

EMPIRICAL ARTICLE

Promoting Sympathy, Empathic Self-Efficacy, and Prosocial Behaviours Among Primary School Children

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ABSTRACT

The present study investigated the efficacy of the CEPIDEAS Junior program, a universal intervention promoting prosocial behaviours and social adjustment in schools, on sympathy, empathic self-efficacy, and prosocial behaviour among primary school children. The longitudinal intervention was conducted in 18 schools in the metropolitan area of Rome, involving students from second, third, and fourth grades. Using a quasi-experimental design, a sample of 1045 students ($M_{\text{age}} = 8.51$, $SD = 0.73$; 471 girls) was divided into intervention ($N = 527$) and control groups. Teacher-reported sympathy, children's empathic self-efficacy, and peer-reported prosocial behaviour were assessed at the beginning and end of the intervention. Latent Difference Score (LDS) models revealed significant increases in sympathy and empathic self-efficacy in the intervention group compared to the control group, while the positive effect on prosocial behaviours did not reach statistical significance. The results indicated that the intervention program directly enhanced sympathy and empathic self-efficacy, highlighting the potential of the CEPIDEA school-based program, grounded on the Social-Cognitive Theory, in promoting students' socio-emotional skills.

Prosocial behaviours, encompassing acts of kindness, sharing, and cooperation, are fundamental components of social interaction and community cohesion, particularly within educational settings. Recognising the pivotal role of prosocial education in primary schools, the Social and Emotional Learning approach (SEL; Durlak et al. 2024) has emerged as a key framework for fostering socioemotional competencies and promoting positive behavioural outcomes among children.

Central to developing prosocial behaviours in children is the cultivation of sympathy and empathic self-efficacy. Sympathy, often regarded as a precursor to prosocial behaviour, involves the emotional response to the distress or suffering of others, laying the foundation for altruistic tendencies and compassionate actions (Eisenberg et al. 2006, 518). On the other hand, empathic

self-efficacy, conceptualised within the Social Cognitive Theory (SCT; Bandura 1986, 1997), emphasises individuals' beliefs in their capacity to understand and respond empathetically to the emotions of others. The awareness and belief in one's ability to enact sympathetic actions play a crucial role in facilitating prosocial behaviours and promoting prosocial engagement within interpersonal interactions (Caprara et al. 2012; Caprara and Steca 2007; Carlo et al. 2015; Eisenberg et al. 2006).

Based on the SEL approach, the CEPIDEAS Junior program (from the Italian acronym for Emotional and Prosocial Competence: An Idea for Schools, Vecchio, Pallini, et al. 2023 for an in-depth understanding of the program) is designed to implement prosocial education among elementary school students. This program employs targeted learning activities to improve

understanding of prosociality and its determinants, with the overall goal of cultivating a supportive and inclusive school environment that fosters positive social development.

The present study examined whether the CEPIDEAS Junior program has been effective in increasing children's sympathy and empathic self-efficacy, which represent two main components of the intervention, and prosocial behaviour, as the focal predictor, from pretest to posttest among primary school children, using diverse informants.

1 | The Importance of Cultivating Prosocial Behaviours

Prosocial behaviour is conceptualised as all voluntary actions intended to benefit another individual or group without any personal gains (Eisenberg et al. 2006). Thus, prosocial behaviour is motivated by other-oriented emotions, moral concern, and the desire to benefit, help, aid, or assist others rather than by concrete or social rewards. This multifaceted construct encompasses a wide range of behaviours such as helping, sharing, caring, consoling, cooperating, as well as altruistic actions (see Eisenberg et al. 2015). Understandably, prosocial behaviour has a positive impact on the target of these behaviours, and the literature underlines its beneficial effects for actors and the larger society (Caprara et al. 2012). Acting prosocially nourishes self-esteem and positive feelings about oneself, with a positive impact on eudaimonic well-being (Hui et al. 2020; Liu et al. 2021). Indeed, prosocial children who actively contribute to the well-being of others can experience a sense of competence and social validation, and they also tend to be viewed as more socially competent, resulting in positive social responses such as popularity, peer liking, and acceptance (see McDonald et al. 2023). In addition, high prosocial behaviour was associated with lower levels of internalising and externalising behaviours (Memmott-Elison et al. 2020).

Prosocial behaviour is also associated with positive relationships and interactions. For instance, children who act prosocially experience more sincere, supportive, and high-quality friendships and are less likely to exert psychological control over friends (Padilla-Walker et al. 2015). Scholars highlight the link between children's prosocial behaviour and the quality of teacher-child interactions. Prosocial behaviours are associated with greater intimacy, closeness, and teacher preference while being negatively related to teacher-student conflicts (Birch and Ladd 1998; Longobardi et al. 2021). Additionally, positive school relationships support academic engagement, as prosocial tendencies are consistently linked to better academic adjustment. Longitudinal studies show that early prosocial behaviours predict future academic achievements (Hammond et al. 2023; Spinrad and Liew 2022).

Given the established beneficial role of prosocial behaviour for individuals and society (e.g., Eisenberg et al. 2024; Mesurado et al. 2019), promoting these other-oriented behaviours has become a key focus of educational and developmental interventions. Among the primary socialising environments during childhood, schools offer a unique context for nurturing prosocial tendencies through both structured programs and

everyday interactions (Durlak et al. 2011; Luengo Kanacri et al. 2020). For instance, primary school-based interventions such as PATHS (Crean and Johnson 2013; Kusché and Greenberg 2012), Second Step (Holsen et al. 2008), and the Incredible Years (Webster-Stratton 2004) have largely demonstrated their efficacy in enhancing empathy and social skills through activities like role-playing and group discussions. Similarly, the 4Rs (Jones et al. 2010), RCCP (Aber et al. 1996), and RULER (Hoffmann et al. 2020; Reyes et al. 2012) have fostered positive peer interactions and reduced aggression by focusing on emotional literacy and conflict resolution. While these programs demonstrate the potential of school-based interventions to indirectly promote prosocial behaviour, many address Social-Emotional Learning more broadly, without explicitly targeting prosocial actions, such as caring, helping, or sharing. Thus, the additional feature of the CEPIDEAS Junior Program lies in its focus on specifically promoting prosocial behaviour, based on well-established socio-emotional mechanisms that underpin the development of such behaviours.

