Effectiveness of Prosocial Behavior Interventions: A Meta-analysis

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Following the current prevailing view in psychology, the intervention programs focused primarily on reducing risk factors associated with internalizing and externalizing problems without paying much attention to the promotion or stimulation of constructive behaviors. Consequently, there are several intervention programs of known effectiveness designed to discourage disruptive behaviors such as aggressive behavior in children and teenagers, which then study their secondary effect on positive behavior, for example, prosociality [1]. However, with the emergence of positive psychology, the development of programs began to directly promote prosocial attitudes or behaviors in children as well as adolescents. With this change in approach in the manner of designing and addressing intervention, the need arises to analyze the efficacy of these intervention programs whose main purpose is to promote prosocial behaviors.

Prosocial Behaviors

Prosocial behaviors have been defined as voluntary actions aimed at sharing, comforting, and helping others [2–4]. Several research studies have shown that helping behavior arises at an early age, for example, studies performed by Warneken and Tomasello [5] found evidence that infants between 14 and 18 months of age display instrumental helping behaviors. Instrumental helping develops once a child can perceive the needs of others and can spontaneously provide help, for example, in reaching for an object or removing an obstacle without receiving a reward. According to Warneken and Tomasello [5], instrumental helping is the first rudiment of altruistic behavior. Other studies showed that cooperation and sharing behaviors appear around the ages of 24 and 25 months, respectively [6, 7],

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while more elaborate prosocial behaviors such as comforting others first appear around the age of 30 months [8].

Although many studies on prosociality have been conducted, there are less longitudinal studies (performed on the same participants across time) that report the evolution of prosocial behaviors during the different stages of life span. Since previous studies have shown the relationship that exists between the development of moral reasoning and prosocial behavior, the authors were inclined to affirm that prosocial behavior increased with age [9]. However, a recent study conducted on children and adolescents from 10 to 17 years old found that prosocial behavior patterns are relatively stable and identified three distinct prosocial trajectories, high, medium, and low, which remained stable across the ages under study [10]. Hence, one may deduce that having acquired the maximum level of prosocial reasoning does not guarantee the emergence of prosocial behavior, since the latter is also the fruit of a voluntary and intentional decision.

Furthermore, it is encouraging to know that previous research has indicated that prosocial behavior is a relatively supple variable that can be stimulated through appropriate educational actions [e.g., 11, 6]. "The main goals of humane education are to provide children the opportunity to learn and understand another's experience, share their feelings, and to help others. Each of these components is associated with the feeling of having empathy for others" [12 (399)] and, consequently, would lead to the manifestation of greater levels of helping behavior. Prosocial behaviors, such as sharing, comforting, and being available to help others, are behaviors that are highly valued in the society because they contribute to the social well-being and to the construction of a more equitable world, hence the importance of analyzing the efficacy of existing intervention programs given that the critical role of prosocial behaviors on civic and social commitments are well known, as well as in their prevention of crime and of disruptive behaviors.

Prosocial Behaviors and Aggressive Behaviors

Prosocial and aggressive behaviors are independent behavioral tendencies derived from different dispositions [13]. However, there is substantial literature indicating that prosocial behaviors act as protective factors against aggressive behaviors [14]. Previous research indicates that "while aggressive behaviors are critical due to their negative effects on psychosocial adjustment in the short-, mid- and long-term, the lack of prosocial behavior seems to be critical especially due to its long-term effects" [15 (213)]. For example, longitudinal studies developed by Flynn and collaborators [10 (476)] showed that a medium or high prosocial trajectory was associated with significantly less externalizing behavior than the low trajectory, and being on a high prosocial trajectory was associated with reduced borderline personality features compared with the low prosocial trajectory.

Early intervention is an important element for the promotion of positive behavior and for the prevention of violence and its consequences. Evidence suggests that when earlier interventions are made, better prognoses in development can be expected given the plasticity that children have. However, any intervention program – even though it is not applied during childhood – can be a positive promotion factor for growth.

