgments

We would like to express our gratitude to all the individuals who participated in this study.

References

- Acosta, K.R., Canals, J., Hernández-Martínez, C., Balladriga, M.C.J., Viñas, F., Doménech-Llaberia, E., 2010. Comorbidity between SCARED anxiety factors and depressive symptomatology in 8-to 12-year-old children. *Psicothema* 22, 613–618.
- Aebi, M., Giger, J., Plattner, B., Metzke, C.W., Steinhausen, H.-C., 2014. Problem coping skills, psychosocial adversities and mental health problems in children and adolescents as predictors of criminal outcomes in young adulthood. *Eur. Child Adolesc. Psychiatry* 23, 283–293. <https://doi.org/10.1007/s00787-013-0458-y>.
- Andrade Palos, P., Betancourt Ocampo, D., 2012. Problemas emocionales y conductuales en niños: Predictores desde la percepción de los padres y de los hijos. *Acta Investig. Psicol* 2, 650–664.
- Angold, A., Costello, E.J., Messer, S.C., Pickles, A., 1995. Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *Int. J. Methods Psychiatr. Res.* 5, 237–249.
- Beardslee, W.R., Brent, D.A., Weersing, V.R., Clarke, G.N., Porta, G., Hollon, S.D., Gladstone, T.R.G., Gallop, R., Lynch, F.L., Iyengar, S., DeBar, L., Garber, J., 2013. Prevention of depression in at-risk adolescents. *JAMA Psychiatry* 70, 1161. <https://doi.org/10.1001/jamapsychiatry.2013.295>.
- Benjamin, C.L., Harrison, J.P., Settiani, C.A., Brodman, D.M., Kendall, P.C., 2013. Anxiety and related outcomes in young adults 7 to 19 years after receiving treatment for child anxiety. *J. Consult. Clin. Psychol.* 81, 865–876. <https://doi.org/10.1037/a0033048>.
- Bitsko, R.H., Claussen, A.H., Lichstein, J., Black, L.I., Jones, S.E., Danielson, M.L., Hoenig, J.M., Davis Jack, S.P., Brody, D.J., Gyawali, S., Maenner, M.J., Warner, M., Holland, K.M., Perou, R., Crosby, A.E., Blumberg, S.J., Avenevoli, S., Kaminski, J.W., Ghandour, R.M., Meyer, L.N., 2022. Mental health surveillance among children — United States, 2013–2019. *MMWR Supplements* 71 (2), 1–42. <https://doi.org/10.15585/mmwr.su7102a1>.
- Broeren, S., Muris, P., Diamantopoulou, S., Baker, J.R., 2013. The course of childhood anxiety symptoms: developmental trajectories and child-related factors in normal children. *J. Abnorm. Child Psychol.* 41, 81–95. <https://doi.org/10.1007/s10802-012-9669-9>.
- Canals, J., Voltas, N., Hernández-Martínez, C., Cosi, S., Arijia, V., 2019. Prevalence of DSM-5 anxiety disorders, comorbidity, and persistence of symptoms in Spanish early adolescents. *Eur. Child Adolesc. Psychiatry* 28 (1), 131–143. <https://doi.org/10.1007/s00787-018-1207-z>.
- Cohen, J., 1988. *Statistical Power Analysis for the Behavioral Sciences*. Routledge. <https://doi.org/10.4324/9780203771587>.
- Cullins, L.M., Mian, A.I., 2015. Global child and adolescent mental health. *Child Adolesc. Psychiatr. Clin. N. Am.* 24, 823–830. <https://doi.org/10.1016/j.chc.2015.06.010>.
- Cummings, C.M., Caporino, N.E., Kendall, P.C., 2014. Comorbidity of anxiety and depression in children and adolescents: 20 years after. *Psychol. Bull.* 140, 816–845. <https://doi.org/10.1037/a0034733>.
- Daviss, W.B., Birmaher, B., Melhem, N.A., Axelson, D.A., Michaels, S.M., Brent, D.A., 2006. Criterion validity of the Mood and Feelings Questionnaire for depressive episodes in clinic and non-clinic subjects. *J. Child Psychol. Psychiatry* 47, 927–934. <https://doi.org/10.1111/j.1469-7610.2006.01646.x>.
