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## **Differential Effectiveness of an Elementary School Social and Emotional Learning Program during Middle School Transition in Portugal**

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### Abstract

This study analyzed the effectiveness of an elementary school Social and Emotional Learning (SEL) program during middle school transition in Portugal, and the influence of gender, classroom size and student's perception of two school climate dimensions (student–student relationships and teacher–student relationships) upon its effectiveness. One-thousand-sixty-three students ( $M_{age} = 9.14$ ;  $SD = 0.64$ ; 51.2% were boys) participated: 702 in the intervention group and 361 in the control group, assessed at pretest, post-test, and follow-up ten months later (after middle school transition). Multilevel analyses identified that the program was effective in enhancing social awareness, self-control, and self-esteem, even after middle school transition. Results also showed that there no differential gains by gender, and that intervention group students who had more positive perceptions of student–student relationships and teacher-student relationships displayed more positive trajectories in self-esteem. Students from smaller 4th-grade classrooms displayed lower social awareness than students from larger 4th-grade classrooms, but a more positive trajectory in that competence than students from medium and larger 4th-grade classrooms. This study highlights the importance of analyzing the differential effectiveness of SEL programs.

### Impact and Implications Statement

Although generally Social and Emotional Learning (SEL) programs have been proven to be effective, still little is known regarding under which conditions they have better outcomes. This manuscript analyzed how two dimensions of school climate, student–student relationships and teacher–student relationships, influenced the effectiveness of a SEL program.

**Keywords:** Social and emotional learning; school climate; gender differences; class size; program effectiveness.

Social and emotional competencies play a key role in children and adolescents' development and future psychological well-being. These competencies match what the World Health Organization (WHO, 2003) defined as life skills, i.e., the abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life. Several reviews (Durlak et al., 2011; Taylor et al., 2017) have reported that implementing universal social and emotional learning (SEL) programs improve students' prosocial behavior, social relationships, attitudes toward school and academic performance, and lead to reductions in behavior problems and psychological distress. Furthermore, Jones et al. (2017) claimed that children who master SEL skills have more successful careers and better mental and physical health as adults. Given these benefits, there has been a steady increase in interventions that focus on developing these competencies, with thousands of schools implementing SEL programs mostly in the United States (Greenberg et al., 2017; Taylor et al., 2017). Recently, however, there has been a call for studies to expand on the reviews that established the effectiveness of SEL programs (Coelho & Sousa, 2018; Jones et al., 2017). Some authors have argued for the necessity of conducting longer follow-up analyses (Taylor et al., 2017), whereas others have argued that studies that analyze the differential effectiveness of SEL programs are needed (Coelho & Sousa, 2018; Jones et al., 2017).

In Portugal, appropriate social and emotional competencies are crucial for students to navigate the school transitions in the Portuguese school system (Coelho, Bear, & Brás, 2020). Currently, compulsory school lasts 12 years, divided into four cycles. The first, elementary school (first to fourth grades), is characterized by having a single teacher teaching all school subjects (Portuguese, mathematic, sciences, and arts), and smaller schools that are closer to the communities. The second cycle, low-middle school (comprising fifth and sixth grades), is characterized by larger schools and one teacher per each of the nine subjects. The third cycle,

high-middle school (seventh to ninth grades), is usually housed in the same buildings as the previous cycle—but with a complete turnover of teachers and additional subjects. So, the transition into middle school is the most comprehensive that Portuguese students must endure (Coelho, Romão et al., 2020). However, students receive little preparation for this transition, as currently, no specific activities in the school curriculum offer support. Additionally, national SEL standards have not been established (as detailed in Bowles et al., 2017).

The present study has two main aims: The first is to assess the effectiveness of the current version of the Positive Attitude SEL Program with a longer follow-up that includes following students during their middle school transition. The second is to analyze differential factors that influence an SEL programs' effectiveness, specifically if students' perceptions of two school climate dimensions (student–student relationship and teacher–student relationship) influence an SEL programs' effectiveness.

