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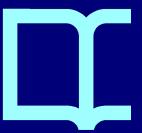
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# Effectiveness of school-based emotional education program: a cluster-randomized controlled trial

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#### Abstract

**Objectives:** The acquisition of emotional competences through emotional education programs improves both short- and long-term health outcomes. The *1,2,3,emoció!* program directed at children aged 3 to 5 years aims to promote health through the development of emotional competences. This study evaluated the effectiveness of the program during its first year of implementation.

Study design: Cluster randomized trial.

**Methods:** The information sources were an ad-hoc questionnaire to evaluate emotional competences and focus group discussions with the teachers implementing the program. For the quantitative data analysis, we compared mean emotional competences scores pre- and post- intervention for the intervention group and the comparison group. We also conducted a multilevel regression with repeated measures, adjusted by sociodemographic variables and stratified by gender and school year. For the qualitative data, we performed a thematic content analysis.

**Results:** The sample consisted of 2,625 children (48.4% girls and 49.2% intervention group). Emotional competences improved in both groups after the school year (P-value<.001), but the increase was greater in the intervention group. The multilevel analysis showed an improvement in the final scores attributed to the intervention, especially for those in the first year of prechool [boys: 12.3 points (95% CI 5.5-19.2), girls: 9.7 points (95% CI 3.3-15.9)]. The thematic content analysis also highlighted enhanced emotional competences in the intervention group. The final scores did not vary by sociodemographic variables.

**Conclusions:** The *1,2,3,emoció!* program had a positive effect on emotional competences among children, with effectivity being higher among younger children.

**Key words:** emotional competences, emotional education, preschool children, cluster randomised trial, universal preventive intervention

#### Introduction

Emotional competences are a set of knowledge, capacities, abilities and attitudes needed to appropriately understand, express, and regulate emotional phenomena. <sup>1</sup> These competences are addressed and improved through emotional education, a continuous and permanent educational process aimed at enhancing emotional development in parallel with cognitive development. <sup>2</sup> The acquisition of emotional competences through educational and preventive interventions is particularly important during childhood and adolescence.<sup>3,4</sup> Emotional education and enhancing emotional competences are universal prevention strategies and have long been linked with improved health outcomes, especially in mental health. <sup>5–7</sup> They have also been associated with better social, behavioral and academic outcomes, which are important for healthy development. <sup>8–11</sup> Futhermore, they have been shown to be good predictors for important life outcomes in middle-age, such as lower substance use and abuse during adulthood. <sup>12,13</sup>

The ideal age to develop and enhance emotional competences is between 3 to 5 years, as those first years are crucial for determining long-term outcomes, and maladaptative behaviors tend to consolidate before the age of 8 years. <sup>14–16</sup> Of note, the benefit of such programs is influenced by the socioeconomic status of the family and the child's assigned gender. <sup>17,18</sup> In addition, when school interventions are carried out, it is always essential to obtain evidence supporting their effectiveness. <sup>19</sup> However, in the case of emotional education programs, studies evaluating their effectiveness are scarce, and those measuring changes in emotional competences are even rarer. <sup>12</sup>

The *1,2,3,emoció!* program is a school-based emotional education program designed by the Public Health Agency of Barcelona that aims to promote health and prevent future risk behaviors by enhancing emotional competences in children aged 3 to 5 years. <sup>20</sup> It is an adaptation of the Social and Emotional Aspects of Learning program, developed by the

Department of Education of the United Kingdom. <sup>21</sup> The 1,2,3,emoció! program works on the 5 emotional competences described by Bisquerra et al. in 2003: emotional conscience, emotional regulation, emotional autonomy, social competency and life skills and well-being. <sup>22</sup> These competences are addressed cross-sectionally through 6 thematic units: 1) belonging, 2) self-esteem, 3) friendship, 4) challenges, 5) justice and harassment and 6) changes, loss and death. The program includes 48 classroom activities, 6 family activities and 12 activities to be done in the school environment outside the classroom for each school year. The program is implemented by teachers throughout the school year, after completion of a specific 20-hour course.

The aim of this study was to assess the effectiveness of the 1,2,3,emoció! program in 3- to 5year-olds during its first year of implementation (school year 2018-19) in Barcelona. Secondly, it also evaluate the effectiveness of the program according to the children's sociodemographic characteristics. Our hypotheses are: 1) the program is effective in developing emotional competences during its first year of implementation; and 2) demographic variables moderate the effectiveness of the intervention.

