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REVIEW ARTICLE

A School-Based Program Focused on Initial Education Teachers to Strengthen Cognitive and Socio-Emotional Skills in Children

Mirta Susana Ison*, Daniela Fernanda González, Gabriela Susana Morelato and Adriana Espósito

Faculty of Psychology, Aconcagua University and Human, Social, and Environmental Sciences, Institute of the National Scientific and Technical Research Council (INCIHUSA-CONICET), Mendoza, Argentina

Abstract

This study describes a Program to Strengthen Cognitive and Socio-Emotional Skills (PCSES) applied by teachers to their initial-level students during the COVID-19 pandemic. This work has two objectives. The first is to explore the grade of acceptance of teachers regarding the training process on cognitive and socio-emotional skills carried out by our team during the COVID-19 pandemic period, according to the school context, urban vs. urban-marginal. The second is to analyse whether teachers perceived improvements in the cognitive and socio-emotional performance of their students after the implementation of the PCSE, according to the school context. The sample consists of 36 initial-level teachers, in charge of classrooms of 4-year-olds and 5-year-olds. During the pandemic, 2020-2021, 36 teachers responded to the survey: 20 teachers from urban schools, and 16 teachers from urban-marginalized schools located in socially-vulnerable sectors. Despite the difficulties experienced during the pandemic, 94.45% of the teachers indicated that they were satisfied with the training process received. In addition, teachers from both school contexts perceived improvements in the cognitive and socio-emotional performance of their students after the implementation of the PCSES. These results suggest that the training of initial education teachers made it possible to implement a stimulation program during the pandemic period that aimed to favor cognitive, emotional, and social functions in students. The main contribution of this work was to increase the evidence of the importance of teacher training and knowledge for the development of strategies that can be used to scaffold socio-cognitive and emotional processes in the context of teaching-learning.

Abbreviations

PCSES: Program to Strengthen Cognitive and Socio-Emotional Skills; DGE: General Directorate of Schools; PINI: Initial Level Pilot Project

Introduction

This work is based on previous studies aimed at investigating cognitive and socio-emotional functioning in initial-level children and its strengthening through the implementation of a program focused on training teachers for its application in the classroom.

***Corresponding author(s)**

Mirta Susana Ison, Faculty of Psychology, Aconcagua University and Human, Social, and Environmental Sciences, Institute of the National Scientific and Technical Research Council (INCIHUSA-CONICET), Mendoza, Argentina

Tel: +542-615-201-685
Fax: +542-615-201-600
Email: mison@uda.edu.ar; mison@mendoza-conicet.gob.ar

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Specifically, this study describes a Program to Strengthen Cognitive and Socio-Emotional Skills (PCSES) applied by teachers to their initial-level students during the COVID-19 pandemic.

In Argentina, the formal educational system begins at the initial level at age 4. This represents the beginning of formal schooling, in which children learn new rules of coexistence different from those existing in the family environment. For children, this situation represents a challenge and an opportunity in terms of establishing new interpersonal relationships with their peers and significant adults. This is a beginning for facing the solution to problematic situations, both in the interpersonal and academic order. It is in the framework of these socio-emotional interactions where children will develop their potential at the cognitive level, progressively internalising these experiences and working together with their peers and their teacher.

From this perspective, teachers play a very important role as facilitators of learning. A student is required to put into practice a series of socio-cognitive and emotional skills during the teaching-learning process [1-3].

To further complete the introductory comments for our study, the following two subsections are added. They are related to both: a general Literature Review, and, The Inception of the Program Design.

Literature Review

Cognitive and socio-emotional functioning is a developing multidimensional construct that encompasses a series of highly-interrelated and interdependent cognitive and socio-emotional processes, responsible for the self-regulation of behaviour [4-6]. During the early years, the rudiments of cognitive and socio-emotional capacities emerge [7]. Between the ages of 3 and 5, important achievements are recorded, characterized by a process of integration and coordination of these capacities. These abilities follow a constant process of development and change from early childhood to adulthood [7,8]. The quality of affective bonds and the learning opportunities offered by the different contexts of social interaction will be relevant for the development of cognitive and socio-emotional skills during childhood [9-11]. In turn, the harmonious development of these skills is a predictor of academic success and socio-emotional skills in the short- and long-term [12,13].

These cognitive and socio-emotional skills are the basis of students' understanding and their responses to teacher instruction [14].