### **Social and Emotional Learning**

SEL has been defined by the Collaborative for Academic, Social and Emotional Learning (CASEL) as “the processes through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions” (CASEL, 2012; p. 4). More specifically, CASEL's framework identifies five interrelated sets of social and emotional competencies targeted through SEL: self-management, social awareness, self-awareness, responsible decision making and relationship skills (CASEL, 2012).

The current study focuses on three of the five key competencies enunciated by CASEL (2012), namely (a) self-management, (b) social awareness, and (c) self-awareness. Self-management is the ability to regulate thoughts, emotions, and behaviors in different situations and the ability to manage stress and set and achieve goals (Greenberg et al., 2017). Steinberg

(2014) has suggested that self-management is the single best determinant of adolescent and subsequent adult success. In the current developmental literature, self-control is a key aspect of self-management (Ross et al., 2019), and higher levels of self-control are associated with fewer behavior problems (Franken et al., 2015) and better academic achievement (Duckworth et al., 2019).

Social awareness is the individuals' ability to understand others' behavior, take others' perspective, and demonstrate empathy (CASEL, 2012). Higher levels of social awareness have been associated with less aggression, externalized behaviors (Li et al., 2015), and greater prosocial behavior (Cigala et al., 2014). According to Ross et al. (2019) social awareness is also closely tied to the development of relationship skills and relationships' quality.

Self-awareness refers to the individuals' ability to understand and accurately appraise their thoughts, emotions, strengths, limitations, and behaviors (Greenberg et al., 2017). As such, self-awareness encompasses self-concept and self-esteem (Mantz et al., 2018; Ross et al., 2019). Literature reviews of self-esteem have generally found it positively (but not strongly) related to academic motivation and achievement, life satisfaction, and positive social relations (Baumeister et al., 2003; Mantz et al., 2018).

#### **4th-Grade Positive Attitude SEL Program**

The 4th-grade Positive Attitude SEL program has been considered as a leading SEL program in Portugal by an independent review (Cristovão et al., 2018). This program is based upon the framework proposed by CASEL (2005) for SEL. Therefore, it is a classroom-based manualized program that includes all students and is infused into the school curriculum and integrated into a multi-year project that focuses on SEL. The 4th-Grade Positive Attitude SEL Program is composed of 13 weekly 60-min sessions delivered by five trained educational psychologists in the teacher's presence. The current version of the program is composed of four modules: (a) self-awareness, two sessions focusing on emotion recognition and

expression; (b) self-management and social awareness, three sessions using a board game to ask students to perform several tasks; (c) self-esteem, students primarily recognizing and expressing strengths in themselves and others; and (d) responsible decision-making, three sessions using roleplay, case studies and storytelling.

Coelho and Figueira (2011) described in detail the primary theoretical basis, methodologies, and activities used in the program, and Coelho et al. (2015) reported the program implementation's effectiveness results for the first five years: positive intervention results in emerged in social awareness, self-control and self-esteem, and the Authors also concluded that girls benefitted more in social awareness. Based on those results, we made some adjustments; one session for self-awareness was added, some materials were altered, and some activities were replaced for others that aimed to achieve better results among boys.

However, given the recent call to analyze the differential effectiveness of SEL programs (Coelho & Sousa, 2018; Jones et al., 2017), additional studies are required to identify and describe the influence of individual and class-level moderators over the 4th-grade Positive Attitude SEL program's effectiveness.

### **Individual and Class-Level Moderators of SEL Programs' Effectiveness**

#### ***Gender***

Ross et al. (2019) reported that social and emotional competencies follow different trajectories across youth, and that these trajectories differ between boys and girls. However, literature has not indicated a clear consensus regarding gender differences in gains from SEL programs. Several studies have reported differential gains for boys and girls from participating in SEL programs (Durlak et al., 2011). A study detailing a previous version of the current SEL program showed that girls gained more self-esteem from participating in the program than boys, but no gender differences were found for self-control and social awareness (Coelho et al., 2015).