#### Methods

#### Study design and population

This study used a stratified cluster randomized trial design, with schools being the randomization unit.

In 2017, all the schools in Barcelona were invited to participate in the evaluation of the 1,2,3,emoció! program. We used a convenience sample: schools agreeing to participate were randomly assigned to either the intervention group (IG), consisting of those that would implement the program during the 2018-19 school year, or to the comparison group (CG), which would not implement the program. To ensure comparability between groups, the

schools were randomized by stratifying by type of center (public or private/semi-private) and socioeconomic status of the neighborhood (high/low). For school selection, the number of classes for each preschool year was weighted to ensure a similar number of children in both the IG and CG. The trial was conducted during the 2018-19 school year.

The study population consisted of 3- to 5-year-olds from Barcelona. The inclusion criteria were that participants: a) were preschoolers in their first, second, or third year (henceforth P3, P4, P5, respectively) enrolled in a school in Barcelona, and b) attending schools agreeing to participate in the study. Preschoolers who did not fit the inclusion criteria were excluded from this study.

The present study met all recommended ethical guidelines for conducting research with human subjects, including the basic principles of the Helsinki Declaration. <sup>23</sup> It was approved by the Research Ethics Committee of Parc Salut Mar under number 2019/8508/I.

#### Data collection and instruments

The effectiveness evaluation (including both process and results) was done using quantitative as well as qualitative methods.

To obtain quantitative data, we used the Emotion Competencies Assessment Questionnaire (ECAQ) to register the level of emotional competences of each child. The questionnaire was designed taking into account other validated tools, including the Emotional Regulation Checklist, <sup>24</sup> the Student Rating Scale, <sup>25</sup> and the Social Competence Scale <sup>26</sup> and with the contributions of emotional education experts. Evidence of validity and reliability was demonstrated in the pilot trial of the program. <sup>27</sup> The questionnaire is based on Bisquerra's emotional competences model <sup>22</sup> and contains 30 questions with a 6-point Likert scale (never, almost never, seldom, sometimes, often, always). The questionnaire was completed by a teacher for each child at both the beginning and the end of the school year. The final score

ranges from 30 to 180 points. The higher the score, the higher the emotional competence level. Additionally, we used an activity log throughout the school year, in which each teacher in charge of implementing the program kept a strict record of all the class and family activities carried out.

Qualitative data were collected through 6 semi-structured discussion groups with 34 different teachers (5-9 participants per group). Participants in these groups represented 49.3% of the teachers implementing the program; nevertheless, they were drawn from all schools in the IG. The discussions were held at the end of the school year and were guided by technical staff from the Public Health Agency of Barcelona. The group discussions aimed to provide data to better understand the effects of the program on children and facilitate its general evaluation by the teacher. Each focus group was audio recorded, and participants were identified using their unique study identification numbers. Recordings were transcribed verbatim.

#### Study variables

To perform the process evaluation, 3 variables were included: coverage, exhaustivity, and satisfaction. The coverage variable was calculated on the basis of the number of schools receiving the intervention versus the total number of schools in Barcelona. Exhaustivity was calculated through the abovementioned registry of activities and was categorized into "high" (for children receiving 4 or more class activities per unit) and "low" (for those receiving less than 4 class activities per unit). We qualitatively assessed satisfaction by using the data obtained in the group discussions, during which teachers gave their general evaluation of the program.

The dependent variable was each child's level of emotional competences, obtained through the questionnaire score. The main independent variable was whether the child belonged to the IG or not ("yes" or "no"). Other independent variables included for each child were the

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gender assumed by their teachers ("boy" or "girl"), their school year ("P3", "P4" or "P5"), their socioeconomic status based on the Gross Disposable Family Income of the school's neighborhood ("high" if their score was >=85 or "low" if their score was <85), <sup>28</sup> and school type ("public" or "private or semi-private").

#### Data analysis

For the quantitative data, we determined the baseline equivalence between children in the IG or CG by comparing proportions for each independent variable through a chi-square test. We also conducted a mean comparison between the level of emotional competences of children (pre-test, post-test, and post-pre changes) based on whether the child was in the IG or CG, stratifying by gender and school year using the paired *t*-test. To evaluate the effectiveness of the program, we designed a linear multilevel regression model with repeated measures. In this model, individual scores were nested within children, who in turn where nested within schools. The model was adjusted by the pre-score, the IG and the sociodemographic variables and was stratified by gender and school year. All quantitative data were analyzed using STATA v.15 with a 95% confidence interval and a *P*-value <.05 level of significance.