During childhood, favoring and enhancing the acquisition of skills and abilities that contribute to the development of cognitive competencies and socio-emotional self-regulation processes, implies strengthening the development of personal and social resources that can act as protective factors for mental health in childhood [11].

In this study's research group on Child and Adolescent Development Psychology, for decades, we have been implementing programs to strengthen meta-cognitive and socio-emotional skills at different stages of development [15]. The group's theoretical-epistemological support is based on sociocultural and contextual approaches to development [16].

Following Vygotsky's postulations expressed in the constructs of the "Law of double formation of psychological functions" and the "Zone of proximal development", interaction with adults or more qualified peers facilitates the understanding of new knowledge and favors the deployment of skills.

For their part, Wood D, et al. [17] developed the term "scaffolding" as a metaphor to describe the role played by the interactional conversation between students and other experts. Effective scaffolding fits the needs of students and constantly adjusts in response to what they can do.

Both Vygotsky and Bruner have recognized the importance of language in the mediation of learning and the need for effective support from significant adults to favor the level of potential development of students. This requires that teachers be able to develop teaching sequences that provide students with appropriate levels of support, and that this support is only withdrawn when students are able to perform tasks independently.

Within the school context, the role of teachers as mediators of knowledge is essential to promote and enrich the learning potential of children [18]. For this, it is necessary for the teacher to diversify, expand and enrich their own practices and pedagogical experiences that make it possible to generate facilitating conditions and opportunities for learning in children.

Recent research done with elementary school teachers emphasises the impact neuroscience has had

on analysing learning, related to: the way students learn, the approach to learning, the effectiveness of teaching and the determination of teachers. Specifically, one of the results obtained suggests that teachers may collectively feel more effective when they learn about and comprehend the enormous malleability and ability to learn that is present in each and every student [19].

The Inception of the Program Design

Early childhood is a time of great richness and fecundity for interventions oriented towards the development of cognitive and socio-emotional skills, promoting psychosocial well-being during childhood and adult life. Based on this, we were summoned by the Directorate of Initial Education, under the General Directorate of Schools (DGE), of the province of Mendoza, Argentina, to design and implement a Program to Strengthen Cognitive and Socio-Emotional Capacities in early childhood (PCSES).

The PCSES consists of 8 theoretical-practical modules. Each module has a theoretical foundation, supporting a series of practical activities described in a stimulation booklet entitled "Strategies to strengthen cognitive and socio-emotional functioning in initial education" [10]. This booklet works as a working guide for the teacher, in order to stimulate these functions in their students through playful activities.

This program is a part of a larger project called the Initial Level Pilot Project (PINI). PINI has 3 lines of action between children, teachers and parents, with the purpose of: a) Optimising the cognitive-affective performance of schoolchildren; b) Promoting cooperative work between classroom, physical education, English-language and music education teachers in order to articulate activities to promote socio-cognitive and emotional functioning in early childhood; and, c) Promoting teamwork among professionals, teachers, and parents in order to foster an interpersonal climate favouring cooperative relationships in the school context.

Under this conceptual framework, this work has two objectives. The first is to explore the grade of acceptance of teachers regarding the training process on cognitive and socio-emotional skills carried out by our team during the COVID-19 pandemic period, according to the school context, urban vs. urban-marginal. The second is to analyse whether teachers perceived improvements in the cognitive and socio-emotional performance of their students after the implementation of the PCSES, according to the school context.

Methods

Design

The design is non-experimental and cross-sectional. It has a descriptive scope [20].

Participants

Olds and 5-year-olds. During the pandemic, 2020-2021, 36 teachers responded to the survey: 20 teachers from urban schools, and 16 teachers from urban-marginalized schools located in socially-vulnerable sectors. Teaching experience ranged from 5-to-20 years.

In 2020, a total of 15 teachers, 7 from urban schools and 8 of them from urban-marginalized institutions. In 2021, 21 teachers participated in the online training. That year, the number of urban school teachers who chose to participate in the program increased. Thus, 13 were from urban schools, and 8 were from urban-marginalized.

In the province of Mendoza, public schools are classified according to areas: urban, urban-marginalized, rural, rural-marginalized, and rural-border [21]. The classification takes into account factors, such as: habitat conditions and services; environmental conditions with or without limitations to access to goods and services; and, some social aspects, like schooling and occupation of parents or caregivers (Table 1).

What did the teacher training consist of?