### ***Classroom Size***

Given that students' academic, social, and emotional development are influenced by the micro and meso conditions within their families, classrooms, and school communities, a multi-level approach is required to fully understand the impact of SEL programs (Berg & Aber, 2015). The classroom is the primary setting for most SEL programs, and emotionally supportive and well-organized classrooms can improve student-level outcomes (Jones et al., 2017), such as teacher–student relationships, participation on classroom activities and engagement in learning. Therefore, SEL interventions can contribute to meaningful changes in classroom environments. Furthermore, Rambaran et al. (2019) found that studying class size (with different types of classrooms) can be relevant when considering students' relationships and interactions. Likewise, a study with the 7th to 9th-grade Positive Attitude SEL program showed that intervention group students in smaller classes benefitted more from the program in self-control, than intervention groups students in larger classes (Coelho & Sousa, 2018).

### ***School Climate***

Cohen et al. (2009) defined school climate as the “quality and character of school life” that includes “norms, values, and expectations that support people feeling socially, emotionally, and physically safe” (p. 182). According to Wang et al. (2013) school climate encompasses most of the school experience, including the school organization (the school environment's institutional and structural features) and the quality of teaching and learning. Therefore, students' school environments can either facilitate or hinder student adjustment, academic achievement, and skill development. Several studies have shown that a positive school climate is associated with multiple valued outcomes: higher levels of self-esteem (Murray & Greenberg, 2001), better school adjustment (Bear et al., 2011) and students' socio-emotional adjustment (Berg & Aber, 2015; Hung et al., 2015). Particularly, students'



school climate perceptions influence their relationships with the teachers and peers (Mucherah et al., 2018). Evidence has also shown that participating in SEL programs is associated with a more positive school climate (Bear et al., 2017). However, studies are generally lacking that indicate which school climate dimensions positively contribute to specific social and emotional competencies.

### **Present Study**

The current study had two main goals: (a) analyze the effectiveness of an SEL program for elementary students during their middle school transition with a 10-month follow-up and (b) assess the differential effectiveness of the SEL program at follow-up by analyzing the influence of the individual-level (gender and school climate perceptions) and classroom-level (4th-grade class size) variables on the social and emotional competencies trajectory.

Accordingly, for the first goal, and based on research (Coelho et al., 2015; Greenberg et al., 2017), we hypothesize that elementary students who participate in an SEL program (intervention group) will display a more positive trajectory in social awareness, self-esteem, and self-control when compared with those students who do not participate in the program: i.e., the control group (Hypothesis 1).

Regarding the second goal, we have formulated several hypotheses. First, based on the previous research (Coelho et al., 2015), we hypothesize that some gender differences will emerge. While for social awareness and self-control it is expected that boys and girls will display the same trajectory across conditions, for self-esteem, we hypothesize that there will be gender differences; girls will benefit more than boys participating in the SEL program (Hypothesis 2). Finally, considering previous research (Bear et al., 2017; Mucherah et al., 2018), we also hypothesize that the intervention group students who perceive their student–student relationships and teacher–student relationships more positively, will display a more

positive trajectory in social and emotional competencies during middle school transition (Hypothesis 3 and 4, respectively). We have chosen student–student relationships and teacher–student relationships because these dimensions are relevant during the middle school transition in Portugal (as described in Coelho, Romão et al., 2020). Regarding classroom size, due to the scarce literature analyzing the effect of classroom size on SEL programs’ effectiveness, we have also formulated the following research question: Does 4th grade classroom size influence the trajectory of social and emotional competencies during the school-transition process?

## Method

### Participants

Portuguese schools are organized into groupings, composed by a middle school, several elementary schools, and kindergartens, administrated by a School Board. Data were gathered from three different cohorts, each spanning two school years (2015–2016; 2016–2017 and 2017–2018). Every year, the same selection criteria were applied, with each School Grouping Board choosing classes from rural elementary school for participation, randomly assigning them to the control and intervention groups and then informing the program developers. One thousand sixty-three 4<sup>th</sup>-grade students from 72 classes in 21 Portuguese elementary public schools (in 2018, according to the *Direção-Geral de Estatísticas da Educação e Ciências*, 87% of Portuguese elementary school students frequent public schools), from the municipality of Torres Vedras (district of Lisbon) participated in this study. Seven hundred and two students received the intervention (46 classes;  $M_{classsize} = 15.26$  students) and 361 students composed the control classes (26 classes;  $M_{classsize} = 13.88$  students). Five hundred and fifty-four (51.2%) students were boys. Students’ age ranged from 8 to 11 years ( $M = 9.14$ ;  $SD = 0.64$ ) in their first assessment (October for each cohort). The total number of students per elementary school class ranged between 8 and 23 ( $M = 16.34$ ).