For the qualitative data, first, we used a thematic content analysis with a phenomenological approach. After transcribing each discussion group, two researchers read the text identifying meaning units to operationalize the search for relevant data. When discrepancies arose, a third researcher helped to reach a consensus. Second, each researcher separately labeled the main ideas of the text as codes using Atlas-ti 6.2. After extraction of the initial codes, data reduction was done to organize and meaningfully present the findings. Third, the final categories were agreed upon again by both researchers. The qualitative data were triangulated with the quantitative data to achieve a deeper comprehensive picture of the phenomenon.

#### Results

The sample consisted of 2,797 children from 37 different schools (GI: 17 schools; GC: 20 schools). Of these, we excluded 172 children with special needs from the quantitative analysis, as we considered they would need a separate study to evaluate the effect of the program on them. Of the final sample of 2,625 children, 48.4% (n=1271) were girls and 49.2% (n=1291) were assigned to the IG. Comparison of the proportions of the 2 groups for each independent variable (*Table 1*) showed no differences except for type of center, as private schools were more strongly represented in the intervention (39.7% vs 34.8%; P =0.01). In terms of coverage, study participation reached 37 out of 196 schools (18.9%) offering early learning in Barcelona in 2018-19.<sup>29</sup> Of the children receiving the intervention, exhaustivity was high for 89.7% of them (no significant differences between school years). Table 2 shows the mean pre and post scores for the emotional competences questionnaire as well as the mean change (post-pre) in each group stratified by gender and school year. Differences between pre and post scores were observed for both groups (P<.001 for both genders in each school year). Although emotional competences improved in both groups, the change seemed to be higher for children in the IG, with the highest increase occurring in school year P3. In boys, the mean change in the scores for P3 was 24.5 points for those in the IG and 13.8 for those in the CG. In girls, the mean change in the scores for P3 was 24.4 points for those in the IG and 13.8 for those in the CG. Generally, a negative gradient was observed, as the change became smaller as the school year became higher.

*Table 3* shows the linear multilevel regression, setting the post score as the main result variable and controlling by the variance within and between schools. The results were stratified by gender and school year. Belonging to the IG contributed positively to the final post score. A gradient could be observed by school year. For boys in P3, the average number of points gained in their post score that could be attributed to the intervention was 12.3 (95%)

CI 5.5-19.2), while for girls in P3 was 9.7 (95% CI 3.4-16). The contribution of the intervention to the post score in boys and girls in P4 remained significant, 7.3 points (95% CI 0.4-14.2) and 7.8 (95% CI 0.1-15.6) respectively. However, in P5, although the contribution was positive for both boys at 2.8 points (95% CI -4.9-10.4) and girls at 2.8 (95% CI -6.3-12), the values were not statistically significant. In general, the post score was not affected by attending a public school or having low socioeconomic status. Low socioeconomic status only showed a slight negative contribution in P4 boys (P = .032).

The thematic content analysis provided additional information on the effects of the program. *Table 4* presents the reduced data of the discussion groups, split into the consensus-based categories as well as relevant quotes for each of them. These categories were as follows: *a*) effect of the program on children: interpersonal (30 quotes), *b*) effect of the program on children: intrapersonal (33 quotes), *c*) effect of the program on teachers and classroom environment (23 quotes), *d*) differences in the effect by sociodemographic characteristics (24 quotes), *e*) and general satisfaction (36 quotes).

#### Discussion

Overall, the results of this study indicate that the intervention significantly enhanced the emotional competences of participating children. This effect was significant for both genders and was not altered by sociodemographic characteristics. These results are supported by the thematic content analysis.

While emotional competences increased in all children, the improvement was 2-fold greater in the IG than in the CG. This finding, along with the results of the multilevel analysis, reinforces the effectiveness of the program. These findings are further strengthened by the thematic content analysis, stressing the improvements in both the interpersonal and intrapersonal domains of emotional competences and highlighted the effect of the program on

children when they were compared with children from the previous year. These general outcomes align with the supporting evidence, showing that some school programs addressing emotional competences tend to have significant effects on children. <sup>16</sup> They also mirror those reported in the evaluation of the "Positive Attitude Program", an elementary school program in Portugal centered on improving emotional competences, which identified an increase in the self-control and social awareness of participating children. <sup>30</sup>

If we factor in school year, a gradient can be seen in the change of scores (post-pre) for children in the IG. The change was steeper in P3 and consistently shrank through P4 and P5. These results are in line with current evidence, suggesting that the earlier children participate in school-based programs, the better the results. <sup>14,15</sup> However, a detailed examination of the thematic content analysis reveals that multiple teachers mentioned that the program also worked well for P5 children. Therefore, the findings suggest that the emotional competences of P5 children in the IG also improved, but not quite as much.

