Research report

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Effects of the Promoting-Children Intervention with Multiple Informants: An Experimental Study

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Abstract
Behavior problems are frequent in school-age children; however, few controlled studies have assessed the effects of social skills interventions with this population, especially involving different informants and environments. This study aimed to describe the effects of the Promoting-Children intervention in an experimental group design with children (Experimental Group and Control Group), utilizing various probes and informants, regarding the children's behaviors before and after the intervention, a follow-up evaluation (social skills, behavior problems, academic performance) and assessment of the teachers and parents' positive and negative educational practices. Teachers and parents/guardians responded to standardized instruments to measure educational social skills, negative practices, behavior problems, and social skills with various probes. The results demonstrated a reduction in behavior problems and negative practices, as well as an increase in social skills and educational social skills, in both the school and family environments, after the interventions in the Experimental Group, whereas no such changes were observed in the Control Group. This confirms the positive effects of the efficacy and effectiveness of the Promoting-Children intervention.
Keywords: Behavior Problems; Social Skills; Psychological Intervention; Educational Practices; School.

Efeitos do Promove-Crianças por Múltiplos Informantes: Um Estudo Experimental

Resumo
Problemas de comportamento são frequentes em crianças em idade escolar, mas há poucos estudos controlados para aferir efeitos de intervenções em habilidades sociais com essa população, especialmente com diferentes informantes e ambientes. O objetivo desta pesquisa foi descrever efeitos da intervenção Promove-Crianças, em um delineamento experimental de grupo com crianças (Grupos Experimental e Controle), com diferentes sondas e informantes, sobre os comportamentos das crianças antes e após a intervenção, incluindo avaliação de seguimento (habilidades sociais, problemas de comportamento, desempenho acadêmico) e práticas educativas positivas e negativas de seus professores e familiares. Professores e pais/responsáveis responderam a instrumentos padronizados para mensurar habilidades sociais educativas, práticas negativas, problemas de comportamento e habilidades sociais, nas diferentes sondas. Os resultados demonstraram, nos ambientes escolar e familiar, redução de problemas de comportamento e de práticas negativas e aumento das habilidades sociais e habilidades sociais educativas após as intervenções no Grupo Experimental, não ocorrendo no Grupo Controle. Atesta-se efeitos positivos de eficácia e de efetividade do Promove-Crianças.
Palavras-chave: Problemas de comportamento; habilidades sociais; intervenção psicológica; práticas educativas; escola.

Efectos de Promueve-Niños de Múltiples Informantes: Un Estudio Experimental

Resumen
Problemas de comportamiento son frecuentes en niños en edad escolar y faltan estudios controlados que certifiquen los efectos de intervenciones en habilidades sociales en esa población, especialmente con diferentes informantes y ambientes. El objetivo de la investigación es describir los efectos de la intervención Promueve-Niños en un grupo experimental de niños (Grupo Experimental y Grupo Control), con diferentes sondas e informantes sobre el comportamiento de los niños antes y después de la intervención (habilidades sociales, problemas de comportamiento, rendimiento académico) y prácticas educativas positivas y negativas de sus profesores y sus familiares. Profesores y padres/tutores respondieron a instrumentos estandarizados para medir habilidades sociales educativas, prácticas negativas, problemas de comportamiento y habilidades sociales con diferentes sondas e informantes. Los resultados muestran que hubo una reducción de problemas de comportamiento y de prácticas negativas en los entornos escolar y familiar, así como un aumento de las habilidades sociales y habilidades sociales educativas después de las intervenciones del Grupo Experimental, no ocurriendo en el Grupo Control. Los efectos positivos de la eficacia y de la efectividad del Promueve-Niños son atestiguados.
Palabras clave: Problemas de Conducta; Habilidades Sociales, Intervención Psicológica; Prácticas Educativas; Colegio.

Introduction

Behavior problems and learning difficulties can occur simultaneously (Grigorenko et al., 2020), and teachers are often underprepared to deal with such challenges (Taño & Matsukara, 2020), increasing the risk of early referrals and medicalization (Amaral & Caponi, 2020). Additionally, a high prevalence of these repertoires is observed in children who are not receiving clinical attention and have been screened in public schools, as assessed by both family members (Cruz et al., 2021) and teachers (Bolsoni-Silva et al., 2016). Given the trend toward early referrals and medicalization of children (Amaral & Caponi, 2020), identifying, preventing, and addressing behavior problems as early as possible becomes of paramount importance. The impact on development becomes even more evident when risks are combined, such as having problems in multiple environments (Assis-Fernandes & Bolsoni-Silva, 2020) and/or comorbidities of externalizing and internalizing problems (Duprey et al., 2020). Bolsoni-Silva and Loureiro (2021) assessed mothers and teachers of children with behavior problems in school and family settings, or exclusively in the family or school environment. They found that children who exhibited indicators of behavior problems in both environments displayed more interpersonal impairment, and their teachers and mothers had difficulties with disciplinary practices.

Behavior problems are often directly related to academic difficulties (Grigorenko et al., 2020) and inversely proportional to social skills (Casali-Robalinho et al., 2015; Elias & Amaral, 2016; Fernandes et al., 2018). Externalizing problems can be identified by a high occurrence of disobedience, aggression, and rule-breaking, while internalizing problems include behaviors like shyness, anxiety, and sadness (Achenbach et al., 2017). A comprehensive understanding of these problems implies describing the multiple variables involved (Costa & Fleith, 2019).

Behavior problems occur because they obtain reinforcing consequences, which can be attention, escaping from an unpleasant or difficult task, or immediately obtaining something they desire, to name a few examples. Therefore, by identifying the function of the problem behavior, it is possible to teach behaviors that can serve the same function as the problem behavior (Goldiamond, 1974/2002). Accordingly, social skills are behaviors that assist in this direction - as they can assume the same functions in the child's interaction with adults (family members, teachers) and peers. For example, during a visit to the supermarket, a child can either throw a tantrum (problem behavior) or make a request/negotiate (skilled behavior) to gain access to something they desire, like a packet of cookies. Therefore, socially skilled behaviors of making requests and/or negotiating assume the function of problem behavior, and they can be considered functionally equivalent repertoires (Falcão & Bolsoni-Silva, 2016). To ensure that socially skilled responses assume this function, adults need to identify and reinforce them since children's behaviors interact with the educational practices of teachers (Garcia et al., 2016; Santiago et al., 2016) and family members (Hosokawa & Katsura, 2017; Kaiser et al., 2017; Lunkenheimer et al., 2017; Santos Rego et al., 2018).