- Diego-Castaño, S., Morales, A., Orgilés, M., 2023. Benefits of Super Skills for Life in a randomized controlled trial in clinical settings for Spanish children with comorbid conditions. *Dev. Psychopathol.* 1–10. <https://doi.org/10.1017/S0954579423001189>.
- Ehrenreich-May, J.E., Chu, B.C., 2014. *Transdiagnostic Treatments for Children and Adolescents: Principles and Practice*. The Guilford Press.
- Espada, J.P., González, M.T., Fernández-Martínez, I., Orgilés, M., Morales, A., 2022. Spanish validation of the short mood and feelings questionnaire (SMFQ) in children aged 8–12. *Psicothema* 24 (4), 610–620. <https://doi.org/10.7334/psicothema2022.54>.

- Essau, C.A., Ollendick, T.H., 2013. *The Super Skills for Life Programme*. University of Roehampton, London, UK.
- Essau, C.A., Conradt, J., Sasagawa, S., Ollendick, T.H., 2012. Prevention of anxiety symptoms in children: results from a universal school-based trial. *Behav. Ther.* 43, 450–464. <https://doi.org/10.1016/j.beth.2011.08.003>.
- Essau, C.A., Olaya, B., Sasagawa, S., Pithia, J., Bray, D., Ollendick, T.H., 2014. Integrating video-feedback and cognitive preparation, social skills training and behavioural activation in a cognitive behavioural therapy in the treatment of childhood anxiety. *J. Affect. Disord.* 167, 261–267. <https://doi.org/10.1016/j.jad.2014.05.056>.
- Essau, C.A., Sasagawa, S., Jones, G., Fernandes, B., Ollendick, T.H., 2019. Evaluating the real-world effectiveness of a cognitive behavior therapy-based transdiagnostic program for emotional problems in children in a regular school setting. *J. Affect. Disord.* 253, 357–365. <https://doi.org/10.1016/j.jad.2019.04.036>.
- Fernández-Martínez, I., Morales-Sabuco, A., Espada, J.P., Orgilés, M., Essau, C.A., 2019. Effectiveness of the program Super Skills For Life in reducing symptoms of anxiety and depression in young Spanish children. *Psicothema*. <https://doi.org/10.7334/psicothema2018.336>.
- Fernández-Martínez, I., Morales, A., Espada, J.P., Orgilés, M., 2020a. Psychometric properties and factorial structure of the Spanish version of the parent-report Mood and Feelings Questionnaire (MFQ-P). *Clin. Child Psychol. Psychiatry* 25, 533–544. <https://doi.org/10.1177/1359104519897939>.
- Fernández-Martínez, I., Orgilés, M., Morales, A., Espada, J.P., Essau, C.A., 2020b. One-year follow-up effects of a cognitive behavior therapy-based transdiagnostic program for emotional problems in young children: a school-based cluster-randomized controlled trial. *J. Affect. Disord.* 262, 258–266. <https://doi.org/10.1016/j.jad.2019.11.002>.
- Galán-Luque, T., Serrano-Ortiz, M., Orgilés, M., 2023. Factor structure and psychometric properties of the Spence Children's Anxiety Scale: a 25-year systematic review. *Child Psychiatry Hum. Dev.* <https://doi.org/10.1007/s10578-023-01566-1>.
- Galán-Luque, T., Cabello, E., Orgilés, M., 2024. Evaluating Super Skills for Life Program's impact on transdiagnostic variables in children with emotional disorders: A comparative randomized trial. *Manuscript Submitted for Publication*.
- Garber, J., Brunwasser, S.M., Zerr, A.A., Schwartz, K.T.G., Sova, K., Weersing, V.R., 2016. Treatment and prevention of depression and anxiety in youth: test of cross-over effects. *Depress. Anxiety* 33, 939–959. <https://doi.org/10.1002/da.22519>.
- García-Escalera, J., Chorot, P., Valiente, R.M., Reales, J.M., Sandín, B., 2017. Eficacia de la terapia cognitivo conductual transdiagnóstica en el tratamiento de la ansiedad y la depresión en adultos, niños y adolescentes: Un meta-análisis. *Revista de Psicopatología y Psicología Clínica* 21, 147. <https://doi.org/10.5944/rppc.vol.21.num.3.2016.17811>.