Stratification of the results by gender showed that emotional competences improved in both girls and boys in the IG. This finding is in line with the information obtained from the thematic content analysis, in which the teachers explicitly indicated that they perceived no differences based on assumed gender. This contrasts with the results of the "Positive Attitude Program" which identified significant differences in the effect of the program between girls and boys, <sup>30</sup> even though that program addressed elementary school children (when gender roles are more clearly defined). Many program evaluations do not assess the effect of gender on the results obtained <sup>31,32</sup>, and consequently there is very little evidence on the influence of gender on the outcomes of school-based emotional education programs. <sup>30</sup>

The results obtained for the two remaining sociodemographic variables in the multilevel analysis showed no significant differences based on socioeconomic status of the neighborhood or school type among children in the IG. The analysis of the data obtained in

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the group discussions, which centered on the individual circumstances of the participating children, also indicated that there were no perceived differences in the effect of the program due to socioeconomic status, cultural background, or language barriers.

In this regard, the results of this study do not support the evidence suggesting that both gender <sup>17,33</sup> and socioeconomic status <sup>18</sup> play an important role in determining the effect of similar school programs. This effectiveness in children in all their diversity was probably due to the in-depth design of the study compared with those of other similar programs, which was strongly revised to be inclusive, particularly in terms of gender and interculturality. Additionally, the participation of teachers from neighborhoods with differents income levels in the design of the materials could also have contributed to the absence of differences based on socioeconomic status.

Finally, the apparent success of the program in improving the emotional competences of children could also be linked to the high level of exhaustivity and the school environment and family activities, as programs without components beyond classrooms tend to be less effective. <sup>34–36</sup> The resounding satisfaction with the program expressed by the teachers could also have contributed to its success.

This study has several important strengths. First, the large sample reinforces the representativity and relevance of the obtained results. Additionally, the stratified cluster randomized trial design allowed us to control, through the CG, for other potential factors that could also improve the children's emotional competences and threaten our internal validity. Second, the stratified randomization also allowed us to reduce potential biases and improve the homogeneity between the 2 groups. In terms of data collection, having both quantitative and qualitative data strengthens the results obtained. Third, the multilevel analysis allowed us to detect and control for the effect of nested data, and thus to avoid underestimating the

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variance and to report stronger results than those in other studies describing frequently used quantitative analyses. <sup>37</sup>

This study also has some limitations. The questionnaire was designed ad-hoc, making it more susceptible to bias. However, the questionnaire was piloted and was further evaluated through group discussions with teachers. In addition, during the pilot phase the questionnaire was tested so that anyone, with or without training in emotional education, could understand and answer all the questions. This was also important because of the possible bias between GC and GI. Even so, the aim was not to compare scores between the two groups, but to compare the change in scores over the school year for each student. It was therefore essential that the pre- and post-questionnaires were answered by the same teacher, which was strictly adhered to in all cases. The fact that it was not self-administered, could also have made the collected scores more prone to bias. However, this limitation loses strength if we consider that teachers spend a substantial number of hours every day with these children, so the scoring is likely to be accurate. This contrasts with other school programs in which the children are evaluated by the researchers or not at all.

In summary, the *1,2,3,emoció!* program was implemented effectively during its first year and the robust results obtained show that it had a positive effect on the emotional competences of participating children. The younger the children, the stronger the effect. The effect of the program was positive for both genders and was not altered by the other sociodemographic factors included in the study. To determine the effect of the program on children throughout preschool, it is essential to carry out the evaluation of the program for the next 2 years as planned.

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## Statements of ethical approval

It was approved by the Research Ethics Committee of Parc Salut Mar under number 2019/8508/I.

## **Competing Interests**

None declared.