With the aim of expanding socially skilled repertoires to reduce the frequency of behavior problems, the Promoting-Children program was developed (Falcão & Bolsoni-Silva, 2016) to teach social skills to children in a playful manner. It should be emphasized that behaviors are taught based on the functional analysis of behaviors exhibited by characters in animated films and pre-programmed group activities. During these sessions, the therapist can positively reinforce skilled behaviors, as the program is adapted to each child, considering prior assessment and case formulation, defining behavioral objectives, and using modeling and functional analysis as the primary teaching strategies.

The Promoting-Children procedure is an intervention aimed at teaching social skills to children in ten 50-minute intervention sessions (Falcão & Bolsoni-Silva, 2016), conducted by a psychologist. The procedure consists of the following sessions: Session 1 - greetings, initiating conversations, and civility; Session 2 - expressing gratitude, saying positive things, and expressing opinions; Session 3 - making friends, helping, playing, and sharing belongings; Session 4 - waiting for one's turn, and self-control; Session 5 - expressing frustration appropriately, and not being intimidated; Session 6 - naming feelings, and empathy; Session 7 - expressing rights and needs, and participating in discussion topics; Session 8 - praising, kissing, and hugging; Session 9 - complying with requests, and expressing gratitude; Session 10 - admitting mistakes, apologizing, and accepting criticism (Falcão & Bolsoni-Silva, 2016).

At the beginning of each session, the homework assigned in the previous session is checked, and then a segment of an animated film is shown in which the characters exhibit the behavior problems and/or social skills that will be taught. Based on the behaviors

displayed in the animation, the therapist, with the participants' assistance, contextualizes and functionally analyzes the characters' behaviors. Subsequently, the therapist explains the function of the behaviors exhibited by the children, providing examples of the occurrence of behavior problems and social skills in the participants' daily lives, as reported by them.

In the second phase, activities are conducted to reinforce the importance of each behavior, including role-playing, storytelling, puppetry, balloon games, collage-making, and drawing, among others. At the end of the activities, those children who actively participated in the session and completed the requested activities receive a necklace symbolizing that the child displayed skilled behaviors during the sessions. At the end of the procedure, besides the mentioned necklace, every socially skilled behavior exhibited during the session (even if not the direct focus of the session) was praised by the therapist with expressions of acceptance, compliments, and positive feedback. Problem behaviors that could not be ignored were addressed with reminders of the rules agreed upon, negative feedback, and requests for behavior change.

The program aims to promote behaviors such as "taking initiative," "expressing affection," "seeking help," and "greeting people," which were selected from empirical studies (Alvarenga & Piccinini, 2003; Bandeira et al., 2006; Cia & Barham, 2009; 2010; Elias Marturano & Motta-Oliveira, 2012; Leme & Bolsoni-Silva, 2010) that analyzed repertoires and found that these topographies occurred less frequently in children with behavioral problems. Additionally, behaviors that adults could recognize and value, at least in part, were identified and included in the program, such as "giving compliments," "expressing desires appropriately," and "expressing feelings appropriately" (Leme & Bolsoni-Silva, 2010).

Bolsoni-Silva et al. (2021) compared the effects of the Promoting-Children (n = 13) and Promoting-Teachers (n = 13) interventions, focusing on six-year-old children and their teachers. The Promoting-Teachers procedure is an educational program designed for teachers with the aim of reducing the frequency of negative practices and enhancing positive ones in teacher-student relationships. Additionally, it seeks to determine whether improvements in teacher practices lead to improvements in children's academic performance, behavior problems, and social skills. The intervention consists of 12 weekly sessions lasting approximately two hours each, in which important social skills for teacher-student interactions are taught through pre-programmed activities, analysis of classroom situations, and homework assignments. In the Promoting-Teachers program, post-test results showed a statistically significant improvement in children's social competence, a reduction in behavior problems (both internalizing and externalizing), and an increase in positive practices by teachers. In the Promoting-Children intervention, a statistically significant reduction in externalizing and internalizing behavior problems was also observed. The study showed that all indicators improved in both programs; however, behavior problems decreased more with the Promoting-Children intervention, while negative teaching practices by teachers and academic difficulties improved more with the Promoting-Teachers program.

Falcão et al. (2016) applied the Promoting-Children program with seven children aged 7 to 9. Mothers and teachers were interviewed about the mother-child and teacher-child interactions and completed scales about the evaluated children's behaviors. The study found that in the therapeutic setting, which was filmed and later analyzed, problem behaviors were emitted at a low frequency, while social skills statistically increased in the process measures. In the pre-test and post-test comparisons, externalizing problems significantly reduced in both family and school environments, as measured by instruments assessing behavior problems based on reports by mothers and teachers about the children's behaviors before and after the intervention. Miott et al. (2020), with another sample of children, found that after the intervention, which involved seven children aged 7 to 9, there was a reduction in behavior problems, an increase in prosocial behaviors, and a reduction in risky parental styles.

Although some investigations have been conducted with the Promoting-Children program (Bolsoni-Silva et al., 2021; Falcão et al., 2016; Miott et al., 2020), with promising results regarding the reduction of behavior problems and the expansion of social skills, there has not yet been a study with an experimental design, which is the gap this research aims to fill. Additionally, behavior problems are multidetermined (Costa & Fleith, 2019) and have a relationship with the child's social skills repertoire (Fernandes et al., 2018), and with social interactions established in school and family settings (Santos Rego et al., 2018; Roksa et al., 2017). Therefore, describing, in a single study, the effects of the program on children with comorbid problems (i.e., internalizing and externalizing) in family and school environments

is a further gap in the knowledge to be investigated, as these are the children who present greater impairment (Assis-Fernandes & Bolsoni-Silva, 2020; Freitas & Del Prette, 2013).