The total sample consists of 36 initial-level teachers, in charge of classrooms of 4-year-A Program for the Strengthening of Cognitive and Socio-Emotional Skills (PCSES) was described as having the purpose of strengthening the cognitive-emotional functioning in children aged 4 and 5 [10], directly involving teachers and indirectly engaging parents. Previous research carried out by our group and the experience of the initial-education teachers contributed to its development [11,15,22-26].

The purpose of the PCSES is to promote successful educational trajectories in children aged 4 and 5 through the training of classroom, English-language, physical education, and music education teachers.

Table 1: Teachers participating in PCSES during the pandemic, according to context school.

	Context School	2020	2021	Total
		f (%)	f (%)	f (%)
Teachers	Urban	7 (46.7)	13 (61.9)	20 (100)
	Urban-marginalized	8 (53.3)	8 (38.1)	16 (100)
n		15 (100)	21 (100)	36 (100)

The goal is to provide them with theoretical-practical tools on cognitive and socio-emotional functioning in childhood, so that they can implement stimulation strategies with their students. To do this, our team of counsellors works with teachers on the central role that their own emotions play in the teaching process and in making creative decisions to open up to new ideas. That is to say, the program presents goal-directed activities, but we also focus on how that process develops. This aspect has been highlighted very clearly by Geiger PB [27], when he argues that the skill of a counselor or therapist can be seen as the ability to know when to choose, change or vary the combination of goals and process elements in treatment. Geiger PB [27], argues that the skilled clinician or counsellor handles the dialectic between the goals and the process, and that the counselling and therapy models are not pure because the techniques, processes, and interventions are located on a continuum, either more goal-based or more process-based.

The stimulation program lasted 4 months, incorporated as part of the activities of the school curriculum, working daily on these functions through recreational activities based on the activities described in a stimulation booklet.

During the pandemic, the stimulation program was applied by teachers through online meetings with groups of students or by sending exercises to be done at home. These activities were suggested and reviewed by the researchers of our group based on materials accessible to families in preventive isolation. Feedback was obtained from the families through videos and audio, where the children were recorded doing the activities.

The teachers guided and monitored the development of the online activities, "scaffolding that knowledge", giving positive feedback, trying to maintain the motivation of the group, and promoting emotional self-regulation in their students. The teachers functioned as a support structure, or guide, for the execution of the children's tasks, such as helping them to think about how they did the activities, why they did them that way, and what other activities they could think about or do. Although the teacher training program had a defined structure with specific content, the teachers could creatively incorporate other activities, allowing their work to be adjusted to the characteristics of the group of children. The focus was on stimulating group function for strengthening effective action.

Instruments

After the stimulation program, an anonymous online survey was first carried out for teachers, in order to explore both the grade of acceptance of teachers regarding the training process on cognitive and socio-emotional skills carried out by our team and whether the training program stimulation contributed to the strengthening of these functions in children. To investigate the degree of acceptance of the program, the questions of the online survey were: a) whether the teacher training was useful and relevant to the objectives of the PINI project; b) whether the work material was clear, precise, and relevant to the objectives of the PINI project; c) whether the management by the professionals in charge of the project was satisfactory or unsatisfactory; d) whether the support and accompaniment of the collaborators were satisfactory or unsatisfactory; e) whether it was considered important and pertinent to give continuity to the PINI project in their educational institution, and why; f) whether the families of the students received the PINI project with enthusiasm and positive predisposition; and, finally, g) whether significant improvements in student performance were observed with the implementation of PCSES.

The second part consisted of inquiring about which process or set of processes that the teachers perceived or noticed improvements on.

Procedure

Stage 1

Teacher training: Consisted of 8 theoretical-practical online meetings of 2 hours each. The topics

of perceptive organization, attention, inhibitory control, cognitive flexibility, working memory, recognition of emotions, resilient attitude, and strengthening of socio-emotional resources in school contexts were addressed.

Each meeting analysed each of the functions and skills involved, their evolutionary development, and why it is important to promote their development. Thus, teachers learned about children's cognitive and socio-emotional development, as well as its importance for social and academic skills. They also learned to find creative solutions to exercise socio-cognitive and emotional functions.

In the online meetings, ideas were proposed on how to incorporate the contents of the stimulation program into the school curriculum and into the daily routines of the grade. With the physical education teachers and music teachers, they discussed and practiced different activities that they could implement in their classes to encourage the development of socio-cognitive and emotional functions in their students.