### References

- 1. Bisquerra R, Pérez N. Competencias Socioemocionales. *Educ XXI*. 2007;10:61-82.
- 2. Bisquerra R. Educación Emocional y Bienestar. 6th ed.; 200AD.
- Pérez-gonzález JC, Yáñez S, Ortega-Navas MC, Piqueras JA. Educación Emocional en la Educación para la Salud: Cuestión de Salud Pública. *Clínica y Salud*. 2020;31:127-136.
- Health C. Adolescent health : an opportunity not to be missed The printed journal includes an image merely for illustration. 6736(07):1057-1058. doi:10.1016/S0140-6736(07)60374-2
- Bosque-Prous M, Espelt A, Juárez O, Ramos P, Bartroli M. Educação Emocional e Saúde Pública. *Psico*. 2016;46(4):409. doi:10.15448/1980-8623.2015.4.23134
- Neil AL, Christensen H. Efficacy and effectiveness of school-based prevention and early intervention programs for anxiety. *Clin Psychol Rev.* 2009;29(3):208-215. doi:10.1016/j.cpr.2009.01.002
- Fernández-Martínez I, Morales A, Espada JP, Essau CA, Orgilés M. Effectiveness of the program super skills for life in reducing symptoms of anxiety and depression in young spanish children. *Psicothema*. 2019;31(3):298-304. doi:10.7334/psicothema2018.336
- Brackett MA, Mayer JD, Warner RM. Emotional intelligence and its relation to everyday behaviour. *Pers Individ Dif.* 2004;36(6):1387-1402. doi:10.1016/S0191-8869(03)00236-8
- Weissberg RP, Others. Promoting Competent Young People in Competence-Enhancing Environments: A Systems-Based Perspective on Primary Prevention. J Consult Clin Psychol. 2011;59(6):830-841.
- Malouff JM, Hall LE, Haggerty DJ, et al. Development and validation of a measure of emotional intelligence. *Pers Individ Dif.* 1998;25(2):167-177.
- Lea RG, Davis SK, Mahoney B, Qualter P. Does emotional intelligence buffer the effects of acute stress? A systematic review. *Front Psychol.* 2019;10(MAR). doi:10.3389/fpsyg.2019.00810
- Wilson DB, Gottfredson DC, Najaka SS. School-Based Prevention of Problem Behaviors: A Meta-Analysis. *J Quant Criminol*. 2001;17(3):247-272. doi:10.1023/A:1011050217296
- 13. Tobler NS, Roona MR, Ochshorn P, Marshall DG, Streke A V., Stackpole KM.

School-based adolescent drug prevention programs: 1998 Meta-analysis. *J Prim Prev*. 2000;20(4):275-336. doi:10.1023/A:1021314704811

- Koglin U, Petermann F. The effectiveness of the behavioural training for preschool children. *Eur Early Child Educ Res J*. 2011;19(1):97-111. doi:10.1080/1350293X.2011.548949
- Anderson LM, Shinn C, Fullilove MT, et al. The Effectiveness of Early Childhood Development. 2003;24(02):32-46. doi:10.1016/S0749-3797(02)00655-4
- Berk LE. Development Through the Lifespan. Sixth edit. Pearson; 2014. doi:10.1017/cbo9780511840975.009
- Durlak JA, Weissberg RP, Dymnicki AB, Taylor RD, Schellinger KB. The Impact of Enhancing Students' Social and Emotional Learning: A Meta-Analysis of School-Based Universal Interventions. *Child Dev.* 2011;82(1):405-432. doi:10.1111/j.1467-8624.2010.01564.x
- Rhoades BL, Greenberg MT, Domitrovich CE. The contribution of inhibitory control to preschoolers' social-emotional competence. *J Appl Dev Psychol*. 2009;30(3):310-320. doi:10.1016/j.appdev.2008.12.012
- Ariza C, López MJ. Recomanancions per a l'avaluació d'intervencions comunitàries. Agència Salut Pública Barcelona. 2017.
- Bartroli M, Juárez O, Ramos P, Puertolas B, Teixidó Compañó E, Clotas C, Bosque-Prous M, Espelt A. Programa d'educació emocional per a segon cicle d'educació infantil. Agència Salut Pública Barcelona. 2018.
- 21. Humphrey N, Kalambouka A, Bolton J, et al. Primary Social and Emotional Aspects of Learning (Seal): 2008;(November).
- 22. Bisquerra Alzina Rafael. Educación Emocional Y Competencias Básicas Para La Vida. *Rev Investig Educ*. 2003;21:7-47.
- WorldMedical Association. Declaration ofHelsinki Ethical Principles for Medical Research Involving Human Subjects. *Clin Rev Spec*. 2013;64th WMA G. doi:10.1001/jama.292.11.1359
- Shields A, Cicchetti D. Emotion regulation among school-age children: the development and validation of a new criterion Q-sort scale. *Dev Psychol*. 1997;33(6):906-916. doi:10.1037/0012-1649.33.6.906
- Schmitt SA, Flay BR, Lewis K. A pilot evaluation of the Positive Action prekindergarten lessons. *Early Child Dev Care*. 2014;184(12):1978-1991. doi:10.1080/03004430.2014.903942