The Current Meta-analysis

Many intervention programs with the purpose of mitigating aggressive behaviors in the general population as well as in children or adolescents with serious behavioral problems [16] also show having an effect on the promotion of prosocial behaviors. The interest of this meta-analysis is precisely the possibility of studying whether the inverse effect exists, that is, if existing prosocial intervention programs are successful at efficiently promoting prosocial behaviors, while they mitigate aggressive behaviors. More specifically, this meta-analysis includes an examination of the effectiveness of intervention programs

intended for children and adolescents between the ages of 8 and 18 years old, developed between 2000 and July 2017 inclusive.

Method

The performance of this meta-analysis followed the same procedures as Ciocanel and collaborators in a recent meta-analysis performed in 2017 [17]. The inclusion criteria for studies in the meta-analysis included the following:

Population

The selection of the population focused on interventions for children and adolescents ranging between the ages of 8 and 18 for both sexes. The interventions that were intended for relatives or adults and who did not directly act upon the children and adolescents were excluded. Since our attention was focused on the promotion of prosocial behavior on the general public, those populations with specific characteristics such as high levels of aggressiveness, disability, and mental disorders, among others, were excluded.

Intervention

Those interventions whose main goal was to promote prosocial behaviors in children and adolescents and whose research design included experimental and control groups were selected. Those interventions whose main purpose was inhibiting aggressive behaviors and whose secondary purpose were to promote prosocial behaviors were excluded. The duration of the intervention was not considered an inclusion criterion.

Outcome and Setting

Any prosocial behavior, such as cooperative, helpful, or comforting behaviors, is measured at the onset and finish of the intervention through self-reporting, third-party reports, or observations. Similarly, as a result, the measurement of aggressive behavior was taken, described as verbal aggression, physical aggression, breaking rules, starting a fight, etc.

All interventions with significant and nonsignificant results in comparison with the control group were included. Interventions that were carried out inside and outside of the school settings were included.

Design

Those interventions that were chosen had a design that contained a control group allowing the comparison of prosocial and aggressive behavior intervention results. All publications appearing between 2000 and September 2017 were selected, and only those written in English, Spanish, or Portuguese were included. Publications in other languages, such as Chinese, were excluded.

Search Strategy

An exhaustive review of the literature was performed to collect published and non-published studies which complied with the inclusion criteria, using the following databases: Scielo, NCBI, Science Direct, JSTOR, Dialnet, Networked Digital Library of Theses and Dissertations, Academic Search Premier, ERIC, Directory of Open Access Journals, and EBSCO Host. The search was carried out in September 2017, and studies published in English, Spanish, or Portuguese were selected.

The search keywords used for meeting the objective of the meta-analysis were “prosocial behavior” and its derived terms “prosociality” and “altruism”; and the following terms were utilized in order to comply with the intervention criteria: “intervention,” “outcome,” “program,” and “treatment.”

Study Selection and Data Extraction

The selection of studies was performed by two independent reviewers and included three selection stages. In the first stage, the title of

the article was considered, and those studies that complied with the prosociality intervention inclusion criteria were chosen. Following the first selection stage, a second stage consisted of reviewing article abstracts and selecting those studies which fulfilled the inclusion criteria relating to population and methodological design. Finally, ten (10) studies were left that fulfilled all of the inclusion criteria, and the data needed to perform the analysis was extracted from them. The information retrieved included: author and year of study, intervention (duration, location), sample characteristics (age group and mean, gender ratio), and methodological design.

Risk Bias Assessment

The RevMan 5.3 program developed by Cochrane was used to assess the risk of bias in the articles included in the meta-analysis. Two authors independently evaluated every single article included in this review. Whenever there was a disagreement in the classification criteria between low risk, high risk, and unclear risk, the classification was discussed until an agreement was reached.

Statistical Analyses

The Comprehensive Meta-Analysis Program (version 2) and RevMan 5.3 were used to carry out the meta-analyses. We used the Comprehensive Meta-Analysis Program to calculate forest plot, funnel plot, and heterogeneity, and the RevMan 5.3 was used to calculate risk of bias and to create the CONSORT diagram.