2 | Cultivating Sympathy for Enhancing Prosocial Behaviour

Studies on the determinants of other-oriented motivations and prosocial behaviours have identified empathy-related responding as one of the cornerstones on which these behaviours rest (Eisenberg et al. 2006). Within these responses, Eisenberg et al. (2006) distinguished between empathy, personal distress, and sympathy, identifying the latter as one of the most important sources of prosocial behaviours. Empathy is an emotional response that mirrors another's feelings, arising from understanding their emotional state (Davidov et al. 2013). Depending on cognitive regulation, such as perspective-taking, empathy can lead to sympathy, characterised by compassion and a desire to help, or to personal distress, marked by being overwhelmed and avoiding the situation. As such, regulated responses are governed by sympathy that, in turn, seems a critical driver of prosocial behaviour (Eisenberg et al. 2015). Specifically, sympathy consists of feeling compassion, sorrow, or concern for another person's difficulties or misfortunes and a desire to alleviate his or her discomfort or need. It results from empathy and apprehension of the other person's emotional state and is based on empathic sadness, although it is governed by cognitive processes such as perspective-taking or retrieval of information relevant to the other person's experience (Eisenberg et al. 2006). Therefore, children who experience sympathy may be more inclined to take actions that are more likely to result in prosocial behaviours (Eisenberg et al. 2015).

Researchers have found a positive relationship between sympathy and prosocial behaviour at different ages (Carlo et al. 2015; Eisenberg et al. 2015). Similarly to prosocial behaviour, research suggests that sympathy is associated with positive social-emotional and academic adjustment (Spinrad and Liew 2022). Indeed, more sympathetic children tend to be higher in personal characteristics such as self-regulation skills or social cognitive skills like perspective-taking compared with their counterparts. They are also more likely to cooperate in the classroom and exhibit appropriate behaviour; they are thus often viewed positively by peers and teachers (McDonald et al. 2023).

Studies have pointed out that sympathy is a strong motivating factor for other-oriented behaviours and their development (Davidov et al. 2013). For example, a six-year longitudinal study by Malti et al. (2016) showed that sympathy predicted higher levels of helping, cooperating, and sharing behaviours, as well as rates of change in the mean level of helping (6 to 12 years of age). A recent study conducted in middle childhood (Vecchio, Zava, et al. 2023) found that sympathy mediated the relationship between emotion regulation and prosocial behaviours reported by self, peers, and teachers. Therefore, the promotion of sympathy seems crucial for effective interventions aimed at fostering altruistic tendencies and social cooperation in educational settings (Spinrad and Eisenberg 2014).

3 | The Importance of Promoting Empathic Self-Efficacy Beliefs

An individual might possess the ability to feel concerned about another person in distress (i.e., sympathy), but may not necessarily be able to act prosocially to mitigate the other person's state of distress because he or she does not have self-perceptions consistent with these empathy-related skills (see Bandura 1997). Empirical investigations have shown that individuals may fail to enact other-oriented behaviours if they do not believe in their own abilities to effectively manage the challenges of these actions (Caprara and Steca 2007).

Within the framework of Social Cognitive Theory (Bandura 1986, 1997), self-efficacy beliefs “are judgments about the effectiveness with which a person believes he or she can act to achieve a goal or deal effectively with difficult situations”. Confidence in one's ability to achieve desired outcomes not only motivates engagement in activities but also encourages persistence in the face of challenges (Bandura 1997; Caprara 2002). Specifically, in the interest of the present study, perceived empathic self-efficacy takes the form of a unique knowledge structure that goes beyond sympathy, encompassing judgements about one's ability to understand and experience the feelings of others (Bandura 1986). Empathic self-efficacy refers to people's belief that they are able to understand, connect, and respond effectively to the emotions and experiences of others. In other words, it is the belief that one can put oneself in the shoes of others, perceive their moods, anticipate their requests for help, and be supportive in adverse situations (Caprara et al. 2001; Di Giunta et al. 2010).

Caprara (2002) pointed out that beliefs of being able to empathise with others are strongly related to beliefs of being able to manage and maintain positive interpersonal relationships, shaping up as efficacy beliefs in the broader interpersonal domain. Moreover, interpersonal efficacy beliefs, in addition to self-efficacy in emotion regulation, are important determinants of psychosocial adjustment, acting on various aspects of individual functioning, such as prosocial and delinquent behaviours and depressive symptoms (Bandura et al. 2003). A study with adolescents (Eklund et al. 2012) found that empathic self-efficacy explained prosocial behaviours to a greater extent than self-oriented emotional self-efficacy. These findings have been confirmed by other studies that have longitudinally examined the role of empathic self-efficacy in the development of prosociality from adolescence to early adulthood. Specifically, Alessandri et al. (2009) showed

that empathic self-efficacy promoted the development of prosocial tendencies 4 years later and significantly mediated the impact of emotional self-efficacy on prosociality. Two other longitudinal studies examined the interrelationship between empathic self-efficacy, traits, and values in relations with prosociality. In detail, Caprara et al. (2010), a study with a sample of late adolescents, found that, although agreeableness (i.e., one of the Big Five Personality Factors mostly related to prosocial behaviour) resulted as the main antecedent of prosocial behaviour, this relation was partially mediated by empathic self-efficacy. Similarly, in a sample of young adults, Caprara et al. (2012) showed that empathic self-efficacy beliefs are the proximal predictors of prosocial behaviour, mediating the predictive contribution of agreeableness and self-transcendence.

It is crucial to note that empathic self-efficacy beliefs are dynamic constructs, capable of evolving through experiences of mastering new skills and learning from successes and failures. This dynamic interplay between personal perceptions and real-world experiences highlights the potential for growth and development throughout an individual's lifespan, particularly in the realms of empathic self-efficacy and prosocial behaviours (Alessandri et al. 2009). Overall, this highlights the need to place empathic self-efficacy at the core of interventions designed to enhance prosociality.