It is known that the ideal way to address behavior problems is through simultaneous interventions with children, family members, and teachers (Herman et al., 2011). However, the adherence of parents and teachers is not always high, serving as a barrier to treatment (Kenyon et al., 2020). Therefore, intervention with children in a school environment can increase the feasibility of reducing behavior problems and increasing social skills, which, in turn, can have a positive impact on interactions established in school and family environments, including improving the educational practices of parents and teachers, as verified in the study by Miott et al. (2020).

In the national context, other programs for teaching social skills can be found, focusing on solving interpersonal problems, motivation, self-control, and self-regulation (Elias et al., 2012; Elias & Amaral, 2016). International studies, like the national ones, have focused on problem-solving (Webster-Stratton et al., 2001) and teaching some social skill behaviors to reduce behavior problems, especially externalizing ones (Han et al., 2017). All the studies have reported improvements in the acquisition of social skills and a reduction in behavior problems.

Two issues can be considered based on these investigations. First, interventions do not always cover social skill topographies of various classes, often restricting themselves to teaching social skill behaviors from a single class. However, several child social skills differentiate children with and without behavior problems in family and school environments, and therefore, these behavioral deficits can be the target of intervention (Bolsoni-Silva & Loureiro, 2020). The second issue concerns the evaluation of behavior problems, as few studies identified (e.g., Barbosa, 2021; Falcão et al., 2016; Miott et al., 2020) the number of children who improved or maintained clinical scores after the interventions. This approach aims to clarify improvements in repertoires (i.e., the frequency of social skills) as well as the difficulties that persisted and were overcome (i.e., the frequency of behavior problems). This information is relevant when assessing the effectiveness of an intervention program (Durgante, & Dell'Aglio, 2018).

Furthermore, few investigations have assessed social interactions from different perspectives, including the educational practices of family members and teachers, considering the bi-directionality of children's and adults' behaviors (Garcia et al., 2016; Santiago et al., 2016). Therefore, as Abreu et al. (2016) found, studies conducted with children and adolescents in educational environments are predominantly long-term (i.e., many intervention sessions), with small samples, pre-experimental or quasi-experimental designs, and do not include follow-up assessments. In a review study (from 2009 to 2019) on group social skills training for children aged 6 to 12, conducted by Bittencourt and Menezes (2020), 29 works were identified, and only one of the interventions focused on children with externalizing and internalizing behavior problems. Therefore, experimental studies with multiple probes and informants that meet all these criteria have not yet been conducted, justifying research focused on children with comorbid problems in family and school settings, considering behavioral measures of children, family members, and teachers.

Accordingly, the study aimed to describe the effects of Promoting-Children in an experimental group design (Experimental Group - EG and Control Group - CG), with different probes and informants (mothers, fathers/caregivers, and teachers), on children's behaviors (social skills, behavior problems, academic performance) and positive and negative educational practices of their teachers and family members. Based on the statements, the first hypothesis was that the Promoting-Children intervention would reduce behavior problems and increase social skills in the EG children to a greater extent than in those of the CG. The hypothesis was that when children reduce the emission of behavior problems and increase social skills, their teachers and family members will also interact more positively with them, using more positive practices and fewer negative ones.

Method

Participants

Study participants were 41 children from the first year of Elementary School I, along with their mothers, fathers/caregivers, and teachers. The children were randomly assigned, with 21 allocated to the Experimental Group (EG) and 20 to the Control Group (CG). The children in the CG participated in the intervention after the post-test of the EG for ethical reasons.

In the EG, 16 children were 6 years of age, while the others were 7 years of age (18 boys, three girls). The CG consisted of 18 children who were 6

years of age, with the remainder being 7 years of age (15 boys, five girls).

In the EG, there were five teachers and 12 biological mothers who responded to the instruments. Additionally, there were two adoptive mothers, four fathers, one aunt, one sister, and one caregiver for the child who was in foster care. In the CG, six teachers, 16 biological mothers, and four fathers responded to the instruments.

It should be noted that all the children who started the intervention completed it, with a mean absence rate of 10% or less.

Instruments

The Child Behavior Checklist – CBCL (Achenbach & Rescorla, 2001) assesses children's behavioral problems aged 6 to 18 years through 138 items, as reported by parents, on a three-point Likert-type scale. Behavioral problems are categorized as internalizing, externalizing, and total problems. The information is also organized based on the indicators from the DSM - Diagnostic and Statistical Manual of Mental Disorders (affective problems, anxiety problems, somatic problems, attention difficulties/hyperactivity, oppositional defiant problems, and conduct problems). The assessment includes indicators for clinical, borderline, and non-clinical behaviors. There is also a competence scale that covers social and academic behaviors. Previous studies have shown the psychometric adequacy of this scale (Bordin et al., 2013).

The Teacher's Report Form -TRF for Children and Adolescents aged 6 to 18 years (Achenbach & Rescorla, 2001) assesses behavioral problems that occur in the school environment based on reports from teachers. Like the CBCL, it uses a three-point Likert-type scale with 113 items. Behavioral problems are categorized as internalizing, externalizing, and total problems, with the information organized based on indicators from the DSM. There are indicators for clinical, borderline, and non-clinical behaviors in all assessments. Academic performance is also measured. Previous studies have confirmed the psychometric quality of this scale (Bordin et al., 2013).

The Socially Skilled Responses Questionnaire for Parents (*Questionário de Respostas Socialmente Habilidosas para Pais* - QRSH-Pais; Bolsoni-Silva & Loureiro, 2020) assesses children's social skills based on parent/caregiver reports using a three-point Likert-type scale with 15 items. The parent version has four factors explaining 54.83% of the variance. Previous studies provide evidence of the scale's validity based on internal structure indicators and external validity indicators, including its ability to discriminate between groups of children with and without behavioral problems, as well as children with deficits in social skills (Bolsoni-Silva & Loureiro, 2020).

The Socially Skilled Responses Questionnaire for Teachers (*Questionário de Respostas Socialmente Habilidosas para Professores* - QRSH-Pr; Bolsoni-Silva & Loureiro, 2020) assesses the frequency of children's social skills based on teacher reports with 23 items, using a three-point Likert scale. The instrument has three factors explaining 59.21% of the variance. Previous studies have provided evidence of the scale's validity based on internal structure indicators and external validity indicators, including its ability to discriminate between groups of children with and without deficits in social skills (Bolsoni-Silva & Loureiro, 2020).