Associated with these training sessions, our research team produced a booklet with different exercises and strategies for teachers to consult about providing ideas on how to transfer what they learned into practice in their school group.

Stage 2

During the pandemic period 2020-2021, the stimulation program was applied by teachers through online meetings with groups of students or by sending exercises to be done at home. This program was applied for 4 months, working daily on socio-cognitive functions with playful activities based on those described in the stimulation booklet [10]. These activities were suggested and reviewed by the researchers of our group based on materials accessible to families in preventive isolation. Feedback was obtained from the families through videos and audio, where the children were recorded doing the activities. The teachers in these online meetings, guided and monitored the development of the students' activities "scaffolding that knowledge", giving positive feedback, and trying to maintain the motivation of the group.

Stage 3

Post-evaluation: After the application of the online intervention program, an anonymous online survey was applied to teachers to explore both the grade of acceptance of teachers regarding the training process on socio-cognitive and emotional skills carried out by our team and whether the stimulation program contributed to the strengthening of these functions in children.

Data Analysis

The frequencies obtained by both groups of teachers, pre-pandemic and during the pandemic, were compared in each of the items of the online survey. The results are expressed in percentages.

Ethics Statement

All investigation procedures and the evaluation instrument applied were reviewed and approved by the DGE. The teachers had to give their informed consent to participate in this study. The online survey was anonymous and voluntary. The informed consent notice, as well as the administration of this study, complied with CONICET guidelines on ethical behaviour in the Social Sciences and Humanities (2857/06).

Results

For the first objective, during the pandemic period of 2020-2021, of the 36 teachers who answered the anonymous online survey, 34 teachers, 94.45%, indicated they were satisfied with the training process on cognitive and socio-emotional skills during the period. However, 2 teachers, 5.55%, neither agreed nor disagreed with the training process.

When comparing the percentages of acceptance of teachers, taking into account each year, 2020 and 2021, of the training process carried out by our team, small differences were observed between the perceptions of teachers from urban schools compared to those from urban-marginalized schools (Table 2).

As observed in table 2:

- For item a., in 2021, 2 teachers of urban schools neither agreed nor disagreed in relation to whether the training was useful and relevant to the objectives of the PINI project. However, 2 teachers of urban-marginalized schools disagreed.
- For item b., referring to the work material used, only 1 urban school teacher neither agreed nor agreed in both 2020 and 2021. 1 teacher from an urban-marginalized school disagreed in 2020.

Table 2: Grade of acceptance of teachers regarding the training Process on Cognitive and Socio-Emotional skills (PCSE), according to the school context, in 2020 and 2021.

Context School	Urban		Urban-Marginalized	
	2020 (*n* = 7)	2021 (*n* = 13)	2020 (*n* = 8)	2021 (*n* = 8)
Online Survey: Items	f (%)	f (%)	f (%)	f (%)
a. Teacher training was useful and relevant to the objectives of the PINI project	7 (100)	11 (84.61)	8 (100)	6 (75)
b. Work material was clear, precise, and relevant to the objectives of the PINI project	6 (85.71)	12 (92.31)	7 (87.5)	8 (100)
c. Management by the professionals in charge of the project	6 (85.71)	13 (100)	8 (100)	6 (75)
d. Support and accompaniment of the collaborators	6 (85.71)	12 (92.31)	8 (100)	6 (75)
e. To give continuity to the PINI project in their educational institution	7 (100)	13 (100)	8 (100)	6 (75)
f. Families of the students received the PINI project with enthusiasm and positive predisposition	7 (100)	13 (100)	8 (100)	6 (75)
g. Improvements in student performance	7 (100)	13 (100)	8 (100)	6 (75)

- For item c., regarding the management by the professionals in charge of the project, in 2020 only 1 urban school teacher neither agreed nor agreed, while in 2021, 2 teachers from an urban-marginalized school disagreed.
- For item d., related to the support and accompaniment of collaborators, 1 urban school teacher did not agree or disagree in both 2020 and 2021. In urban-marginalized schools, in 2021, 2 teachers disagreed.
- For item e., concerning giving continuity to the PINI project in their educational institution, in 2021, 2 teachers from urban-marginalized schools disagreed.
- For item f., regarding the opinion of the teachers on whether the PINI project had been received with enthusiasm by the families of their students, 2 teachers from urban-marginalized schools disagreed with this item in 2021.
- For item g., the same teachers in f. responded that they did not observe significant improvements in the cognitive and socio-emotional performance of their students.