Effect Size Calculations

For continuous outcomes, we calculated the standardized mean differences and the standard errors. To avoid effect size underestimation, the Hedge's g correction for bias was applied, which is usually recommended for a sample size lower than 20 [18, 19]. None of the studies had dichotomous outcomes. When a study had multiple measures for the same outcome, an overall effect size was calculated by averaging the individual effect sizes.

Statistical Heterogeneity

Statistical heterogeneity between the studies was assessed using the Q statistics and the I^2 statistics. A nonsignificant Q statistics and an I^2 statistics smaller than 50 are expected to be found, which indicates the absence of heterogeneity between the studies included in the meta-analysis [20].

Publication Bias

Finally, the presence of publication bias was assessed using funnel plots and the fail-safe number, which assess the potential impact of unpublished studies on the analysis. A fail-safe number is often considered robust if it is greater than 5n+10, where n is the original number of studies [21].

Results

Figure 21.1, obtained from the RevMan 5.3 program, summarizes the search and selection procedures of articles included in the meta-analysis. A total of 10.641 articles were identified in the databases described under the Search Strategy section and 1.009 in the web and through a review of the bibliography of other articles. Afterward, 6.108 articles were selected through the reading of titles and abstracts. Of these, 106 were selected for an in-depth review, and following a full text reading, 96 were dismissed. Ten were included in the final meta-analysis (see Fig. 21.1 and Table 21.1).

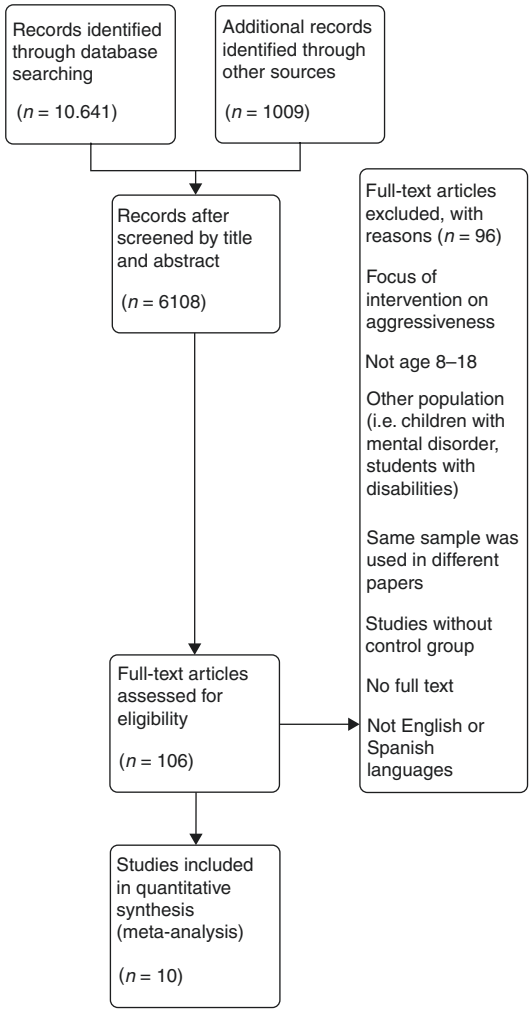


Fig. 21.1 Obtained from the RevMan 5.3 program, summarizes the search and selection procedures of articles included in the meta-analysis

Characteristics of Included Studies

Design

Three of the selected studies were performed in Canada [22, 28], three were in Spain [24, 27, 30], and the rest were carried out in the United States, Lithuania, Italy, and Ireland. Six were published in scientific journals and four were dissertations. Publications from 2000 to 2017 were included, while most publications were dated after 2010 (60%). All of the designs were controlled studies and eight of them were randomized studies. All interventions were performed within the school setting, some during class times and others following the class schedule. Most of the studies collected their information through self-reporting or reports provided by teachers, parents, and classmates. In those cases where studies used were more than one measurement for the evaluation of prosociality or aggressiveness variables, a combination of assessments was used to obtain a closer approximation to the assessment of the true behavior of the child or adolescent. All of the studies except one informed that participants gave informed consent of their parents [27]. Only one of the studies reported follow-up measures [23].