As displayed in Table 1, intervention and comparison groups were homogenous regarding gender, school location and previous retention rate. Likewise, the groups were extremely homogeneous regarding ethnicity; students were overwhelmingly Portuguese (99.1%). There were almost twice as many intervention classes when compared to the control classes due to the schools' reluctance to accept control groups, because of prior positive results. The socioeconomic status, analyzed by classroom, showed little variation, it ranged from 34.7% to 39.8% of students per class eligible for free or reduced lunches.

Attrition was due to students who left school during 4th-grade (4 students, 0.4%) and, therefore, did not take part in the second and third measurement (these were removed from the sample). Students who changed schools from 4th to 5th grade (19 students, 1.8%) were also unavailable for the third measurement. The dropout rate was homogenous across the three cohorts.

## **Measures**

### ***Social and Emotional Competencies***

Social awareness and self-control were assessed through the Portuguese version of the *Bateria de Socialização-3* (BAS-3; Portuguese adaptation by Ferreira & Rocha 2004). This self-report instrument is rated in a two-point scale (yes or no), and it includes two subscales for social awareness (14 items; Cronbach's  $\alpha = .82$  in the Portuguese adaptation; T1:  $\alpha = .86$ , Average Variance Explained (A.V.E.) = .54; T2:  $\alpha = .88$ , A.V.E. = .55; T3:  $\alpha = .84$ , A.V.E. = .52; e.g., "I help other students when I see that they are having problems") and self-control (14 items; T1:  $\alpha = .81$ , A.V.E. = .51; T2:  $\alpha = .82$ , A.V.E. = .51; T3:  $\alpha = .79$ , A.V.E. = .50; e.g., "I wait for my turn when I want to talk"). In this instrument, a higher score indicates higher levels of the competence.

### **Self-esteem**

Self-Esteem was assessed with the General Self scale from the Self-Description Questionnaire I - (SDQ I; Marsh, 1990; Portuguese adaptation by Faria & Fontaine, 1990) for elementary students. The scale is composed by 8 items (Cronbach's  $\alpha = .83$ ; T1:  $\alpha = .81$ , A.V.E. = .56; T2:  $\alpha = .85$ , A.V.E. = .58; T3:  $\alpha = .80$ , A.V.E. = .53), answered on a five-point scale (1 – False; 5 – True), that are related to general self-esteem (e.g.: “Generally, I like the way I am”). A higher score corresponds to a higher self-esteem.

### **Student–Student Relationships and Teacher–Student Relationships**

Two scales of the Portuguese version of the Delaware School Climate Survey-Students (Coelho, Romão et al., 2020) were used. Student–student relationships (4 items,  $\alpha = .77$ ; e.g., “Students get along with one another”) and teacher–student relationships (7 items,  $\alpha = .85$ ; e.g., “Teachers care about their students”). The survey was validated for grades 4–8. Students respond to each item using a 4-point Likert scale (1 - Strongly Disagree; 2 - Disagree, 3 - Agree, and 4 - Strongly Agree). Summing scores across items and dividing it by the number of items provides the scores for each subscale. A higher score represents a more positive school climate.

### **Procedure**

The data for the present study were collected at three points in time during middle school transition (i.e., spanning two school years); a month after the beginning of 4th grade (final year of elementary school - October: T1); at the end of the SEL program (middle of 4th grade - February: T2); three months after the start of 5th grade (at the end of the first term - December: T3). School climate measurement occurred at T3. Each elementary school is part of a school grouping headed by a secondary school (5th to 9th grade), with most students remaining in the same school grouping after they make the transition to 5th grade.