4 | The Importance of Promoting Prosocial Behaviour and Prosocial-Related Skills in School Settings

Social and Emotional Learning (SEL, Durlak et al. 2025) provides a comprehensive model for universal, curriculum-integrated interventions that emphasise the intentional cultivation of emotional regulation, interpersonal skills, and responsible decision-making within educational settings. Substantial evidence has shown that when SEL programs are carefully designed and implemented with fidelity, they are associated with a broad range of positive outcomes, including improved academic performance, better classroom climate, and reductions in behavioural problems (Durlak et al. 2011, 2022; Taylor et al. 2017).

For instance, a meta-analysis by Cipriano et al. (2023), which included 424 studies across 53 countries and more than half a million students, reported significant, though modest, improvements in various domains: social-emotional learning (SEL) skills ($g = 0.228$), prosocial behaviour ($g = 0.193$), academic achievement ($g = 0.111$), reductions in externalising behaviours ($g = 0.171$), and emotional distress ($g = 0.149$). These findings confirm and extend earlier results by Durlak et al. (2011), supporting the broad applicability of SEL interventions across diverse educational systems. Focusing more specifically on primary education, Wigelsworth et al. (2022) reviewed 33 systematic and meta-analytic studies. The review highlights consistent evidence that universal, school-based SEL programs can support improvements in social and emotional competencies, reduce behavioural issues, and contribute positively to classroom outcomes. Other contributions have emphasised the importance of integrating SEL practices into the daily routines and classroom practices of children in primary schools. For example, Pervez and Galea (2024) highlight the role of primary schools in promoting

prosocial behaviour by equipping children with the emotional and social skills needed to engage in positive peer relationships, which are essential for their overall well-being and academic success. Finally, Spivak and Durlak (2016) stress that not all SEL programs automatically enhance prosocial behaviour; rather, these outcomes are most likely when prosociality is an explicit focus of the curriculum, supported through structured activities such as role-playing, empathy training, and cooperative tasks.

The broader theoretical framework that informs the CEPIDEAS Junior program aligns with the SEL framework by integrating prosocial behaviours and prosocial-related skills (e.g., sympathy and empathic self-efficacy) within the academic curriculum and daily classroom interactions, while drawing from additional theoretical perspectives that emphasise strengths-based development. Specifically, the Positive Youth Development (PYD) framework (Lerner et al. 2015), rather than focusing solely on preventing negative behaviours, highlights the value of fostering positive personal and social resources that enable children and adolescents to contribute constructively to their environments.

In line with these principles, the CEPIDEAS Junior program is a school-based intervention program specifically aimed at promoting individual and collective prosocial behaviours and social-emotional skills among primary school children. The program is an adaptation of the original CEPIDEA model (Caprara et al. 2014), designed for adolescents and validated with secondary school students, that integrates training on the determinants of prosocial conduct with academic programs. Its most important purpose is to raise awareness of prosocial values and promote prosocial behaviour at the personal and group levels by nurturing specific cognitive, social, and emotional competencies (Caprara et al. 2012, 2014, 2015). The CEPIDEAS Junior model includes five key components, which are addressed progressively throughout the program: (1) prosocial values;

(2) emotional competencies; (3) empathy and perspective-taking; (4) interpersonal communication skills; and (5) precursors of civic engagement. These components are conceived as inter-related domains that support children's capacity to engage in socially responsible and emotionally competent behaviour.

Drawing from Social Cognitive Theory (Bandura 1997), the CEPIDEAS Junior program emphasises the crucial role of self-efficacy in promoting children's prosocial behaviour. Through learning strategies based on mastery experiences, vicarious experiences, and persuasion, the program aims to strengthen children's confidence and belief that they can express and manage their emotions appropriately, that they can recognise the emotional states of others and respond empathetically (i.e., empathic self-efficacy), and that they can communicate effectively and self-regulate their behaviours. According to Bandura's theoretical framework, these strategies were adopted to promote self-efficacy beliefs as a cross-cutting component of the program applied to the specific determinants of prosocial behaviours.

The intervention, lasting 100 h over a school year, included 20 h of preliminary observation, 60 h of prosocial lessons divided into 3 units of 20 h each, and finally, 20 h of monitoring and evaluation. A distinctive feature of the CEPIDEAS Junior program is its full integration into the academic curriculum. Prosocial lessons were not delivered as isolated sessions or extracurricular activities but were embedded within regular instruction across subjects such as history, language, and science. For an illustration of this methodology, see Table 1.

The prosocial lessons were structured and implemented following the Sequenced, Active, Focused, and Explicit (SAFE) criteria (Durlak et al. 2011), which are essential for high-quality SEL interventions. Sequenced refers to the organisation of activities based on a logical progression to build key skills; Active refers

TABLE 1 | Examples of prosocial lessons: CEPIDEAS junior components, school subjects, and topics.

CEPIDEAS junior component	Subjects	Topics	Methodologies
Empathy and perspective-taking	Science	Organisation of bees, ants, and prairie voles	Brainstorming, circle time, cooperative learning, role play, group discussions
Empathy and perspective-taking	History and literature	Biographies to get to know each other better: Martin Luther King, Greta Thunberg, and Malala Yousafzai	Interactive reading, role play, circle time, cooperative learning, shared writing, group discussions
Sympathy and prosocial behaviour	Italian language	The helping relationship in writing: using flashback and flashforward in narrative texts	Cooperative learning, writing narrative texts using flashback, flashforward, and hypothetical sentences
Empathic responding	Italian language	Group reading of the story "Gea's Flight, a Tale about Empathy", followed by: text analysis, summary writing, and writing about a personal experience related to empathy	Circle time, cooperative learning, reading and writing narrative texts
Effective communication and empathic listening	Physical education	Fundamentals of volleyball and the concept of fair play, with focus on emotional regulation, accepting defeat, and teamwork for shared goals	Video modelling, volleyball practice, peer collaboration

to the promotion of active learning, engaging children through role-playing, group discussions, and hands-on exercises; Focused emphasises the importance of targeting specific behaviours, such as helping, caring, and sharing, and Explicit refers to the clear and detailed definition of programme goals, ensuring that both educators and students understand the purpose of each activity.

Overall, CEPIDEAS Junior provides an organised set of curriculum-based activities designed to foster prosocial behaviour in primary school children, focusing on key areas such as prosocial values, emotional competencies, empathy, communication skills, and early civic engagement.