- Ghandour, R.M., Sherman, L.J., Vladutiu, C.J., Ali, M.M., Lynch, S.E., Bitsko, R.H., Blumberg, S.J., 2019. Prevalence and treatment of depression, anxiety, and conduct problems in US children. *J. Pediatr.* 206, 256–267.e3. <https://doi.org/10.1016/j.jpeds.2018.09.021>.
- Goldberg, D.P., Krueger, R.F., Andrews, G., Hobbs, M.J., 2009. Emotional disorders: cluster 4 of the proposed meta-structure for DSM-V and ICD-11. *Psychol. Med.* 39 (12), 2043–2059. <https://doi.org/10.1017/S0033291709990298>.
- Hawley, K.M., Weisz, J.R., 2005. Youth versus parent working alliance in usual clinical care: distinctive associations with retention, satisfaction, and treatment outcome. *J. Clin. Child Adolesc. Psychol.* 34, 117–128. https://doi.org/10.1207/s15374424jccp3401_11.
- Karver, M.S., De Nadai, A.S., Monahan, M., Shirk, S.R., 2018. Meta-analysis of the prospective relation between alliance and outcome in child and adolescent psychotherapy. *Psychotherapy* 55, 341–355. <https://doi.org/10.1037/pst0000176>.
- Keenan, K., Feng, X., Hipwell, A., Klostermann, S., 2009. Depression begets depression: comparing the predictive utility of depression and anxiety symptoms to later depression. *J. Child Psychol. Psychiatry* 50, 1167–1175. <https://doi.org/10.1111/j.1469-7610.2009.02080.x>.
- Kovess-Masfety, V., Husky, M.M., Keyes, K., Hamilton, A., Pez, O., Bitfoi, A., Carta, M.G., Goelitz, D., Kuijpers, R., Otten, R., Koç, C., Lesinskiene, S., Mihova, Z., 2016. Comparing the prevalence of mental health problems in children 6–11 across Europe. *Soc. Psychiatry Psychiatr. Epidemiol.* 51, 1093–1103. <https://doi.org/10.1007/s00127-016-1253-0>.
- Lawrence, P.J., Rooke, S.M., Creswell, C., 2017. Review: prevention of anxiety among at-risk children and adolescents: a systematic review and meta-analysis. *Child Adolesc. Mental Health* 22, 118–130. <https://doi.org/10.1111/camh.12226>.
- Liang, K.Y., Zeger, S.L., 1986. Longitudinal data analysis using generalized linear models. *Biometrika* 73, 13–22. <https://doi.org/10.1093/biomet/73.1.13>.
- Long, E.E., Young, J.F., Hankin, B.L., 2018. Temporal dynamics and longitudinal co-occurrence of depression and different anxiety syndromes in youth: evidence for reciprocal patterns in a 3-year prospective study. *J. Affect. Disord.* 234, 20–27. <https://doi.org/10.1016/j.jad.2018.02.074>.
- López-Martín, E., Ardura, D., 2023. The effect size in scientific publication. *Educación XX1* 26, 9–17. <https://doi.org/10.5944/educxx1.36276>.
- Lyneham, H.J., Sbrulati, E.S., Abbott, M.J., Rapee, R.M., Hudson, J.L., Tolin, D.F., Carlson, S.E., 2013. Psychometric properties of the Child Anxiety Life Interference Scale (CALIS). *J. Anxiety Disord.* 27, 711–719. <https://doi.org/10.1016/j.janxdis.2013.09.008>.
- Martinsen, K.D., Rasmussen, L.M.P., Wentzel-Larsen, T., Holen, S., Sund, A.M., Løvaas, M.E.S., Patras, J., Kendall, P.C., Waaktaar, T., Neumer, S.-P., 2019. Prevention of anxiety and depression in school children: effectiveness of the transdiagnostic EMOTION program. *J. Consult. Clin. Psychol.* 87, 212–219. <https://doi.org/10.1037/ccp0000360>.
- Melero, S., Orgilés, M., Espada, J.P., Morales, A., 2021. Spanish version of Super Skills for Life in individual modality: improvement of children's emotional well-being from a transdiagnostic approach. *J. Clin. Psychol.* 77, 2187–2202. <https://doi.org/10.1002/jclp.23148>.
- Melton, T.H., Croarkin, P.E., Strawn, J.R., McClintock, S.M., 2016. Comorbid anxiety and depressive symptoms in children and adolescents. *J. Psychiatr. Pract.* 22, 84–98. <https://doi.org/10.1097/PRA.0000000000000132>.