- Conduct Problems Prevention Research Group (CPPRG). Psychometric Properties of the Social Competence Scale – Teacher and Parent Ratings. (Fast Track Project Technical Report). Univ Park PA Pennsylvania State Univ. 1995.
- Bartroli M, Angulo-Brunet A, Bosque-Prous M, Clotas C, Espelt A. The Emotional Competence Assessment Questionnaire (ECAQ) for Children Aged from 3 to 5 Years: Validity and Reliability Evidence. Education Sciences. 2022; 12(7):489. https://doi.org/10.3390/educsci12070489
- Ajuntament de Barcelona. Distribució territorial de la renda familiar disponible per càpita a Barcelona 2017. BCNROC Repos Obert Coneix l'Ajuntament Barcelona. 2017:1-19.
- 29. Consorci Sanitari de Barcelona. Memòria del Consorci Sanitari de Barcelona. 2015.
- Coelho VA, Sousa V, Figueira AP. The Effectiveness of a Portuguese Elementary School Social and Emotional Learning Program. *J Prim Prev.* 2016;37(5):433-447. doi:10.1007/s10935-016-0445-4
- Humphrey N, Kalambouka A, Wigelsworth M, Lendrum A. Going for goals: An evaluation of a short, social-emotional intervention for primary school children. *Sch Psychol Int.* 2010;31(3):250-270. doi:10.1177/0143034309352578
- Smith SW, Daunic AP, Barber BR, Aydin B, Van Loan CL, Taylor GG. Preventing Risk for Significant Behavior Problems Through a Cognitive-Behavioral Intervention: Effects of the Tools for Getting Along Curriculum at One-Year Follow-Up. *J Prim Prev.* 2014;35(5):371-387. doi:10.1007/s10935-014-0357-0
- Holsen I, Smith BH, Frey KS. Outcomes of the social competence program second step in Norwegian elementary schools. *Sch Psychol Int*. 2008;29(1):71-88. doi:10.1177/0143034307088504
- Flay BR. Approaches to substance use prevention utilizing school curriculum plus social environment change. *Addict Behav.* 2000;25(6):861-885. doi:10.1016/S0306-4603(00)00130-1
- 35. Lloyd, Ruth Joyce, Jane Hurry, Mike C. The Effectiveness of Primary School Drug Education. *Drugs Educ Prev Policy*. 2000;7(2):109-126. doi:10.1080/dep.7.2.109.126
- Albright MI, Weissberg RP. School-family partnership strategies to enhance children's social, emotional, and academic growth. *Handb Sch Partnerships Promot Studet* Competence. 2010:246-265.
- 37. Heck RH, Thomas SL, Tabata LN. Quantitative methodology series. Multilevel and longitudinal modeling with IBM SPSS (2n ed.). *Routledge/Taylor Fr Group*. 2014.

## Tables

	Comparison (n=1334)		Intervent	ion (n=1291)	p-value <sup>ii</sup>	
	n % n %		praide			
Gender						
Girl	665	49,8	606	46,9	0,136	
Boy	669	50,2	685	53,1	0,150	
School Year						
P3	455	34,1	453	35,1		
P4	453	34,0	441	34,2	0,785	
P5	426	31,9	397	30,7		
Socioeconomi						
c statusi						
Low	808	60,6	802	62,1	0,414	
High	526	39,4	489	37,9	0,414	
Type of Centre						
Public	870	65,2	779	60,3		
Private / Semi- private	464	34,8	512	39,7	0,010*	

<sup>i</sup> Based on Neighbourhood Gross Disposable Family Income 2017
<sup>ii</sup> Chi2 test, Statistical significance: <0,050 (\*significant)</li>