5 | The Present Study

5.1 | The Aim of the Present Study Is Threefold

First, we examined whether the CEPIDEAS Junior program has a positive impact on changing teacher-reported levels of children's sympathy from pretest to posttest. Given that sympathy is one of the main components of the CEPIDEAS Junior program for promoting prosocial behaviour, we expected to find a higher level of children's emotional sensitivity to others' needs (i.e., sympathy) among those who take part in the intervention, compared with the control group, from pretest to posttest.

Second, we investigated the effect of the CEPIDEAS Junior program on the change of empathic self-efficacy from pretest to posttest. As previously stated, the CEPIDEAS Junior program is grounded in the SCT, and Bandura's conceptualization of sources of self-efficacy beliefs (1997; i.e., mastery experience, vicarious experiences, and persuasion) was adopted as a cross-cutting component of the program for promoting prosocial-related skills (e.g., empathic domain). Thus, we expected that participation in the intervention would have a positive effect on children's perception of their capabilities to understand, connect, and respond effectively to the emotions and experiences of others.

Third, we investigated the effect of the CEPIDEAS Junior program on the change of peer-reported prosocial behaviour from pretest to posttest. As prosocial behaviour is the main outcome of the program, we hypothesized that participation in the CEPIDEAS Junior program would be positively associated with an increase in peer-reported prosocial behaviours among primary school students.

6 | Method

6.1 | Participants

Participants in the study were 1045 pupils from second to fourth grade ($M_{\text{age}} = 8.51$, $SD = 0.73$, ranging in age from 7 to 10 years; 471 girls and 534 boys; sex was not specified for 40 children). The study involved a total of 54 classes across both groups, with an average of 19.3 children per class. Attrition was negligible, with only two participants not completing the study, and this minimal dropout did not lead to significant differences between those who completed the study and those who did not. Regarding nationality, 84.2% of the children were Italian, and

4.9% came from another country; for 10.9%, this information was missing.

Moreover, 72.4% of the mothers were Italian nationals, and 15.8% were from another country (nationality was not specified for 11.8% of the mothers). Finally, 76.3% of the fathers were Italian, and 11.9% came from another country (nationality was not specified for 11.8% of the fathers).

Participants were divided into two groups: the intervention group comprised 527 children ($N = 241$ girls), ranging in age from 7 to 10 years ($M_{\text{age}} = 8.48$ years, $SD = 0.75$) and the control group comprised 518 children ($N = 230$ girls), ranging in age from 7 to 10 years ($M_{\text{age}} = 8.56$ years, $SD = 0.71$). In the intervention group, 4.5% of the children were of foreign nationality, while 95.5% held Italian nationality. Similarly, in the control group, 6.6% of the children were of foreign nationality, and 93.4% held Italian nationality. These proportions are slightly lower than the national data reported by the Italian Ministry of Education (MIUR 2022), which indicates that 10.3% of students in Italian schools hold foreign nationality. However, they remain broadly reflective of the general primary school demographic in Italy.

The intervention was conducted by 27 pre-service teachers in collaboration with the in-service teachers, one per class. The children and their teachers were recruited from 13 schools in the metropolitan area of Rome.

We investigated the program's efficacy in enhancing prosocial behaviour via a nonrandomized quasi-experimental design. The schools participating in the CEPIDEAS Junior program were selected based on their availability and willingness to collaborate with our research team. These schools hosted the program as part of preservice teacher training activities, which were integrated into the curriculum of specific teacher training institutions. Both the intervention group and control group were assessed at two different time points, 6 months apart, corresponding to the beginning and the end of the intervention, respectively (i.e., pre-test and post-test).

6.2 | Procedure

The program was implemented over 9 months from September to June, from the start to the end of the school year. This period included three main activities: teacher training, pre- and post-test assessment phases, and delivery of the prosocial lesson blocks.

The program began with targeted training for pre-service teachers, who were students in the Primary Education master's degree program. The training included 6 h on the theoretical and methodological principles of the CEPIDEAS Junior model, followed by 8 h of in-person workshops and 17 h of remote teamwork to design prosocial lessons. As part of their teaching internship, the pre-service teachers planned and refined these lessons under supervision. The program was manualised before being delivered and implemented.

Regarding the delivery of prosocial lessons in the intervention group, the CEPIDEAS Junior program was implemented by pre-service teachers as part of their supervised training activities,

with support from the in-service teachers in the intervention classrooms. Only some classes within the participating schools took part in the intervention, while other classes served as control groups. Importantly, the control classes were taught exclusively by in-service teachers who did not have contact with the pre-service teachers or the intervention program. This ensured a clear distinction between the intervention and control groups. Additionally, the intervention followed the same model in all participating classrooms, ensuring consistency in its implementation.

During the nine-month intervention period, implementation quality was overseen by the Principal Investigator through regular meetings between the research team and the pre-service teachers. These meetings aimed to monitor the actual duration of the sessions delivered in schools and to ensure that the activities adhered to the CEPIDEAS Junior model. The program was supported by a practitioner-oriented manual and supervised through a dual system complemented by daily logs and formal certification of lesson completion. This structure helped maintain fidelity to the program's principles and ensured consistency across school settings.

Regarding assessment, following recommended practice in developmental research (e.g., Zuffianò et al. 2018), a multi-informant approach was used to assess the impact of the program, including peer reports, children's self-reports, and in-service teachers' reports. The children's assessment took about 30 min and was administered during school hours at the two time points by appropriately trained pre-service teachers who conducted the pre- and post-testing as well as the intervention. The assessment took place in both the intervention and control groups.

Written informed consent was obtained from 95.7% of the parents. Children whose parents did not provide written informed consent still took part in the intervention activities, as the program was integrated into the standard school curriculum. However, these children were excluded from the assessment phase and data analysis, in accordance with ethical guidelines. This approach ensured that all students could benefit from the intervention while maintaining compliance with research standards. Moreover, both the schools and the parents were informed by letter of the contents and aims of the research and data analysis. Finally, the children themselves verbally agreed to participate in the study before completing the questionnaire.

The study was approved by the Ethics Commission of (deleted for Department of Education, University of Roma Tre review), and the research procedure met the APA's ethical standards for research with children. The participants did not receive any rewards or gifts for joining the study.