The Educational Social Skills Interview Script for Parents (*Roteiro de Entrevista de Habilidades Sociais Educativas Parentais* - RE-HSE-P; Bolsoni-Silva et al., 2016; Bolsoni-Silva & Loureiro, 2010) is used to assess parent-child interactions through interviews with guided questions covering educational social skills (communication, affection, and boundaries), negative practices, and contextual variables in interaction with the children's behaviors, both those considered skilled and those indicating behavioral problems. The instrument has two factors, total positive practices and total negative practices regarding the parents' behaviors. The discriminant analyses differentiated between children with and without behavioral problems, with Cronbach's alpha for the parent version being .85.

The Educational Social Skills Interview Script for Teachers (Bolsoni-Silva et al., 2019; Bolsoni-Silva et al., 2018) assesses teacher-student interactions in the school environment through interviews with pre-programmed questions about educational social skills (communication, affection, and boundaries), negative practices, and contextual variables in interaction with students' behaviors. The questions assess the occurrence of behavioral problems and social skills in the teachers' and students' repertoires. It also includes totals for positive and negative practices of teachers, as well as the frequency and topography of behavioral problems and social skills of the children. The Cronbach's alpha for the teacher version is .87.

Procedures

The study, after approval from the Ethics Committee, was presented for the consent of the Department of Education. Following authorization from the

Department of Education in the city, seven municipal schools were contacted, and five of them expressed interest in participating in the study. Subsequently, the schools, teachers, and parents/guardians were contacted.

The research was conducted in the municipal schools the children attended, during their school hours. For this, rooms were made available for the intervention sessions. In each of the five schools, different rooms were used depending on availability, including the library, support room, classrooms, reinforcement room, pedagogical team room, special room, and cafeterias for intervention and assessment.

As an inclusion criterion, children needed to present a score indicative of clinical or borderline behavior in the scales of the Child Behavior Checklist (CBCL - Achenbach & Rescorla, 2001) that assess the family context and those of the Teacher's Report Form (TRF - Achenbach & Rescorla, 2001) that assess the school context, for internalizing and externalizing behaviors. Therefore, the children needed to have comorbid problems in both family and school contexts.

Data Collection Procedure for Mothers and Fathers/Guardians, and Teachers:

All 12 first-grade teachers of Elementary School I agreed to participate and completed the consent form. Each teacher identified the children in their class who exhibited behavioral problems, totaling 61 referrals. For the mothers and fathers/guardians of these children, notes were sent and/or they were contacted by telephone. The mothers and fathers/guardians of 12 children (19.67%) did not consent to their children participating in the study or did not respond to the notes and phone calls.

The mothers and fathers/guardians of the remaining 49 children signed the consent form and completed the CBCL; only eight children did not meet the inclusion criteria (13.11%). Consequently, the sample consisted of 41 children with internalizing and externalizing behavioral problems in both family and school contexts.

The next step was to administer the TRF with the teachers to verify whether these children met the inclusion criteria in the school environment, which was confirmed. The instruments were administered at this point in the data collection so that teachers would not respond to the instruments without the consent of the children's mothers and fathers/guardians.

The teachers and mothers and fathers/guardians completed the instruments (interviews and scales on behaviors and interactions of dyads) in all phases of the intervention procedure, which included a pre-test, post-test (immediately after the intervention), and follow-up (six months after the intervention) for the Experimental Group (EG), and Probe 1 (at the same time as EG) and Probe 2 (after EG intervention, concurrently with the EG post-test, approximately 10 weeks after Probe 1) for the Control Group (CG). Data collection was conducted in person in a single session of up to two hours by the researcher and previously trained assistants.

Data Collection Procedure for the Children:

The participating children were grouped based on studying at the same school and during the same period. After forming the groups, a draw was conducted to select the children who would compose the Experimental Group (EG) and the Control Group (CG).

The intervention groups with the participating children contained five to six children each. Four EGs were formed. According to the draw, each EG consisted of five children from the morning period and 16 children from the afternoon period. In the CG, 14 children attended school in the morning period and six in the afternoon period.

The CG underwent intervention at a later stage. Schools and families received feedback on the research results, and referrals to available support services were made when necessary and of interest to the families. Informational materials on child development and educational practices were also provided both in the schools and to the families.

Data Analysis:

For data analysis, the instruments were coded according to specific instructions, and comparisons (Wilcoxon Test) were conducted, considering the different evaluation measures in each of the groups separately. The aim was to determine whether there were changes in the EG and not in the CG, in accordance with the hypotheses raised. Additionally, intergroup comparisons (Mann-Whitney Test) were conducted, meaning that the baseline measures in the EG were compared with Probe 1 in the CG, as well as post-test and Probe 2 assessments between the EG and CG. A significance level of 5% and effect size (Cohen, 1988) were considered. According to Cohen (1988), the effect size can be very small (0 - 0.10), small (0.11 - 0.29), medium (0.30 - 0.49), or large (0.50 or above). Descriptively, the number of children with clinical/borderline scores throughout the assessments in the EG and CG was calculated, both for the CBCL and TRF.

To verify whether the baseline measures of the CG and EG were equivalent in terms of total scores of

the instruments used (QRSH-parents, QRSH-teachers, CBCL-problems, CBCL-competencies, TRF-problems, TRF-academic performance, Parental Educational Social Skills Interview Script - RE-HSE-P - Total positive, RE-HSE-P - Total negative, RE-HSE-Pr - Total positive, RE-HSE-Pr - Total negative), the Mann-Whitney Test was conducted, which did not identify statistically significant differences in any comparison (p ranging from .12 to .99).

Results

The section presents three tables (Tables 1 to 3). Tables 1 and 2 describe, respectively, the within-group comparisons regarding the behaviors reported by the family members and the teachers of the children selected for the EG and CG. Table 3 identifies the number of children with clinical and borderline scores in the different measures of externalizing problems, internalizing problems, and disorders. Tables 1 and 2 also include the between-group comparisons, i.e., the assessments at pre-test/probe 1 and post-test/probe 2 between the EG and CG.