Girls (n=1271)															
	<b>P3</b> (n=461)					P4 (n=440)					P5 (n=370)				
	n	Pre Score	Post Score	Change	P-value <sup>i</sup>	n	Pre Score	Post Score	Change	P-value <sup>i</sup>	n _	Pre Score	Post Score	Change	P-value <sup>i</sup>
		Mean (SD)				Mean (SD)					Mean (SD)				
Intervention															
Yes	220	92.5 (25.6)	116.9 (27.1)	24.4 (20.6)	<0.001*	h	105.3 (24.9)	124.4 (24.1)	19.1 (23.1)	<0.001*	169	114.3 (21.4)	127.5 (23.1)	13.3 (19)	<0.001*
No	241	97.2 (20.2)	111.0 (21.4)	13.8 (17.5)	<0.001*	223	114.9 (25.1)	123.1 (22.1)	8.2 (17.5)	<0.001*	201	113.7 (23.3)	121.3 (27.6)	7.6 (19.0)	<0.001*
Boys (n=1354)															
	P3 (n=447)					P4 (n=454)				P5 (n=453)					
	n	Pre Score	Post Score	Change	P-value <sup>i</sup>	n	Pre Score	Post Score	Change	P-value <sup>i</sup>	n	Pre Score	Post Score	Change	P-value <sup>i</sup>
	Mean (SD)			Mean (SD)					Mean (SD)						
Intervention															
Yes	233	106.5 (26.1)	131.0 (25.0)	24.5 (19.7)	<0.001*	224	110.1 (24.7)	130.1 (23.5)	20.0 (21.3)	< 0.001*	228	120.8 (21.2)	133 (22.8)	12.2 (19.6)	<0.001*
No	214	103.6 (21.2)	117.4 (22.7)	13.8 (19.2)	<0.001*	230	121.8 (24.0)	130.4 (21.3)	8.6 (17.5)	<0.001*	225	122.1 (22.7)	128.1 (25.8)	5.9 (17.9)	<0.001*

*Table 2.* Bivariate analysis of the emotiona competences questionnaire Pre Score, Post Score and Change, stratified by gender, school year and explain by group (N=2625)

<sup>i</sup> T-student paired test for pre- and post-intervention scores \* statistically significant (P-value<0.05)

Girls (n=1271)										
	P3 (n=461)				P4 (n=440)		P5 (n=370)			
	β	95% CI	P-value	β	95% CI	P-value	β	95% CI	P-value	
Pre-score	0,7	0.6-0.8	< 0.001*	0.7	0.6-0.7	< 0.001*	0.8	0.8-0.9	< 0.001*	
Intervention										
Yes	9.7	3.4-16.0	0.003*	7.8	0.1-15.6	0.048*	2.8	-6.3-12.0	0.550	
No	-	-	-	-	-	-	-	-	-	
Socioeconomic status										
Low	-2.4	-8.9- 4.0	0.454	-5.9	-14.0-2.2	0.156	-1.6	-10.9-7.8	0.742	
High	-	-	-	-	-	-	-	-	-	
Type of School										
Public	0.8	-5.7-7.4	0.800	5.2	-2.8-13.1	0.206	1.2	-8.2-10.6	0.802	
Private/semi-private	-	-	-	-	_	_	-	-	-	
			]	Boys (n=13	354)					
		P3 (n=447	)		P4 (n=454)			P5 (n=453)		
	β	95% CI	P-value	β	95% CI	P-value	β	95% CI	P-value	
Pre-score	0.7	0.6-0.8	< 0.001*	0.7	0.6-0.7	< 0.001*	0.8	0.7-0.9	< 0.001*	
Intervention										
Yes	12.3	5.5-19.2	< 0.001*	7.3	0.4-14.2	0.038*	2.8	-4.9-10.4	0.483	
No	_	-	-	-	-	-	-	-	-	
Socioeconomic status										
Low	-5.4	-12.5-1.7	0.137	-7.8	-14.90.7	0.032*	2.5	-5.3-10.3	0.532	
High	-	-	-	-	-	-	-	-	-	
Type of school										
Public	0.5	-6.7-7.7	0.889	0.1	-7.0-7.2	0.980	0.5	-7.5-8.3	0.912	
1 ublic	0.0	011 111	0.009	0.1	/.o /. <u>=</u>	0.700	0.0		0.712	

*Table 3.* Linear multilevel regression analysis of post-intervention scores stratified by gender and school year (N=2625)

**Abbreviations:**  $\beta$ ,= $\beta$ -coefficient, CI,=confidence interval, - = reference category

Adjusted by: Pre-score, intervention, socioeconomic status and type of school

\* statistically significant (P-value<0.05)

*Table 4.* Data reduction of the thematic content analysis (6 discussion groups, 34 individuals)