Parental consent forms were distributed in parent meetings in the first day of school and received via the regular school channels. The present study was approved by the Psychology for Positive Development Research Center Institutional Review Board, and it was conducted

following the national professional code of ethics for psychologists, following national legislation. Questionnaires were applied by the same educational psychologists in all three assessments (in 4<sup>th</sup> and 5<sup>th</sup> grade) in their regular classrooms.

Implementation fidelity is controlled through an online platform, where the educational psychologists register the details for each session and requisite the materials for the next session. Altogether, implementation fidelity varied between 93.7% and 100%.

### **Data Analysis**

IBM SPSS Statistics for Windows, Version 22 (IBM Corp, Armonk, NY) was used. Students who were not present for the third measurement were listwise deleted, given the low level of attrition (1.8%) and because these subjects were similar to those who remained in the sample, following Gerson (2015). Classroom size was divided into three similar sized groups; the small 4th-grade classrooms group included 35 classrooms which ranged from 8 to 13 students; the medium 4th-grade classrooms group was composed by 21 classrooms with 14 to 19 students; finally, the large 4<sup>th</sup>-grade classrooms group included 16 classrooms that had 20 to 23 students.

For conducting the analyses, MultiLevel Modelling (MLM) was employed because in repeated measures studies designs, individual scores are nested within individuals and these are nested within classes. Nested data are more likely to correlate within the group, and evaluations by students from the same class are more likely to be highly correlated points (Heck et al., 2013). So, a three-level model was run to account for the three measurements, nested within the 1063 students, which were nested in 72 classes. All analyses were conducted using Maximum Likelihood as the estimation method.

The first step was to create a null model, without predictors to calculate the Intraclass Correlation Coefficient (ICC) for all three outcome variables. Autoregressive (AR1) was used as the covariance structure for Level 1 (within-subjects) and variance component was used as

the covariance structure for Levels 2 (individual) and 3 (class), because they yielded the best fit. Next, a model 1 was created by including time as a covariate to analyze the effect of the within-subject predictor upon SE competencies. Then, for each of the outcomes, a model 2 was created to analyze individual predictors such as gender and school climate dimensions. Before including class-level predictors, class size was Grand Mean Centered, and then the class-level predictors (condition and classroom size were added) to create Model 3. Finally, to address hypotheses 2, 3, and 4, a final Model was created to include two-way, and three-way, cross-level interactions between time (a level 1 predictor) and, respectively, gender and school climate dimensions (level 2 predictors), and condition and classroom size (level 3 predictors).

## **Results**

### **Preliminary Analysis (and Intraclass Correlations)**

Table 2 displays the descriptive data for the control and intervention groups. Next, the Intraclass Correlation Coefficient (ICC), representing the proportion of variance between classes, was calculated in the unconditional models for each outcome. The ICCs indicated a statistically significant variation between classrooms for all variables ( $> .05$ ); social awareness (ICC = .054), self-control (ICC = .053), and self-esteem (ICC = .057). Therefore, 3<sup>rd</sup> level predictors (between-classes) were included in the models, following Heck et al. (2013).

Insert Table 2

### **Social Awareness**

Table 3 displayed the results for the final models for social awareness, self-control, and self-esteem. After adjusting for all individual and class-level predictors, as well as for cross-level interactions (Table 3), time was found not to be a significant predictor of social awareness. Gender and teacher–student relationships were significant individual predictors; girls and students with a more positive perception of teacher–student relationships had higher initial

levels of social awareness. Only one class-level predictor was significant, classroom size; students from large 4<sup>th</sup>-grade classrooms reported higher initial levels of social awareness than small 4<sup>th</sup>-grade classrooms. Significant predictors also included the two-level interactions between condition and time, and class size and time. Therefore, students in the intervention groups displayed a more positive trajectory in social awareness than the control group's students (supporting Hypothesis 1). Students in medium sized and larger 4th-grade classes displayed a more negative trajectory than students in smaller 4th-grade classes. No three-way, cross-level interactions yielded significant results, including the two, three-way, cross-level analyses conducted between time, condition, and student–student relationships (one) and teacher–student relationships (the other). Therefore, Hypotheses 3 and 4 were partially negated. Altogether, the individual- and class-level variables accounted for 17.6% of the between-individual variance and 3.5% of the between-class variance in social awareness.