Concerning the second objective, the teachers' perception of their students' socio-cognitive and emotional performance after they had implemented PCSE was examined, according to the school context (Tables 3,4).

During 2020, 7 teachers, from urban schools observed that their students made significant progress in attention, 100%, in cognitive flexibility, 85.72%, in inhibitory control, 71.43%, in relations with their peers, 100%, in recognition of their own emotions, 85.72%, in recognizing the emotions of their peers, 71.43%, and in progress in emotional control, 85.72%. In 2021, these teachers observed

Table 3: Teacher's perception from urban schools: Frequencies according to the improvements observed in cognitive and socio-emotional performance of students, in both 2020 and 2021.

Improvements in Performance	2020 (*n* = 7)		2021 (*n* = 13)	
	Yes	No	Yes	No
	f (%)	f (%)	f (%)	f (%)
Attention	7 (100)	-----	12 (92.31)	1 (7.69)
Working Memory	3 (42.86)	4 (57.14)	12 (92.31)	1 (7.69)
Cognitive Flexibility	6 (85.72)	1 (14.28)	5 (38.46)	8 (61.54)
Inhibitory Control	5 (71.43)	2 (28.57)	6 (46.15)	7 (53.85)
Planning	3 (42.86)	4 (57.14)	6 (46.15)	7 (53.85)
Organization	3 (42.86)	4 (57.14)	7 (53.85)	6 (46.15)
Peer Relations	7 (100)	-----	10 (76.92)	3 (23.08)
Recognition of own emotions of children	6 (85.72)	1 (14.28)	7 (53.85)	6 (46.15)
Recognition of emotions of student peers	5 (71.43)	2 (28.57)	8 (61.54)	5 (38.46)
Emotional control	6 (85.72)	1 (14.28)	7 (53.85)	6 (46.15)

Table 4: Teacher's perception from urban-marginalized schools: Frequencies according to the improvements observed in cognitive and socio-emotional performance of students, in 2020 and 2021.

Improvements in Performance	2020 (*n* = 8)		2021 (*n* = 8)	
	Yes	No	Yes	No
	f (%)	f (%)	f (%)	f (%)
Attention	7 (87.5)	1 (12.5)	6 (75)	2 (25)
Working Memory	5 (62.5)	3 (37.5)	7 (87.5)	1 (12.5)
Cognitive Flexibility	6 (75)	2 (25)	7 (87.5)	1(12.5)
Inhibitory Control	4 (50)	4 (50)	6 (75)	2 (25)
Planning	3 (37.5)	5 (62.5)	6 (75)	2 (25)
Organization	1 (12.5)	7 (87.5)	6 (75)	2 (25)
Peer Relations	2 (25)	6 (75)	7 (87.5)	1 (12.5)
Recognition of own emotions of children	6 (75)	2 (25)	7 (87.5)	1 (12.5)
Recognition of emotions of student peers	1 (12.5)	7 (87.5)	6 (75)	2 (25)
Emotional control	5 (62.5)	3 (37.5)	8 (100)	-----

important improvements in attention, 92.31%, in working memory, 92.31%, in peer relationships, 76.92%, and in recognizing the emotions of their peers, 61.54%.

During 2020, 7 teachers from urban-marginalized schools observed that their students made significant progress in attention, 87.5%, in cognitive flexibility, 65%, and in recognition of their own emotions, 75%. In 2021, teachers observed important improvements in all cognitive and socio-emotional processes.

Discussion

In terms of both the program and the goals of the study, it is submitted that this study substantially adds to the developing area of research on cognitive and socio-emotional skills. It supports this primarily by the high acceptance of the program on behalf of teachers and the community, when the program is based on the literature, and that they observed the relevant engagement by the students in terms of cognitive and socio-emotional skills. In contrast, it adds the dimension of the broader participation of different teachers and other participants in the educational community and the variation in the type of the schools involved. From this study, some new conclusions could be drawn especially with respect to the effectiveness of such a program concerning the difference in results between different schools in terms of social contexts.

This study investigated, first, the grade of acceptance of teachers regarding the training process on cognitive and socio-emotional skills carried out during the COVID-19 pandemic period, 2020-2021, according to the school context: urban vs. urban-marginalized. Classroom teachers, as well as the physical education, English, and music teachers, worked online in an articulated way to carry out recreational activities that would lead to improving the cognitive and socio-emotional functions of their students.