Category	Number of quotes	Summary and selected quotes
Effect on children: interpersonal	30	All the teachers reported a positive effect of the program on the children's interpersonal emotional competences. They described an improvement in affective bonds as well as enhanced empathy and conflict management. They also mentioned a decrease in violence among children. A substantial number of comments centered around the themes of death and loss, which the children were able to talk about more openly. <b>Quote1:</b> < <my and="" between="" childern="" complex:="" educational="" enormously="" establish="" families,="" group="" has="" have="" helped="" integrated="" is="" migrated,="" needs.="" new="" program="" quite="" relationships="" special="" the="" them.="" unstructured="" values="" we="" who="">&gt;&gt; <b>Quote2:</b> &lt;<i "hey,="" a="" and="" annoyed="" be="" bit="" careful="" child="" comes="" didn't="" doesn't="" feel="" feeling="" he="" helping="" i="" in="" is="" it"="" it".="" it's="" like="" me="" more="" now="" of="" others,="" says="" sense="" that="" the="" them="" to="" touched="" with="" you="">&gt;&gt;</i></my>
Effect on children: intrapersonal	33	The general consensus was that the program improved the children's intrapersonal emotional competences. All teachers reported better understanding and verbalization of emotions among participating children. They directly attributed these change to the program. Finally, they also mentioned that even for children unable to verbalize emotions, the improvement could be seen through their non-verbal language. <b>Quote1:</b> < <they able="" and="" are="" identify="" recognize.<br="" to="" verbalize,="">They start asking themselves "yes, I feel like this, but why?" The ones in P4 do it now, but not when the year started. The ones in P3 do it already. It's a very big change&gt;&gt; <b>Quote2:</b> &lt;<they an="" awareness="" don't="" feel,="" have="" how="" of="" say<="" th="" they=""></they></they>
Effect on teachers and the classroom environment	23	"good or bad" they say "I feel happy, cheerful, upset">> The teachers' general message was that the program had strengthened the classroom environment, establishing cooperative dynamics between teachers and children. Additionally, they also highlighted that due to the program, they were able to tackle some topics that are normally unnoticed in the curriculum. Quote1: < <the all="" also="" brought="" children="" has="" program="" see="" something="" teachers="" the="" together,="">&gt; Quote2: &lt;<the allowed="" and="" consider="" down="" focus="" has="" important="" most="" on="" program="" slow="" the="" things="" to="" us="" we="">&gt; Quote3: &lt;<we about="" address="" all="" talk="" things="" usually="" we="" wouldn't="">&gt;</we></the></the>

## Content related to the effect of the program

Differences in the effect on children	24	Most teachers pointed out that they could not see any substantial differences among children in the effect of the program. In general, the few differences mentioned were attributed to the child's specific situation when receiving the intervention, similiar to any other activity in the curriculum. Some quotes showed that the effect seemed to be smaller in P3 and P4 children than in P5. Finally, the children's gender and cultural background were generally excluded as reasons that could influence the effect. <b>Quote1:</b> < <the based="" be="" but="" characteristics="" child's="" context,="" different="" everyone,="" might="" on="" or="" program="" reaches="" results="" the="">&gt; <b>Quote2:</b> &lt;<it's about="" activity="" and="" based="" but="" day="" gender,="" it="" more="" not="" on="" one="" others="" person="" rather="" reaching="" than="" the="">&gt; <b>Quote3:</b> &lt;<i all="" benefited="" children="" feeling="" felt="" from="" had="" i="" it="" more="" never="" of="" others,="" part="" program="" some="" than="" that="" the="" they="" think="" were="">&gt;</i></it's></the>
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# Content related to satisfaction with the program

Category	Number of quotes	Summary and selected quotes
General satisfaction	36	Teachers almost unanimously felt very satisfied with the program and believed it met its objective and covered a very important need that is rarely addressed in schools. They rated the themes it covers highly, as some could be very difficult to address without the program, such as justice, loss, death, or bullying. Quote1: < <recently, a="" all="" decide="" had="" meeting="" teachers="" to="" which<br="">projects were essential or not and we all agreed to keep doing 1,2,3,emoció! The program is already considered essential&gt;&gt; Quote2: &lt;<personally, because="" happy="" i'm="" i<br="" program="" this="" very="" with="">had already worked on emotional education but never in so much depth or so systematically. With this program you don't leave anything out, you work on everything&gt;&gt; Quote3: &lt;&lt; Working on emotions is a long-term process, but we are already seeing some results after just 1 year of program&gt;&gt;</personally,></recently,>