6.3 | Measures

6.3.1 | Prosocial Behaviour

Prosocial behaviour was assessed by peer-ratings using an adapted version of the Prosocial Behaviour scale (PB scale) developed by (Caprara and Pastorelli 1993; Caprara et al. 1991). Classmates evaluated their peer's propensity to behave prosocially by

rating—on a 3-point Likert scale (from 1 = *never* to 3 = *many times*)—three items about sharing, caring, or helping behaviours (e.g., “console his/her classmate”; $\alpha = 0.91$ and 0.91 at T1 and T2 respectively).

6.3.2 | Sympathy

Sympathy was assessed by teachers completing the Teachers' Reports of Children's Sympathy Scale (Zhou et al. 2003). The scale consists of 5 items (e.g., “This child often feels sorry for others who are less fortunate” $\alpha = 0.93$ and 0.95 at T1 and T2 respectively), rated on a 5-point Likert scale (from 1 = *very slightly or not at all* to 5 = *extremely*), and provides a measure of children observed compassionate behaviour or reactions for others' feelings.

6.3.3 | Empathic Self-Efficacy

Empathic Self-Efficacy was evaluated by children completing the Empathic Self-Efficacy scale (ESE; Caprara et al. 2001; Di Giunta et al. 2010). The scale consists of 3 items assessing the perceived ability to perceive another person's feelings and to respond empathetically to another person's distress and misfortune (e.g., “How well can you experience how a person in trouble feels?” $\alpha = 0.71$ and 0.75 at T1 and T2, respectively) on a 5-point Likert scale (1 = *not well at all* to 5 = *very well*).

6.4 | Data Analysis Strategy

First, to test the data for normality and to examine associations among variables, we ran preliminary analyses (i.e., means, standard deviations, skewness, kurtosis, and correlations). In this phase, we calculated the attrition rate, which resulted in a low level given that only 0.2% of participants did not complete the post-test assessment (i.e., 2 out of 1045).

Second, given the longitudinal nature of our data (pretest–posttest), we tested the longitudinal measurement invariance within the Structural Equation Modelling (SEM) framework (Asparouhov and Muthén 2009) of each measure (sympathy, empathic self-efficacy, and prosocial behaviour) to account for potential sources of bias in item interpretation and rating scale usage across time. Following the recommendation of Vandenberg and Lance (2000), we tested the configural invariance, in which factor loadings and intercepts were estimated freely, metric invariance, in which factor loadings of the same item were constrained to be equal across time, and scalar invariance, in which both factor loadings and intercepts of the same item were constrained to be equal across time. To test the plausibility of these constraints, we compared the models using the corrected chi-square difference test ($\Delta\chi^2$) (Muthén & Muthén, 1998–2017), and changes in the Comparative Fit Index (ΔCFI) with a critical level of 0.01 (Cheung and Rensvold 2002).

Third, to investigate the effect of the intervention on teacher-reported sympathy, empathic self-efficacy, and peer-rated prosocial behaviour from pretest to posttest, we used the Latent Difference Score (LDS) approach (McArdle and Hamagami 2001) with

multiple indicators, which allowed us to model a second-order latent factor, representing the latent estimated difference score from the pretest to the posttest (McArdle and Hamagami 2001). The LDS has the advantage of modelling the true (i.e., error-free) change between pretest and posttest scores as a latent variable with its own mean (average change across individuals) and variance (inter-individual variability in change) (Geiser et al. 2010; Vecchione and Zuffianò 2024). Accordingly, we modelled an unobserved latent variable, delta (Δ), by adding a fixed value of 1.0 on the regression paths from the latent pre-test score and Δ to the latent post-test variable of each construct. This approach allows us to mimic the difference between posttest and pretest scores while accounting for measurement error and baseline differences between individuals (McArdle 2009), thereby estimating change between pre- and post-intervention as a latent, unobserved construct. Once the latent change factor has been modelled, we included the effect of the intervention (0 = control group, 1 = intervention group) as a predictor of both the latent change (Δ) and the latent initial level factor for each model. Moreover, to account for possible differences at the initial level between the intervention and control group on the variables of interest, the latent change factor for each model was regressed on the interaction term *intervention* \times *pretest scores*.

Finally, to investigate whether the effect of the intervention on teacher-reported sympathy, empathic self-efficacy, and prosocial behaviour was altered or moderated by participant characteristics, the latent change score and pretest latent factor were regressed on gender and age, and on the interaction terms *intervention* \times *gender* and *intervention* \times *age*.

All analyses were conducted using MPlus 8.11 (Muthén & Muthén, 1998–2024) with the Maximum Likelihood with robust standard errors (MLR) estimator to account for non-normality and to handle missing data. Moreover, given that the assignment of children to the intervention or control conditions occurred at the classroom level, we accounted for the clustering of observations by adopting the Cluster robust-standard error method (McNeish et al. 2017). Specifically, we used the TYPE = COMPLEX function in Mplus 8.11, specifying classroom as the clustering variable in all tested models. This approach adjusts standard errors and parameter estimates for the non-independence of observations within classrooms, without requiring multilevel or random specification of the LDS models.

As such, it provides unbiased standard errors and valid statistical inferences regarding the effects of the CEPIDEAS Junior program, ensuring that conclusions about intervention efficacy are robust to the hierarchical structure of the data.

To evaluate the goodness of fit of our models, we used the following indicators: Comparative-Fit-Index (CFI) and Tucker-Lewis-Index values greater than 0.90 as indicators of acceptable model fit, and CFI/TLI > 0.95 as indicators of good model fit (Brown 2015), as well as Root-Mean-Square-Error-of-Approximation (RMSEA) with 90% Confidence Interval (CI) values lower than 0.08 as indicators of moderate model fit, and below 0.05 as an indicator of good model fit (Brown 2015).

7 | Results

7.1 | Preliminary Analyses

The preliminary analyses indicated that there were no normality issues with the data: none of the study variables had values of below |2| for skewness or |7| for kurtosis (see Curran et al. 1996). Descriptive statistics and the full set of correlations among the research variables are presented in Table 2.