Despite the difficulties experienced during the pandemic, 94.45% of the teachers indicated that they were satisfied with the training process received. Also, only two teachers neither agreed nor disagreed with the training process, 5.55%, then. These results coincide, to a large extent, with previous work that this team carried out to explore the grade of acceptance of teachers regarding the training Process on Socio-Cognitive and Emotional Skills (PCSES) carried out by this team both before and during the pandemic. The results showed that, before the pandemic, 79.1% of teachers were satisfied with the training received, while 20.8% were dissatisfied. During the pandemic, 96.9% of the teachers indicated that they were satisfied with the training process received, and only one teacher expressed her disagreement, 3.1% [26].

It could be asked what aspects intervened, in the context of the pandemic, to have a greater number of teachers who satisfactorily perceived the training received for implementing the cognitive-emotional stimulation program with their students.

It could be stated that several aspects converged. One of them was the Initial Level Pilot Project (PINI), in which the Cognitive and Socio-Emotional Program (PCSES) was inserted, which had been developing since 2018 in the schools selected by the Directorate of Initial Education of the province of Mendoza. This allowed the teachers to appropriate the PCSES

and the suggested activities, which were gradually articulated by the teachers to the school curriculum. Thus, they creatively incorporated activities proposed by themselves, adapting and enriching the program, according to the needs of their students, and, indirectly, their community. Interventions in the medium- and long-term require extensive training of both school counsellors and teachers, constantly reviewing the situations that can generate certain blocks in the cognitive-emotional processing of experiences, in order to promote empathic communication [18,27]. For their part, teachers who neither agreed nor disagreed with the implementation of this program maybe perceived this situation as stressful. This could be interpreted this activity as overloading their daily work in a virtual situation, under conditions of social isolation in which the teaching task was developed.

What becomes relevant is the question about what the importance of training teachers in relation to the implementation of these intervention programs is. According to the studies conducted by other researchers [3], one answer is that the transition from 3 to 5 years of age is a period of noticeable improvements in both cognitive and social-emotional functioning.

Knowing the theoretical foundation of the development of cognitive, emotional and social functions in early childhood contributes not only to the systematic application of these stimulation devices, but also to the conviction of teachers in their implementation of supporting teaching practice. In response to the situation of isolation, our team held monthly online meetings with teachers, through which the implementation of the strengthening program was monitored.

In these meetings, not only were cognitive and emotional aspects of their students addressed, but also other emerging issues, such as the emotional situation and the concerns of the teachers. In other words, these meetings also collaborated in helping teachers to manage their own emotions, fears, insecurities and situations shared by all the actors in the educational community: families, students, teachers and professionals from our team [25,26].

When the perceptions of teachers from different school contexts are compared, there is little variability in the percentages in both 2020 and 2021. In general, the teachers better valued the training processes, work material for training, support, accompaniment and supervision provided by the members of the research team, as well as the efforts and predispositions of the families to collaborate in the application of the program. Thus, most of the teachers considered it important to continue with this project in the schools.

During the pandemic, the role of educators has been revalued. They have had to face multiple challenges, such as rapid appropriation of the use of technologies, reorganizing their teaching modality, prioritizing both curricular content and school activities, and having adequate devices with access to connectivity, among others. Under this atypical situation, accompanying and supporting the teacher became even more relevant.

Teachers were essential actors to facilitate and scaffold learning in their students, giving continuity and sustaining the teaching and learning processes. The bonds of security, appreciation, and affective warmth created between the teacher and the children, as well as the bond of trust and respect between the institution and the family, are a condition for the learning experience to take place and be possible [28].

Second, we proposed to analyse whether teachers perceived improvements in the cognitive and socio-emotional performance of their students after the implementation of the PCSES, according to the school context. As an example, teachers of urban schools, in 2020 observed improvement in the core of cognitive functions such as attention, cognitive flexibility, and inhibitory control. In addition, they reported that all the social and emotional functions were enhanced after the training program. However, in 2021, teachers perceived fewer improvements as they perceived improvement in only two cognitive functions, attention and working memory. Likewise, peer relations and recognition of the emotions of student peers, functions related to social and emotional functions, were enhanced.