Insert Table 3

### **Self-Control**

As seen in Table 3, after adjusting for all predictors and all the cross-level interactions, time was a significant predictor of self-control during the analyzed period which decreased during the period analyzed. All the individual-level predictors were significant predictors of self-control; girls and students with more positive perceptions of student–student relationships and teacher–student relationships had higher initial levels of self-control. No classroom-level predictors were found to be significant. One significant two-way, cross-level interaction also emerged; the interaction between condition and time (thus partially supporting Hypothesis 1). Students in the intervention groups displayed a more positive trajectory than students in the control groups. Neither of the two three-way, cross-level analyses between time, condition, and student–student relationships (one) and teacher–student relationships (the other) yielded significant results partially negating Hypotheses 3

and 4. Altogether, the individual- and class-level variables accounted for 8.3% of the between-individual variance and 8.3% of the between-class variance in self-control.

### **Self-Esteem**

After adjusting the models for all predictors and cross-level interactions (Table 3), time was not found to be a significant predictor of self-esteem. Among the individual-level predictors, gender, and student–student relationships were also significant predictors of self-esteem; girls and students with better perceptions of their relationships to other students had higher initial levels of self-esteem. No class-level predictors were found to be significant. Three two-way, cross-level interactions were significant predictors of self-esteem. Students from intervention groups, as well as students with more positive perceptions of student–student relationships and teacher–student relationships displayed a more positive trajectory for self-esteem during the analyzed period than students from control groups (therefore partially supporting Hypothesis 1) and students with lower levels in those two school climate dimensions. The three-way, cross-level interaction between time, gender and condition was not a significant predictor of self-esteem, thus negating Hypothesis 2. Furthermore, analyzing the two, three-way, cross-level analysis between time, condition, and student–student relationships (one) and teacher–student relationships (the other), there was a significant interaction for student–student relationships, but not for teacher–student relationships. These results indicate that intervention group students with a more positive perception of student–student relationships displayed a more positive trajectory in self-esteem during the analyzed period, thus partially supporting Hypothesis 3, and partially negating Hypothesis 4. Altogether, the individual- and class-level variables accounted for 8.6% of the between-individual variance and 67.1% of the between-class variance in self-esteem.

### **Discussion**



The present study had two main goals. First, it aimed to assess the effectiveness of the current version of the 4<sup>th</sup>-grade Positive Attitude SEL program, especially during the middle school transition. Second, it aimed to analyze the program's differential effectiveness, according to gender, classroom size, and especially school climate dimensions (student–student relationships and teacher–student relationships).

Regarding the first goal, the results showed that (as hypothesized) students who participated in the SEL program displayed a more positive trajectory in all three social and emotional competencies (social awareness, self-control, and self-esteem) throughout the analyzed period, which is consistent with previous results (Coelho et al., 2015). These results show that participating in an SEL program is effectively enhances 4th-grade students' social and emotional competencies, even within the context of a middle school transition.

However, regarding the second goal, the results supported only one of the hypotheses. When analyzing gender differences, one can conclude that Hypothesis 2 was not supported by the results of the present study; no differential gains between genders from participating in the SEL program during the analyzed period were found for self-esteem. Although this pattern of results aligns with most of the literature (Durlak et al., 2011; Ross et al., 2019), it contradicts previous results reported with an earlier version of the 4th-grade Positive Attitude SEL program (Coelho et al., 2015). The present study's results may be partially explained by the changes in material and activities introduced in the SEL program after a previous version yielded better results among girls. Another possible explanation is that the middle school transition may be more detrimental to girls' self-esteem than boys' self-esteem, as proposed by Morin et al. (2013).

However, the results partially supported Hypothesis 3 and 4, as both dimensions of school climate were significantly and positively associated with the evolution of one SE competency. Intervention group students who had more positive perceptions of student–

student relationships and teacher–student relationships reported more positive trajectories in self-esteem during the analyzed period. These findings seem to highlight the importance of reestablishing positive student–student relationships and teacher–student relationships after the middle-school transition; previous studies with similar samples have shown that without intervention, students’ self-esteem declines during the middle-school transition (Coelho et al., 2017). Thus, these results are consistent with prior research (Berg & Aber, 2015; Hung et al., 2015), which found that school climate dimensions were associated with social-emotional adjustment.