7.2 | Results of the Longitudinal Measurement Invariance

As reported in Table 3, longitudinal measurement invariance at the scalar level was reached for each measure (sympathy, empathic self-efficacy, and prosocial behaviour) as indicated by the non-significant $\Delta\chi^2$ and ΔCFI . Overall, results indicated that all the scales yielded reliable and equivalent psychometric properties from pretest to posttest. These consistencies allow for meaningful comparisons of changes in sympathy, empathic self-efficacy, and prosocial behaviour over time.

7.3 | The Effect of the Intervention Program on Sympathy

The LDS model of the impact of the intervention on sympathy revealed a good fit for the data ($\chi^2(69) = 94.45$, $p = 0.02$; CFI = 0.99, TLI = 0.99; RMSEA = 0.02 [90% CI: 0.01, 0.03]). As

TABLE 2 | Descriptive statistics and correlations among study variables.

	<i>M</i> tot	<i>SD</i> tot	<i>M</i> intervention	<i>SD</i> intervention	<i>M</i> control	<i>SD</i> control	1	2	3	4	5	6	7
1. Age	8.51	0.73	8.48	0.75	8.56	0.75	—						
2. Gender	1.47	0.49	1.47	0.49	1.47	0.49	0.01	—					
3. Prosocial behaviour T1	6.37	0.96	6.42	0.97	6.32	0.94	0.03	0.37***	—				
4. Prosocial behaviour T2	6.50	0.96	6.65	0.97	6.35	0.92	0.04	0.31***	0.79***	—			
5. Sympathy T1	3.40	0.89	3.34	0.93	3.47	0.85	0.03	0.35***	0.43***	0.37***	—		
6. Sympathy T2	3.65	0.87	3.80	0.90	3.50	0.82	-0.01	0.30***	0.39***	0.42***	0.68***	—	
7. Empathic SE T1	3.70	0.88	3.63	0.90	3.77	0.86	0.04	0.17***	0.23***	0.18***	0.15***	0.09*	—
8. Empathic SE T2	3.77	0.89	3.87	0.92	3.67	0.84	0.05	0.20***	0.20***	0.28***	0.16***	0.24***	0.55***

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

TABLE 3 | Model fits and comparisons of longitudinal measurement invariance of sympathy, empathic Self-efficacy and prosocial behaviour.

Model	χ^2	df	<i>p</i>	scf	CFI	TLI	RMSEA (90% C.I)	SRMR	MC	$\Delta\chi^2$	Δ df	<i>p</i> ($\Delta\chi^2$)	Δ CFI
Sympathy (S)													
1. Configural	44.69	29	0.03	2.43	0.99	0.99	0.03 (0.01, 0.04)	0.02					
2. Metric	54.26	33	0.01	2.25	0.99	0.98	0.03 (0.01, 0.04)	0.03	2 vs. 1	14.02	4	0.01	0.00
3. Scalar	56.52	37	0.02	2.31	0.99	0.99	0.03 (0.01, 0.04)	0.04	3 vs. 2	3.00	4	0.56	0.00
Empathic self-efficacy (E-SE)													
1. Configural	5.64	5	0.34	1.32	1.00	1.00	0.01 (0.00, 0.05)	0.01					
2. Metric	7.21	7	0.41	1.22	1.00	1.00	0.01 (0.00, 0.04)	0.02	2 vs. 1	1.38	2	0.50	0.00
3. Scalar	11.90	9	0.22	1.19	1.00	1.00	0.02 (0.00, 0.04)	0.02	3 vs. 2	4.95	2	0.08	0.00
Prosocial behaviour (PB)													
1. Configural	6.96	5	0.22	2.02	1.00	1.00	0.02 (0.00, 0.05)	0.02					
2. Metric	11.08	7	0.14	1.73	1.00	1.00	0.02 (0.00, 0.05)	0.04	2 vs. 1	5.07	2	0.08	0.00
3. Scalar	17.21	9	0.05	1.97	1.00	0.99	0.03 (0.00, 0.05)	0.04	3 vs. 2	5.24	2	0.07	0.00

Note: The following fit indexes are reported are given below.

Abbreviations: CFI = comparative-fit index; df = degrees of freedom; MC = model comparison; $p = \chi^2/p$ value; $p(\Delta\chi^2) = \Delta\chi^2/p$ value; RMSEA = root mean square error of approximation with 90% confidence intervals (90% CI); scf = scaling correction factor; SRMR = standardised root mean square residual; TLI = Tucker-Lewis index; χ^2 = chi square; Δ CFI = CFI difference test; Δ df = degrees of freedom difference; $\Delta\chi^2$ = chi square difference test.

TABLE 4 | Intervention and covariates effects on pretest score (T1) and latent difference scores (Δ) of teacher-report sympathy (S).

	T1 S			Δ S		
	<i>b</i> (β)	SE	<i>p</i>	<i>b</i> (β)	SE	<i>p</i>
1. Intervention	-0.224 (-0.136)	0.149	0.132	0.359 (0.287)	0.109	< 0.05
2. T1 S	—	—	—	-0.314 (-0.412)	0.046	< 0.001
3. Intervention \times T1 S	—	—	—	0.033	0.087	0.699
4. Gender (0 = boys, 1 = girls)	0.466 (0.284)	0.090	< 0.001	0.087 (0.069)	0.060	0.145
5. Age	0.047 (0.042)	0.071	0.508	-0.062 (-0.072)	0.084	0.464
6. Intervention \times gender	0.257 (0.134)	0.125	< 0.05	0.043 (0.030)	0.082	0.595
7. Intervention \times age	-0.074 (-0.048)	0.148	0.618	-0.162 (-0.138)	0.151	0.285

Note: Unstandardized (*b*) and standardised (β) regression coefficients, standard error (SE), and *p* value (*p*) of *b* are reported. Interaction terms of models 3 and 7 were tested and not retained in the final model because they were not statistically significant.

reported in Table 4, the intervention group displayed a significant increase in teacher-reported sympathy compared to the control group (Cohen's $d = 0.708$ [95% CI: 0.287, 1.129]), suggesting that children who participated in the CEPIDEA Junior program showed an increased emotional sensitivity to others' needs from pretest to posttest as reported by their teachers. Moreover, results showed a significant effect of the interaction term *intervention \times gender* on the initial level of sympathy. In detail, simple slope analyses evidenced that both boys and girls in the intervention group reported higher initial levels of sympathy compared to boys and girls in the control group, respectively. However, taking into account these differences at the pretest did not alter the significant positive effect of the intervention on the change in sympathy from pretest to posttest.