- Muris, P., Simon, E., Lijphart, H., Bos, A., Hale, W., Schmeitz, K., 2017. The Youth Anxiety Measure for DSM-5 (YAM-5): development and first psychometric evidence of a new scale for assessing anxiety disorders symptoms of children and adolescents. *Child Psychiatry Hum. Dev.* 48, 1–17. <https://doi.org/10.1007/s10578-016-0648-1>.
- Núñez, L., Fernández, S., Alamo, N., Midgley, N., Capella, C., Krause, M., 2022. The therapeutic relationship and change processes in child psychotherapy: a qualitative, longitudinal study of the views of children, parents and therapists. *Research in Psychotherapy: Psychopathology, Process and Outcome* 25. <https://doi.org/10.4081/ripppo.2022.556>.
- Orgilés, M., Fernández-Martínez, I., Espada, J.P., Morales, A., 2019a. Spanish version of Super Skills for Life: short- and long-term impact of a transdiagnostic prevention protocol targeting childhood anxiety and depression. *Anxiety Stress Coping* 32, 694–710. <https://doi.org/10.1080/10615806.2019.1645836>.
- Orgilés, M., Fernández-Martínez, I., Morales, A., Melero, S., Espada, J.P., 2019b. Spanish validation of the Child Anxiety Life Interference Scale (CALIS-C): psychometric properties, factorial structure and factorial invariance across gender. *Child Psychiatry Hum. Dev.* 50, 756–763. <https://doi.org/10.1007/s10578-019-00879-4>.
- Orgilés, M., Rodríguez-Menchón, M., Fernández-Martínez, I., Morales, A., Espada, J.P., 2019c. Validation of the parent report version of the Spence Children's Anxiety Scale (SCAS-P) for Spanish children. *Clin. Child Psychol. Psychiatry* 24, 776–790. <https://doi.org/10.1177/1359104519835579>.
- Orgilés, M., Melero, S., Fernández-Martínez, I., Espada, J.P., Morales, A., 2022. The child anxiety life interference scale for parents (CALIS-P): psychometric properties of the Spanish version. *Curr. Psychol.* 41, 3156–3164. <https://doi.org/10.1007/s12144-020-00849-3>.
- Orgilés, M., Morales, A., Fernández-Martínez, I., Méndez, X., Espada, J.P., 2023. Effectiveness of a transdiagnostic computerized self-applied program targeting children with emotional problems: a randomized controlled trial. *J. Affect. Disord.* 338, 155–162. <https://doi.org/10.1016/j.jad.2023.06.004>.
- R Core Team, 2023. *R: A Language and Environment for Statistical Computing*.
- Seligman, L.D., Ollendick, T.H., 2011. Cognitive-behavioral therapy for anxiety disorders in youth. *Child Adolesc. Psychiatr. Clin. N. Am.* 20, 217–238. <https://doi.org/10.1016/j.chc.2011.01.003>.
- Solmi, M., Radua, J., Olivola, M., Croce, E., Soardo, L., Salazar de Pablo, G., Il Shin, J., Kirkbride, J.B., Jones, P., Kim, J.H., Kim, J.Y., Carvalho, A.F., Seeman, M.V., Correll, C.U., Fusar-Poli, P., 2022. Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies. *Mol. Psychiatry* 27, 281–295. <https://doi.org/10.1038/s41380-021-01161-7>.
- Spence, S.H., 1998. A measure of anxiety symptoms among children. *Behav. Res. Ther.* 36, 545–566. [https://doi.org/10.1016/S0005-7967\(98\)00034-5](https://doi.org/10.1016/S0005-7967(98)00034-5).
- Stockings, E.A., Degenhardt, L., Dobbins, T., Lee, Y.Y., Erskine, H.E., Whiteford, H.A., Patton, G., 2016. Preventing depression and anxiety in young people: a review of the joint efficacy of universal, selective and indicated prevention. *Psychol. Med.* 46, 11–26. <https://doi.org/10.1017/S0033291715001725>.
- Van Roy, B., Groholt, B., Heyerdahl, S., Clench-Aas, J., 2010. Understanding discrepancies in parent-child reporting of emotional and behavioural problems: effects of relational and socio-demographic factors. *BMC Psychiatry* 10, 56. <https://doi.org/10.1186/1471-244X-10-56>.