Table 1 shows positive changes in the EG when comparing the pre-test, post-test, and follow-up phases of this group's participants, considering the reports of parents/caregivers. In this group, the frequency of externalizing behavior problems (post-test/follow-up), internalizing behavior problems (pre-test/post-test and post-test/follow-up), total behavior problems (pre-test/post-test and post-test/follow-up), and some of the disorders assessed by the DSM decreased after the intervention. Specifically, affective problems (pre-test/post-test and post-test/follow-up), anxiety (post-test/follow-up), and Oppositional Defiant Disorder (post-test/follow-up) showed statistically significant reductions in their scores with medium to large effect sizes.

Although the assessment of the children's social skills, as evaluated by the RE-HSE-P and QRSH-Parents, did not reveal significant changes, the overall positive score (sum of parental educational social skills, child social skills, and contextual variables), measured by the RE-HSE-P, presented a mean increase after the intervention during the follow-up assessment (post-test/follow-up). This demonstrates that positive interactions statistically improved with a medium effect size.

There were no significant differences in the behaviors exhibited by the children in the CG when comparing the frequency of behaviors between Probe 1 and Probe 2. When comparing the intergroup assessments for the sample of family members, improvements in the frequencies of child social skills presented by the children in the CG at Probe 1 and Probe 2 can be identified, even without the intervention procedure.

Considering the between-group comparisons (Pre-test EG x Probe 1 CG) in the family members sample, there were no differences for most of the variables, except for educational social skills and social skills (QRSH-Parents), where the CG had a higher score in educational social skills, and the EG had a higher score in social skills. In the comparisons between Post-test EG x Probe 2 CG, similar results were found, with differences observed only in educational social skills and child social skills (QRSH-Parents).

From the teachers' perspective, the EG showed significant improvements in the behavior problems that had been presented prior to participating in the intervention program, with statistically significant differences having medium to large effect sizes. In the EG, regarding the children's behaviors, there were improvements in child social skills and academic performance (pre-test/post-test and pre-test/follow-up), as well as reductions in internalizing behavior problems (pre-test/post-test and pre-test/follow-up), externalizing behavior problems (pre-test/post-test and pre-test/follow-up), total behavior problems (pre-test/post-test and pre-test/follow-up), and behavioral complaints (pre-test/post-test and pre-test/follow-up) measured by the RE-HSE-Teachers. Regarding the behavioral indicators of the DSM, there were improvements in affective problems (pre-test/post-test and pre-test/follow-up), anxiety (pre-test/post-test and pre-test/follow-up), Attention Deficit Disorder (pre-test/post-test and pre-test/follow-up), Hyperactivity (pre-test/post-test and pre-test/follow-up), Oppositional Defiant Disorder (pre-test/post-test and pre-test/follow-up), and Conduct Disorder (pre-test/post-test and pre-test/follow-up).

Comparisons in the sample of teachers between the Post-test (EG) and Probe 2 (CG) revealed that affective, anxiety, and internalizing behavior problems were statistically lower for the EG than for the CG in the second assessment. This change can be attributed to the intervention program, as the groups did not differ in the initial assessments (Pre-test EG x Probe 1 CG). The other behaviors did not differentiate the groups in the second assessment, although, as mentioned earlier, there were significant changes in the comparisons for each group separately. An exception was academic

Table 1.
Comparisons of Parent/Caregiver and Child Behaviors on Different Assessment Measures

		Experimental – EG						Control - CG			Pre-teste EG x Probe 1	Post-test EG x Probe 2
		mean (standard deviation)			*p* values (effect size)			mean (standard deviation)		*p* values	*p* values (effect size)	
Item	Instrument	pre	post	fu	pre/post	pre/fu	post/fu	Probe 1	Probe 2	Probe1/ Probe2		
Educational social skills	RE-HSE-P	8.67 (2.73)	8.67 (2.80)	9.00 (2.51)	.82	.48	.07	10.85 (4.19)	10.30 (4.36)	.34	**.04 (.32)**	**.02 (.37)**
Context	RE-HSE-P	12.76 (4.48)	13.29 (3.77)	13.52 (3.97)	.47	.29	.24	0.60 (1.14)	0.35 (0.81)	.06	.83	.33
Negative practice	RE-HSE-P	4.00 (2.68)	3.57 (2.52)	3.62 (2.04)	.58	.72	.56	3.20 (2.91)	3.40 (2.60)	.44	.90	.33
Social skills	RE-HSE-P	10.00 (2.76)	9.86 (3.00)	10.09 (2.88)	.62	.29	.10	9.15 (4.89)	9.10 (4.63)	.71	.13	.16
Behavioral complaints	RE-HSE-P	6.29 (2.24)	6.52 (2.42)	6.67 (2.33)	.75	.58	.66	2.85 (2.81)	2.55 (2.56)	1.00	.52	.90
Total	RE-HSE-P	34.38 (7.31)	33.67 (6.87)	34.52 (6.38)	.86	.57	**.03(.47)**	31.00 (7.22)	30.30 (6.94)	.14	.18	.18
Total negative	RE-HSE-P	14.19 (3.85)	14.00 (4.45)	13.95 (3.89)	.85	.86	1.00	14.15 (5.44)	14.05 (5.37)	.51	.66	.94
Total social skills	QRSH-Parents	27.76 (5.24)	28.24 (5.77)	28.52 (5.50)	.29	.12	.13	26.05 (4.96)	26.45 (4.69)	.30	**.00 (.85)**	**.00 (.22)**
Affective problems	CBCL	65.81 (7.73)	61.81 (7.51)	62.19 (6.85)	**.01 (.54)**	**.03 (.47)**	1.00	65.45 (7.85)	65.30 (8.34)	.72	.86	.16
Anxiety problems	CBCL	68.67 (6.51)	66.62 (7.01)	66.19 (7.12)	.06	**.04 (.45)**	.65	69.40 (4.83)	69.35 (4.84)	.80	.84	.32
Somatic problems	CBCL	52.09 (5.07)	51.67 (5.32)	51.67 (5.32)	.59	.59	1.00	51.45 (3.84)	51.10 (3.63)	.32	.74	.98
ADHD*	CBCL	69.28 (8.47)	69.29 (8.47)	68.05 (9.43)	1.00	.83	.83	72.75 (7.35)	71.75 (8.12)	.24	.17	.30
ODD*	CBCL	69.33 (7.45)	64.48 (9.66)	63.71 (10.15)	.06	**.04 (.44)**	.32	68.90 (8.97)	68.40 (8.79)	.40	.96	.14
Conduct disorder	CBCL	64.95 (8.16)	64.00 (9.42)	63.86 (9.45)	.47	.44	.18	64.80 (7.18)	64.30 (7.38)	.16	.97	.97
Internalizing	CBCL	68.76 (4.04)	63.19 (6.44)	63.19 (6.51)	**.001(.53)**	**.001(.53)**	1.00	67.35 (3.15)	67.10 (3.04)	.06	.28	.07
Externalizing	CBCL	71.05 (4.63)	67.14 (9.51)	66.52 (10.25)	.06	**.05 (.50)**	.18	69.70 (4.52)	69.55 (4.60)	.26	.40	.70
Total problems	CBCL	71.05 (3.06)	66.95 (7.09)	67.00 (7.09)	**.01(.49)**	**.02 (.45)**	.66	70.95 (2.84)	70.40 (3.17)	.08	.99	.16
Total competence	CBCL	31.90 (11.99)	33.62 (12.50)	33.48 (12.56)	.12	.15	.18	31.45 (8.24)	31.35 (7.94)	.59	.67	.66

*ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder

Table 2.
Comparisons of Teacher and Child Behaviors in the Different Assessment Measures

		Experimental – EG						Control - CG			Pre-test EG x Probe 1	Post-test EG x Probe 2
		mean (standard deviation)			*p* values (effect size)			*p* values (effect size)		*p* values	*p* values (effect size)	
Item	Instrument	pre	post	fu	pre/post	pre/fu	post/fu	Probe 1	Probe 2	Probe1/ Probe2		
Educational social skills	RE-HSE-Pr	9.95 (2.38)	10.67 (2.44)	10.71 (2.26)	.10	**.05(.42)**	.70	11.55 (4.02)	11.50 (3.62)	.06	.16	.42
Context	RE-HSE-Pr	5.24 (2.17)	4.81 (2.09)	4.81 (2.09)	.20	.23	1.00	5.80 (2.53)	5.80 (2.57)	.65	.29	.16
Negative practice	RE-HSE-Pr	1.33 (1.11)	0.86 (1.11)	0.86 (1.11)	**.001(.58)**	**.001(.58)**	1.00	1.30 (1.26)	1.35 (1.23)	1.00	.77	.15
Social skills	RE-HSE-Pr	6.76 (2.64)	7.48 (2.66)	7.48 (2.66)	.08	.08	1.00	8.60 (3.73)	8.75 (3.85)	.56	.09	.38
Behavioral complaints	RE-HSE-Pr	7.29 (4.00)	6.24 (3.60)	6.19 (3.61)	**.001(.44)**	**.03(.47)**	.30	8.00 (4.41)	8.00 (4.18)	.74	.56	.15
Total positive	RE-HSE-Pr	16.67 (3.62)	18.19 (3.17)	18.24 (3.10)	**.001(.42)**	**.04(.43)**	.70	20.15 (6.81)	20.20 (6.62)	.67	.12	.73
Total negative	RE-HSE-Pr	8.57 (4.08)	7.09 (3.77)	7.05 (3.79)	**.001(.50)**	**.02(.51)**	.30	9.15 (4.82)	9.35 (4.91)	.79	.73	.17
Total social skills	QRSH-Pr	25.24 (11.31)	28.52 (10.26)	28.95 (9.96)	**.04(.45)**	**.03(.45)**	.09	26.05 (4.96)	26.45 (4.69)	**.03**	.07	.05 (.30)
Affective problems	TRF	66.48 (3.96)	58.71 (7.25)	58.71 (7.25)	**.001(.77)**	**.001(.77)**	1.00	64.80 (5.28)	64.65 (5.67)	.48	.28	.05 (.30)
Anxiety problems	TRF	67.28 (4.65)	56.57 (7.03)	56.57 (7.03)	**.001(.82)**	**.001(.82)**	1.00	65.55 (7.34)	64.75 (7.91)	.08	.62	.03 (.33)
Somatic problems	TRF	50.00 (0.00)	50.00 (0.00)	50.00 (0.00)	1.00	1.00	1.00	51.70 (4.47)	51.70 (4.47)	1.00	.07	.07
ADHD*	TRF	67.76 (12.22)	61.14 (11.75)	61.09 (11.66)	**.001(.70)**	**.001(.70)**	.66	68.75 (10.91)	67.90 (11.43)	.10	.57	.12
ODD*	TRF	65.86 (6.41)	60.62 (9.04)	60.67 (9.01)	**.01(.54)**	**.001(.54)**	.32	65.85 (7.31)	65.65 (7.45)	.25	.99	.22
Conduct disorder	TRF	68.76 (7.13)	61.95 (10.59)	61.904 (10.65)	**.001(.70)**	**.001(.70)**	.56	68.00 (10.91)	67.90 (11.07)	.56	.66	.44
Internalizing	TRF	67.09 (5.45)	53.67 (9.54)	53.76 (9.43)	**.001(.80)**	**.001(.80)**	.16	67.60 (4.47)	67.50 (4.56)	.60	.63	.00 (.46)
Externalizing	TRF	68.57 (5.33)	61.38 (11.27)	61.29 (11.38)	**.03(.65)**	**.001(.65)**	.16	70.45 (7.20)	69.70 (6.98)	.17	.50	.10
Total problems	TRF	69.29 (3.24)	56.90 (15.84)	57.04 (15.78)	**.001(.76)**	**.001(.76)**	.18	70.55 (5.49)	69.95 (5.63)	.07	.41	**<.01**
Academic performance	TRF	40.29 (6.07)	42.86 (6.84)	42.95 (6.87)	**.02(.52)**	**.001(.56)**	.16	42.55 (8.33)	43.35 (8.96)	.29	.56	.83

*ADHD = Attention Deficit Hyperactivity Disorder; ODD = Oppositional Defiant Disorder

Table 3.
Number of Children Scored as Clinical/ Borderline for Behavioral Problems in the Different Assessment Measures