7.4 | The Effect of the Intervention Program on Empathic Self-Efficacy

The LDS model for examining the impact of the intervention on empathic self-efficacy showed a good fit for the data ($\chi^2(21) = 27.41$, $p = 0.16$; CFI = 1.00, TLI = 0.99; RMSEA = 0.02

[90% CI: 0.00, 0.03]; SRMR = 0.02). As detailed in Table 5, results showed that the intervention group displayed a significant increase in empathic self-efficacy compared to the control group (Cohen's $d = 0.603$ [95% CI: 0.307, 0.898]) from pretest to posttest, evidencing that the CEPIDEA Junior program enhanced children's perception of their ability to understand and respond to others' emotions and needs.

7.5 | The Effect of the Intervention Program on Prosocial Behaviour

The results of the LDS model to evaluate the effect of the intervention (0 = control 1 = intervention) on prosocial behaviour showed a good fit for the data ($\chi^2(21) = 76.90$, $p < 0.001$; CFI = 0.97, TLI = 0.96; RMSEA = 0.05 [90% CI: 0.04, 0.07]). As reported in this Table 6 the intervention did not significantly predict the positive change in prosocial behaviour from pretest to posttest (Cohen's $d = 0.381$ [95% CI: -0.041, 0.802]). Thus, peer-rated prosocial behaviour did not show a significant difference between the intervention and control group (Table 6).

TABLE 5 | Intervention and covariates effects on pretest score (T1) and latent difference scores (Δ) of empathic self-efficacy (E-SE).

	T1 E-SE			Δ E-SE		
	<i>b</i> (β)	SE	<i>p</i>	<i>b</i> (β)	SE	<i>p</i>
1. Intervention	-0.146 (-0.094)	0.065	< 0.05	0.324 (0.255)	0.081	< 0.001
2. T1 E-SE	—	—	—	-0.305 (-0.373)	0.042	< 0.001
3. Intervention \times T1 E-SE	—	—	—	0.051	0.076	0.503
4. Gender (0 = boys, 1 = girls)	0.326 (0.210)	0.058	< 0.001	0.155 (0.122)	0.057	< 0.05
5. Age	0.050 (0.047)	0.045	0.265	0.038 (0.044)	0.047	0.421
6. Intervention \times gender	0.136 (0.075)	0.101	0.177	0.002 (0.001)	0.112	0.985
7. Intervention \times age	-0.105 (-0.074)	0.091	0.248	-0.014 (-0.012)	0.094	0.880

Note: Unstandardized (*b*) and standardised (β) regression coefficients, standard error (SE), and *p* value (*p*) of *b* are reported. Interaction terms of models 3, 6, and 7 were tested and not retained in the final model because they were not statistically significant.

TABLE 6 | Intervention and covariates effects on pretest score (T1) and latent difference scores (Δ) of peer-rating prosocial behaviour (PB).

	T1 PB			Δ PB		
	<i>b</i> (β)	SE	<i>p</i>	<i>b</i> (β)	SE	<i>p</i>
1. Intervention	0.022 (0.034)	0.030	0.450	0.069 (0.175)	0.039	0.076
2. T1 PB	—	—	—	-0.189 (-0.318)	0.035	< 0.001
3. Intervention \times T1 PB	—	—	—	-0.031	0.054	0.570
4. Gender (0 = boys, 1 = girls)	0.280 (0.422)	0.023	< 0.001	0.011 (0.029)	0.017	0.504
5. Age	0.023 (0.050)	0.020	0.265	0.015 (0.057)	0.021	0.453
6. Intervention \times gender	0.066 (0.086)	0.044	0.133	-0.029 (-0.063)	0.030	0.337
7. Intervention \times age	-0.050 (-0.083)	0.043	0.246	0.044 (0.122)	0.037	0.240

Note: Unstandardized (*b*) and standardised (β) regression coefficients, standard error (SE), and *p* value (*p*) of *b* are reported. Interaction terms of models 3, 6, and 7 were tested and not retained in the final model because they were not statistically significant.

8 | Discussion

Our study investigated the efficacy of the CEPIDEAS Junior program, a school-based intervention that aims to promote prosocial behaviours among primary school children. Overall, the results partially supported the expected outcomes. Specifically, the CEPIDEAS Junior program increases teacher-reported sympathy and children's self-reported empathic self-efficacy, while no significant differences were found in peer-reported prosocial behaviour. Children who participated in the intervention, compared with the control group, reported an increase from pretest to posttest in the enactment of other-oriented concern, and reactions to each other's emotional states, as well as in the perceived capacity to recognise feelings and respond empathetically to each other's distress. These results suggested that the program successfully enhanced children's emotional sensitivity and confidence in their capacity to understand and respond to others' emotional needs.

However, the intervention did not produce a statistically significant increase in peer-reported prosocial behaviour, indicating that changes in internal dispositions and perceived capacities may not immediately translate into observable behavioural changes among peers. Importantly, the absence of significant effects on prosocial behaviour aligns with a previous study on the CEPIDEA program with adolescents, which also reported

improvements in self-efficacy and prosocial values, but no consistent changes in observed prosocial behaviours. These findings suggest that while prosocial dispositions such as sympathy and empathic self-efficacy are critical precursors to prosocial behaviour, their impact on actual behaviours may unfold over longer developmental trajectories (Caprara et al. 2015).