Finally, classroom size was a significant predictor of social awareness. Students in smaller 4th-grade classrooms displayed a lower initial level of social awareness than students from the larger 4th-grade classrooms. However, students in smaller 4th-grade classrooms also displayed a more positive social awareness trajectory than students in medium and larger classrooms. Thus, answering the research question posed, throughout the school transition process, 4th-grade classroom size influenced only the trajectory of social awareness—but neither self-control nor self-esteem. Additionally, when students come from smaller 4th-grade classrooms, they must adjust to a larger number of new classmates in 5th-grade which seems to increase their social awareness levels. These differential results are consistent with prior research (Berg & Aber, 2015; Rambaran et al., 2019), which highlighted the relevance of studying classroom-level variables and classroom size when analyzing the outcomes of intervention programs.

### **Limitations**

The current study has several limitations. First, only three of the five key social and emotional competencies enumerated by the CASEL could be assessed. The main reason is, when the study began, Portugal lacked valid instruments to assess responsible decision-making. Second, although both scales have adequate psychometric qualities and are

developmentally appropriate, the yes/no two-item response format (used to assess social awareness and self-control) is less likely to capture all the variance in students' responses, than the four- and five-point scales. Third, the study lacked an external evaluation of implementation fidelity, which is a limitation that is currently being addressed.

An additional limitation is that teacher reports were not included in this study. We did not include these reports as (a) students have multiple teachers in fifth grade, and (b) the teachers had limited contact with students at the point of evaluation. Therefore, we did not believe the teacher reports would be valid for our purposes.

### **Future Directions**

Future studies should analyze longitudinally whether the 4th-grade Positive Attitude SEL program impacts school climate dimensions. In Portugal, as students transition from elementary school (at the end of the 4th grade) to middle school (starting with 5th grade), school climate perceptions deteriorate (Coelho, Romão et al., 2020). Therefore, investigating whether participating in the program prevents or dissipates this deterioration would be relevant. Additionally, future studies should analyze if other classroom-level variables, such as classroom socioeconomic status, gender distribution or the experience of the programs' implementer, influence the SEL program's effectiveness. Finally, the present study's results clearly indicates that changes introduced into the programs' activities to promote additional gains among boys have surpassed their goals. Therefore, some activities and materials should be readjusted to balance gains for girls in social awareness and self-control.

### **Implications**

Altogether, the of the current study's results highlight the importance of investing in social and emotional competencies during middle-school transitions in Portugal, aligning with previous studies (Coelho et al., 2015, Coelho, Romão et al., 2020). This conclusion is supported by the current study's control group, indicating that, without the intervention, social and emotional competencies dropped severely. Furthermore, the present study's results

support including components that promote more positive student–student relationships and teacher–student relationships as part of efforts to promote SEL learning, which several authors have defended recently (Bear et al., 2017; Greenberg et al., 2017). Therefore, school psychologists should help prepare Portuguese students for the middle-school transition with effective SEL programs and, subsequently support this transition using activities that promote student–student relationships and teacher–student relationships.

## **Conclusion**

The current version of the 4th-grade Positive Attitude SEL program proved effective, leading to more positive trajectories in the SE competencies analyzed during the middle school transition. Additionally, several variables have shown to promote differential effectiveness for the program. One of them was 4th-grade classroom size, which influenced the trajectory of social awareness throughout the analyzed period and highlighted the importance of accounting for classroom size in the SEL program implementation. The current study also supports analyzing school climate dimensions when implementing SEL programs. As shown in this study's results, students who perceived more positive student–student relationships and teacher–student relationships experienced more positive development in their self-esteem. However, once again, the timing for this intervention might have influenced this result because, during the middle-school transition, students experience extensive changes with peers (most of the 5th-grade classmates are new classmates) and teachers (the teacher from the first four years of elementary school is replaced by eight or nine new teachers). These changes are likely to increase the importance of reestablishing positive student–student relationships and teacher–student relationships.