It would have been expected that teachers in 2021 would report increases in most of the functions analyzed, however this was not always the case. One possible explanation is that, during this year, new teachers who wanted to participate in the application of the intervention program were incorporated. It is probable that the experience factor in the application of the program added to the situation of virtuality has influenced these results. Another possible explanation for this result may be related to the expectations of results on the part of the teachers with more experience in the application of the program, in comparison with the expectations of changes of the

teachers with less experience in the administration of the PCSES. These results partially differ from those obtained in a study carried out by this team before the pandemic. In that other study, the teachers of the urban school only observed improvements in metacognition and working memory functions after the stimulation program [25].

For their part, when analyzing the teachers' perception of urban-marginalized schools regarding the cognitive functioning of their students, in 2020, the teachers observed improvements in attention, working memory, and cognitive flexibility, three fundamental functions for success in school and social harmony [6,7]. In addition, two relevant emotional function were improved, recognition of own emotions of children and emotional control. Likewise, in 2021, all teachers perceived improvements in both cognitive and socio-emotional functions in their students. These results are more in agreement with a study in the pre-pandemic period that the teachers of the vulnerable schools also reported improvements in the performance of socio-cognitive skills in their students after the stimulation program. This group of teachers reported improvements in a greater number of cognitive functions [25].

Some questions arising from these results are: Why did teachers from urban-marginalized schools perceive greater advances in cognitive and socio-emotional skills in their students after the implementation of the PCSES? Did the teachers in these schools value, to a greater extent, the small changes or advances of their students in comparison to the other schools? Future research should investigate this topic in a greater depth.

Research in this field has made it possible to establish that the implementation of intervention programs in the school environment favors the development of cognitive and socio-emotional functioning in early childhood, and the training of these processes has greater effects on younger children [7,29-31].

In the training sessions carried out during the pandemic, our team highlighted the importance of scaffolding processes in the expression of emotions and the role they play in interpersonal relationships with friends and significant adults. In turn, it was highlighted how emotions interact with cognitive functions. Likewise, conducting monthly webinars with teachers from different institutions encouraged exchanging of experiences according to the different realities, sharing innovative strategies and establishing a support network among themselves [26].

Bidirectionality is established, in which cognitive advances are expressed in social cognition and in the recognition in the expression of emotions in oneself and in classmates, and vice versa, functions that are associated with school success.

In response to the objectives indicated in the introduction, the results indicate that the training of initial education teachers made it possible to implement a stimulation program during the pandemic period that aimed to favor cognitive, emotional and social functions in students. We believe that these goals have largely been achieved.

Conclusion

The basis for these programs is that cognitive-emotional and social skills could be enhanced in early educational settings by promoting quality teacher-child interactions through appropriate scaffolding and support practices [2,3,25,26,31]. The objectives of the PCSES was to optimize and promote the development of skills necessary for schools, such as cognitive, emotional, self-regulation, social skills, and literacy in children, especially those who have fewer social and economic opportunities.

It is desirable that these programs be motivating for children, using playful activities with different sensory channels to stimulate the various functions, that they be sustained over time, that they adapt to the characteristics of each group and that they are articulated with the daily activities of the classroom, giving ecological validity of these interventions [10]. In turn, teacher training in the promotion of resources can lead to creating conditions of equal opportunities and can generate benefits in the learning of all students.

This proposal was inspired by the theoretical model of School-Based Family Counseling (SBFC), on which our cognitive and socio-emotional program is based. It was designed because it was expected to help children in the promotion of socio-cognitive functioning, directly involving teachers, and indirectly parents, allowing feedback to our team of counselors in order to generate lasting benefits for children and the entire community.

We can say that the main contribution of this work was to increase the evidence of the importance of

teacher training and knowledge for the development of strategies that can be used to scaffold socio-cognitive and emotional processes in the context of teaching-learning. The current challenge is to develop proposals for ecological intervention, enhancing the capacities of educators and constituting tools to favor the learning capacities of children.

Limitations

Certainly, this work has limitations that must be taken into account when interpreting the results. The first was that, during the pandemic period, only one online survey could be applied in order to explore the perception of teachers of the training courses carried out and the advances, or lack or advances, observed in the socio-cognitive and emotional functioning in their initial level students after the implementation of the stimulation program. Another limitation was that, although the researchers of the team monitored the doubts and concerns of the teachers through virtual meetings, they could not follow up on the application of the PCSES within the classroom, as was done in the classroom before the pandemic.

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Conflicts of Interest

The authors of this work declare that there is no conflict of interest.

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