Our findings confirm previous studies on the CEPIDEA model implemented with adolescents (Caprara et al. 2014, 2015), underscoring the importance of the SCT and SEL framework in guiding intervention activities and actions within the school context to promote better social-emotional adjustment in children. The CEPIDEAS Junior program is explicitly grounded in Social Cognitive Theory (Bandura 1986, 1997), which identifies self-efficacy beliefs as key drivers of human functioning. While many school-based interventions aim to promote socio-emotional skills by increasing children's knowledge or shaping their attitudes, CEPIDEAS Junior takes a step further by targeting children's confidence in their own ability to translate these skills into action. This focus is crucial because, as SCT posits, individuals are more likely to initiate and persist in behaviours when they feel capable of performing them. In the context of prosocial development, empathic self-efficacy becomes the mechanism through which children move from understanding others' emotions and feeling concern (i.e., sympathy) to acting in ways that are supportive and constructive. In this regard,

the CEPIDEAS Junior program used SCT recommendations for behavioural and cognitive changes (Bandura 1997) through mastery experience, modelling, and persuasion as sources of self-efficacy in cognitive, emotional, and interpersonal skills that promote prosocial behaviours. Children in the classroom were exposed to the practice of prosocial behaviours and related prosocial skills (mastery experience) as well as to videos of prosocial behaviours enacted by others (modelling), and they received encouragement and feedback on performance (persuasion). In addition, the CEPIDEAS Junior intervention integrated learning about the determinants of prosociality with curricular contents, providing primary school students with continuous socialisation with prosocial values and skills. In summary, the CEPIDEAS Junior program shows the potential of Social Cognitive Theory for developing school interventions aimed at fostering not only prosocial behaviour but also supporting the development of self-efficacy beliefs concerning the activation and use of prosocial skills in diverse relational scenarios.

Our study presents some theoretical, methodological, and implementation strengths. From a theoretical perspective, it offers evidence of the importance of using an established theoretical framework, such as SCT (Bandura 1986, 1997) to guide a behaviour change intervention in an educational setting. Secondly, the CEPIDEAS Junior program aligns with the principles of Sequenced, Active, Focused, and Explicit (SAFE) practices, which are recognised as benchmarks for high-quality SEL programs (Durlak et al. 2011; Taylor et al. 2017). The relevance of adhering to SAFE criteria is also supported by recent meta-analytic findings. For instance, Cipriano et al. (2023) reported that SEL programs incorporating SAFE components yielded stronger effects across social-emotional, behavioural, and academic domains. This reinforces the importance of intentional program design in maximising the developmental impact of SEL interventions. Another key strength of the program is its integration with the school curriculum, allowing prosocial-related skills and behaviours to be nurtured alongside academic learning. This alignment enhances the program's relevance and facilitates its incorporation into everyday classroom activities, thereby contributing to its positive impact on children's development (Durlak et al. 2011). Moreover, the program was carried out by pre-service teachers who met the criteria for program sustainability (Mancini and Marek 2004). They were involved in the design of the action plan, committed to the program's mission and goals, qualified to work on the project, adequately trained on theories and methods, and monitored by a supervisor. The adaptation of the CEPIDEA model, previously validated with adolescents (Caprara et al. 2015; Luengo Kanacri et al. 2020), suggests its potential efficacy for younger children, offering early preventive support that may help address behavioural challenges and encourage positive developmental trajectories (Eisenberg et al. 2015). Finally, from a methodological perspective, the positive effect of the CEPIDEA Junior program on teacher-reported sympathy and empathic self-efficacy has been found on outcomes measured by different informants (i.e., teacher and self), thereby reducing the risk of common single-informant bias (McCrae 2018). Moreover, the use of multiple indicator LDS models combined with the Cluster robust-standard error method (McNeish et al. 2017), which accounts for the nesting of observations within classrooms, allowed us to rule out potential biased results related to

measurement error or nested data, enhancing the robustness of our findings.

In summary, the study highlights that the CEPIDEAS Junior program is a promising school-based intervention that can be effectively integrated into the academic curriculum and is suitable for younger populations, supporting the development of socio-emotional skills such as sympathy and empathic self-efficacy, which are considered important determinants of prosocial behaviour.

9 | Limitations and Future Directions

Several limitations should be considered when interpreting these results. First, while improvements in sympathy and empathic self-efficacy were observed, no significant change emerged in peer-reported prosocial behaviour, underscoring the challenge of translating internal socio-emotional gains into observable actions within peer interactions. Importantly, longitudinal studies and follow-up assessments are needed to clarify whether increases in prosocial behaviour may emerge over a longer period and whether the observed improvements in sympathy and empathic self-efficacy can predict or sustain prosocial behaviours over time. Such research would offer a more nuanced understanding of how these socio-emotional determinants shape the development and stability of prosociality. Second, while the non-randomised design represents a limitation, we addressed this by employing a quasi-experimental framework, including a baseline assessment and latent difference score modelling, to control for initial group differences and enhance the validity of the findings. Third, despite the schools of the Rome metropolitan area reflecting the Italian context, given its variety of urban and rural neighbourhoods, future studies should replicate the study to generalise the CEPIDEA program in other cultural contexts.

10 | Conclusions and Implications

As suggested by Hammond et al. (2023) in designing intervention programs for the development of prosocial behaviours, it is necessary to consider the school as a distinctive social system in which prosocial behaviours are not only about the relationships between two people, but also about social relationships in the classroom (e.g., refraining from interrupting), pedagogical prosocial behaviours adopted by teachers (e.g., cooperative learning), and prosocial behaviours among peers (e.g., being inclusive and friendly). Taking into account this multi-dimensionality, the CEPIDEAS Junior program is designed to integrate curricular contents with teaching methodologies that promote both individual and collective prosocial behaviours and prosocial-related skills. The program effectively enhanced children's sympathy and empathic self-efficacy, showing that school-based interventions can support socio-emotional development already in primary school. Importantly, the integration of these components into the regular curriculum makes it easier to reach all students, without requiring additional time or resources outside standard instruction. The adoption of Social Cognitive Theory (Bandura 1986, 1997) as a framework allowed the program to work on both emotional aspects and beliefs about one's own ability to respond to others, offering a well-rounded approach.

The current findings have implications for schools, researchers in the field, and policymakers. Integrating empathic self-efficacy training into the regular school curriculum, as proposed in the CEPIDEAS Junior program, appears to align well with current efforts to promote socio-emotional learning and foster inclusive classroom environments. The use of structured, curriculum-integrated activities following the SAFE principles (Durlak et al. 2011) represents a valuable approach for enhancing these capacities in the classroom context. While promising, these findings point to the need to consider that changes in beliefs and attitudes may require time to translate into sustained prosocial interactions.

Ethics Statement

All procedures performed involving human participants were in accordance with the ethical standards of the institutional research committee at Roma Tre University and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent

Informed consent was obtained from all individual adult participants included in the study; assent was obtained from children.

Conflicts of Interest

The authors declare no conflicts of interest.

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