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Table 1

*Student Characteristics across Groups and Years of Implementation*

Characteristic	Total (%)	Control Group n = 361 (34.0%)	Positive Attitude n = 702 (66.0%)
Gender			
Male	544 (51.2%)	183 (50.7%)	361 (51.4%)
Female	519 (48.8%)	178 (49.3%)	341 (48.6%)
Previous retention rate	68 (6.4%)	24 (6.6%)	44 (6.3%)
School Climate			
Student-Student Relationships		3.33 (0.47)	3.44 (0.49)
Teacher-Student Relationships		3.42 (0.36)	3.58 (0.36)
Cohort (4 <sup>th</sup> grade)			
2014/15	326 (30.7%)	77 (21.3%)	249 (35.5%)
2015/16	361 (35.8%)	153 (41.8%)	230 (32.8%)
2016/17	356 (33.5%)	133 (36.8%)	223 (31.8%)

*Note.* N = 1063

Table 2

*Descriptive Statistics for Social and Emotional Competencies, per time*

	Control Group (N = 361)			Positive Attitude (N = 702)		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Social Awareness	12.85 (1.71)	12.66 (1.93)	12.31 (1.87)	12.47 (2.05)	12.89 (1.64)	12.87 (1.40)
Self-Control	11.70 (2.09)	11.39 (2.39)	11.08 (2.21)	11.23 (2.37)	11.81 (2.11)	11.85 (1.76)
Self-Esteem	30.70 (5.00)	30.43 (4.93)	29.75 (4.63)	30.61 (4.76)	31.85 (4.90)	31.84 (4.28)

*Note. Time 1 = September; Time 2 = December; Time 3 = June*

Table 3

*Multilevel Model Analysis Final Models for Social and Emotional Competencies*

	Social Awareness		Self-Control		Self-Esteem	
	$\beta_{0ijk}= 12.95 (0.16)^{***}$		$\beta_{0ijk}= 12.14 (0.20)^{***}$		$\beta_{0ijk}= 31.06 (0.37)^{***}$	
	Co-efficient $\beta$	SE	Co-efficient $\beta$	SE	Co-efficient $\beta$	SE
Classroom						
Medium ClassRoom Size	0.17	0.17	0.27	0.20	0.26	0.36
Large ClassRoom Size	0.52**	0.17	0.09	0.21	-0.06	0.37
Condition (if Intervention)	-0.34	0.19	-0.46	0.24	-0.04	0.34
Students						
Gender (if Boys)	-0.57***	0.10	-0.97***	0.12	-0.61*	0.27
Student-Student Relationships	0.24	0.15	0.37*	0.17	1.21**	0.37
Teacher-Student Relationships	0.40*	0.19	0.46*	0.23	0.06	0.50
Time						
Time	-0.16	0.09	-0.37***	0.08	-0.26	0.15
Interactions						
Gender (if Boys) x Time	0.004	0.07	0.14	0.08	0.16	0.16
SSRav x Time	-0.09	0.10	0.22	0.12	0.93***	0.24
TSRav x Time	0.12	0.13	-0.22	0.16	1.86***	0.31
Medium ClassRoom Size x Time	-0.11*	0.05	-0.04	0.06	-0.05	0.12
Large ClassRoom Size x Time	-0.18**	0.05	-0.04	0.06	-0.11	0.12
Condition x Time (if Intervention)	0.38***	0.07	0.62***	0.08	0.81***	0.16
Intervention x Gender (if Boys) x Time	0.13	0.08	0.03	0.10	-0.10	0.20
Intervention x SSRav x Time	0.10	0.12	-0.17	0.14	0.57*	0.28
Intervention x TSRav x Time	-0.30	0.16	0.12	0.18	0.37	0.36
Deviance (-2loglikelihood)	10975.011		12116.412		16641.081	
$\Delta$ -2LL						
Estimated parameters	21		21		21	

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; SSRav - Student–Student Relationships; TSRav - Teacher–Student Relationships