Categories	Number of children (clinical/borderline)									
	CBCL (parents/guardians)					TRF (teachers)				
	Experimental - EG			Control - CG		Experimental - EG			Control - CG	
	Pre(C/B)*	Post(C/B)	Seg(C/B)	probe1(C/B)	probe 2(C/B)	Pre(C/B)	Post(C/B)	FU(C/B)	probe1(C/B)	probe2(C/B)
	Internalizing Problems									
Anxiety/depression	9/9	5/7	5/7	4/11	4/10	4/5	0/2	0/2	5/8	5/6
Shyness/depression	9/4	5/2	5/2	7/3	7/4	5/5	1/5	1/5	4/5	4/4
Somatic complaints	1/1	1/1	1/1	0/1	0/1	0/0	0/1	0/1	0/2	0/2
Social problems	7/6	6/3	6/3	4/9	3/7	10/5	3/6	3/6	7/7	5/8
Attention problems	8/3	5/5	5/5	11/5	11/5	6/7	3/3	3/3	6/8	6/7
	Externalizing Problems									
Rule-breaking	9/1	6/5	6/5	4/5	3/5	3/11	3/3	3/3	6/7	6/7
Aggressive behavior	12/8	10/5	10/5	11/7	11/6	6/8	3/6	3/6	10/6	8/5
	Problems according to the DSM scales									
Affective problems	5/8	4/5	4/5	6/8	7/6	6/13	1/3	1/3	2/13	2/13
Anxiety problems	14/4	13/3	12/3	12/6	11/7	8/11	1/3	1/3	6/10	6/10
Somatic problems	1/0	1/1	1/1	0/1	0/1	0/0	0/0	0/0	0/2	0/2
Attention deficit/hyperactivity	11/3	9/6	10/5	15/1	14/0	6/5	2/5	2/5	8/5	8/4
Oppositional defiant	12/4	7/5	7/4	12/2	11/3	7/7	4/3	4/3	5/7	7/7
Conduct disorder	6/6	8/2	8/2	5/9	4/9	7/9	5/1	5/1	9/14	9/13
	Total scores of behavior problems									
Internalizing	21/0	14/1	14/0	20/0	20/0	21/0	3/4	3/4	20/0	18/2
Externalizing	21/0	15/2	16/1	20/0	20/0	21/0	10/0	10/0	20/0	20/0
Total	21/0	15/4	16/3	20/0	20/0	21/0	7/6	7/6	20/0	19/1

*C= clinical for behavior problems; B= Borderline for behavior problems

performance (higher in the CG than in the EG), however, baseline measures showed an increase in total behavior problems in the CG and a decrease in the EG.

According to Table 3, a reduction in the number of children scoring as clinical or borderline in the CBCL and TRF instruments in all behaviors evaluated was observed in the EG. A larger number of children reduced their behavior problem scores in the teachers' reports compared to those of the family members, confirming what was previously expressed in Tables 1 and 2. Considering the changes in the frequency of behavior for the children in the CG, it was possible to identify that the number of children evaluated with problems remained stable, both in the family and school environments when comparing Probe 1 and Probe 2.

Discussion

This study described the effects of the Promoting-Children intervention in an experimental group design regarding children's behaviors and their impact on school and family interactions. Two hypotheses were raised, and both were corroborated. The first hypothesis considered that the EG would increase social skills and reduce behavior problems, while the CG would remain stable in the frequency of these behaviors in the assessed phases (Probe 1 and Probe 2). The second hypothesis was that, after the behavioral improvement of the EG children, social interactions in school and family environments would also improve in terms of the educational practices of teachers and family members.

The results showed that, based on reports from family members and teachers, the children in the EG statistically reduced externalizing, internalizing, and total behavior problems. Regarding the assessed subscales, there were improvements in ODD (reported by both family members and teachers), ADHD (reported by teachers), Conduct Disorder (reported by both family members and teachers), and affective and anxiety problems (reported by both family members and teachers). From the perspective of teachers, there were improvements in the behavioral indicators of the DSM, including affective problems, anxiety, ADHD, ODD, and Conduct Disorder. These results demonstrate the generalization of behaviors learned in the therapeutic setting to the school context. These behavioral changes in the children may reflect improvements in the educational practices of the teachers, who increased their educational social skills and reduced negative practices. It was also possible to observe that the frequencies of behaviors in the CG remained stable.

However, Table 3 revealed that not all children ceased to score as clinical or borderline after the EG intervention. Nevertheless, the gains were significant, considering that there was no improvement in the CG, with all 20 children remaining in the clinical/borderline range in both assessments, as reported by family members and teachers. This result strengthens the hypothesis that the intervention procedure was capable of producing changes in the repertoires of the participating children.

The better results in the school environment may be a consequence of the intervention taking place in school, during class hours, with teachers being encouraged to observe the children's behaviors, possibly impacting positive outcomes. Another aspect is that the school environment has rules to be followed and likely provides a more structured routine than the family environment, considering the children's presence in the classroom, which may facilitate better behavior regulation for the children. Future observational studies may help clarify these issues.

It should be highlighted that the children who participated in the intervention presented combined risks, both in comorbid internalizing and externalizing problems (Duprey et al., 2020) and in terms of exhibiting them in more than one environment. (Assis-Fernandes & Bolsoni-Silva, 2020; Bolsoni-Silva et al., 2018). Therefore, the intervention conducted in the school environment with the children may have favored development and reduced risks.

Before the intervention, the study sample exhibited a high occurrence and diversity of behavior problems (Cruz et al., 2021), as well as the co-occurrence of learning difficulties, indicating multiple complaints (Duprey et al., 2020). In the Promoting-Children intervention, academic performance was not a direct focus of the work; however, according to the teachers, the EG children improved their academic performance. Therefore, it is believed that there is a possible relationship between behavior problems and academic performance (Grigorenko et al., 2020). It is also assumed that, after the intervention, the children may have learned to follow the rules better, self-regulate, take turns speaking, ask questions, and exhibit other socially skilled behaviors that enhance academic performance. Future research evaluating children's behavior in natural classroom settings may test this hypothesis and clarify the positive impact on academic performance, as verified in this investigation.

The results of this study confirm the literature regarding the inverse relationship between social skills

and behavior problems, which was observed in the school environment (Casali-Robalinho et al., 2015; Elias & Amaral, 2016; Fernandes et al., 2018), as well as the positive effects of interventions with children (Elias et al., 2012; Elias & Amaral, 2016; Han et al., 2017; Webster-Stratton et al., 2001). However, some findings in the literature also attest that the ideal approach for all children to overcome clinical scores for behavior problems would be simultaneous intervention for children, family members, and teachers. Even though any of these interventions yield results in expanding skills and reducing behavioral excesses or deficits, the combined approach (parents, teachers, and children) yields even more significant results (Webster-Stratton et al., 2001). However, multicomponent studies are challenging to implement.

However, considering the low adherence of teachers and family members (Kenyon et al., 2020) to interventions, especially preventive ones, the chosen approach of conducting interventions with children during school hours contributes to the promotion of development and the reduction of problems that negatively impact their interactional environments. There is a tendency for early referrals and medicalization of children with behavior problems (Amaral & Caponi, 2020). Therefore, interventions like the Promoting-Children program can reduce such outcomes, with a positive impact on mental health and public health, reducing referrals to specialized services. Consequently, it reduces costs, and promotes better social repertoires for children, parents, and teachers, while decreasing their social difficulties, facilitating school learning processes, and promoting satisfactory social relationships. Accordingly, it is believed that school psychologists can prevent behavior problems by promoting social skills in children and educational social skills in teachers and family members.

Regarding the teaching of social skills proposed by the program, the hypothesis was corroborated, as an increase in the children's social skills was observed in the statistical difference in the positive total (sum of parental educational social skills, child's social skills, and contextual variables) in the reports of family members and teachers for the EG and in the scores of social skills reported by teachers in the EG but not in the CG. From a theoretical perspective, behavior problems reduced in frequency in both school and family environments because the program focused on teaching social skills, which, in addition to being inversely related to problems (Casali-Robalinho et al., 2015; Elias & Amaral, 2016; Fernandes et al., 2018), can be considered functionally equivalent (Goldiamond, 2002/1974) to these behaviors. In other words, if a child learns to obtain attention, solve problems, deal with difficult tasks, and behave in a less structured environment (times of free interactions) using skilled behaviors, they will not need to engage in problem behaviors for these functions.

Returning to the second hypothesis of this study, it is known that behavior problems are multidetermined (Costa & Fleith, 2019), including the role of the educational practices of teachers (Garcia et al., 2016; Santiago et al., 2016) and family members (Hosokawa & Katsura, 2017; Santos Rego et al., 2018), which influence the acquisition and maintenance of problematic repertoires. It is believed that the Promoting-Children program (Falcão & Bolsoni-Silva, 2016), being designed to teach social skills that are likely to be valued in natural environments, may have favored the generalization and maintenance of results, demonstrating bi-directionality between the children's and adults' behaviors (Garcia et al., 2016; Santiago et al., 2016). This hypothesis is supported by the results, which showed various gains in the EG, which were maintained in the six-month follow-up, in positive total scores (family and school), an increase in the teachers' educational social skills, a reduction in behavioral complaints through the teachers' reports, a reduction in the teachers' negative practices, and a reduction in the total negative practices (teacher-student interaction). Therefore, when children emit problem behaviors less frequently and more positive behaviors, it facilitates the reduction of difficulties in social interactions, increasing the likelihood that adults will also exhibit more positive practices than negative ones, such as praising more, using punishment less frequently, and giving fewer reprimands, maximizing children's social skills, which become functionally equivalent (Goldiamond, 1974/2002).

The review study by Abreu et al. (2016) found a scarcity of experimental studies with children in the school environment, and Bittencourt and Menezes (2020) identified only one study out of 29 reviewed that worked with children presenting externalizing and internalizing behavior problems. In conclusion, it can be said that this investigation with the Promoting-Children program could contribute to these gaps in the literature, being innovative in the national context and showing positive results in reducing behavior problems, internalizing and externalizing problems, and total problems, as well as in the acquisition of social skills and improving academic performance in children with

comorbid problems in both family and school environments. These behavioral changes in children had a positive impact on the educational practices of family members and educators, who increased positive practices and reduced negative ones.

Despite the positive gains shown in this study, it is worth noting the theoretical study by Durgante and Dell'Aglio (2017), which described 48 methodological criteria/sub-criteria to consider for evaluating the effectiveness and efficiency of intervention programs in Psychology. Analyzing the Promoting-Children intervention program in this investigation considering Durgante and Dell'Aglio's (2018) study, it is believed that a large part of the criteria/sub-criteria were met regarding the program's effectiveness and efficiency. As an example, some of the effectiveness and efficiency criteria presented by Durgante and Dell'Aglio (2018) that were met by the Promoting-Children program included: guidelines were presented based on a wide analysis of relevant empirical literature; the program guidelines specified which results the intervention aims to produce, and evidence must be provided for each result; the experimental method was used (sample randomization) or quasi-experimental; individual differences between participants were evaluated at pre-test (before the intervention); a six-month follow-up was conducted after the intervention; all results, whether positive, non-significant, or negative, were presented. Regarding the effectiveness criteria, only one of them (considering clinical opinion, clinical observation, and expert consensus) was not met; in terms of the effectiveness sub-criteria, considered complementary/desirable, it is possible to assume that the Promoting-Children program meets part of the criteria, especially if previous studies and those conducted by other researchers are considered. Regarding the efficiency criteria, it is believed that the Promoting-Children program meets 14 of the 16 indicated, with it still being necessary to apply it to different populations and by different researchers, which has been happening (Barbosa, 2021; Miott et al., 2020). However, an expansion to children of different ages and with comorbidities in their repertoires, such as ODD, autism spectrum disorder, and others, is recommended.

As strengths of the study, the experimental group design, with multiple probes (including follow-up) and informants who assessed their own behaviors, as well as the children, and other methodological criteria that allowed the assessment of effectiveness and efficiency aspects of the program, can be highlighted. The study was conducted in the school environment, during the children's school hours, which could favor program adherence and its low cost, which is not always achieved with intervention proposals for family members and educators. Limitations include the relatively small number of participants, the exclusive use of self-report measures, and the fact that it was conducted in only one location. Future studies could expand the sample to various locations and include observational measures in the family and school environments. Additionally, it is recommended that studies be conducted to evaluate the effects of this program associated with interventions for teachers and family members and address the gaps in the evaluation of the effectiveness and efficiency of the Promoting-Children program.

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