Participants

A total of 3.020 youth participated in the studies, and 1.483 were subjected to some type of experimental intervention. The age range for the sample was 8–18 years, and there weren't any significant differences regarding gender distribution. Overall participant's families belonged to the working middle class, mainly Caucasian Catholics [23, 24, 29, 30], although some of the studies presented greater cultural diversity [27], and only one of the studies was carried out in a lower-middle class residential area [30].

Intervention

The interventions were performed with the purpose of promoting prosocial behaviors and were all carried out within a school setting whether it be inside the classroom or in schoolyards. Some of the interventions were carried forth during class schedules, and others were performed after classes. In some cases, the interventions were implemented by researchers, and in other cases, teachers received training so that they may conduct interventions.

Table 21.1 Characteristics of included studies ($N = 10$)

1st author (year)	Program name	Location	Baseline sample (age, % female)	Intervention type (format)	Duration	Setting	Follow-up period	Published in	Reports	IC[a]	Who conducted the intervention	Design
Binfet (2000) [22]	Moral reasoning group	Vancouver, Canada	Intervention participants: 25. Women: 48% Total of participants 97 (10–13 years M: 11,6 SD: 0,67) Caucasian 57% Asian 26%, Black, Indian 49,4% women	On-site. Weekly discussion meetings	10 weeks. Weekly 40-min sessions during school hours	Schools	No follow-up	Dissertation	Self-reports. Peer reports. Teacher reports	Yes	Main researcher and graduated alumni	Controlled randomized study
Binfet (2000) [22]	Moral Reflection Group	Vancouver, Canada	Intervention participants: 23. Women 43%. Total participants 97 (10–13 years M: 11,6 SD: 0,67). Caucasian 57% Asian 26%, black, Indian. 49,4% women	On-site. Weekly discussion meetings	10 weeks. Weekly 40-min sessions during school hours	Schools	No follow-up	Dissertation	Self-reports. Peer reports. Teacher reports	Yes	Main researcher and graduated alumni	Controlled randomized study
Caprara (2015) [23]	Promoting Prosocial and Emotional Skills to Counteract Externalizing Problems in Adolescence (CEPIDEA)	Genzano, Italy	Intervention participants 151 (M: 12,4 SD: 0,49) women: 48%. Control group participants 140 (M: 12,6; SD: 0,53) women 55,7%. Total participants: 291. 14% of parents were professionals; 25% merchants, 31% qualified workers; 29% nonqualified workers and 1% retired	On-site	6 months. Lessons on prosocial behaviors once a week (total of 16)	Schools	18 months	Periodical: Journal of Youth and Adolescence	Peer reports	Yes	Teachers were trained to conduct interventions	Not specified

Garaigordobil (2008) [24]	Psychological intervention program	Basque Country, Spain	Intervention participants: 54. Total participants 86 (10–11 years) women: 60%. Middle socioeconomic level, 39% of parents had a university education	On-site	During school year. Weekly 2-h play sessions horas during school hours	Schools. In the gymnasium or the activities hall	No follow-up	Periodical: childhood and learning	Self-reports. Parent and teacher reports. Peer reports	Yes	Program implemented by teachers and psychology researchers and students	Controlled randomized study
McCarty (2014) [25]	Actively Caring for People (AC4P)	Southwest Virginia, USA	Intervention participants 209. Total participants 403	On-site	5 weeks. Weekly 22-min sessions	School	No follow-up	Dissertation	Self-reports	Yes	Coaches (trained university students)	
O' Hare (2015) [26]	Mate-Tricks	Dublin, Ireland	Intervention participants 184. Women 46%. Total participants 580 (9–10 years). Women 44%	On-site after school, with sessions for parents, for children, and for parents and children together	During school year. After school hours	School		Periodical: The Elementary School Journal	Self-reports	Yes	Trained staff	Controlled randomized study
Romersi (2011) [27]	Minimal Prosocial Improvement Program (PMIP)	Barcelona, Spain	Intervention participants 128 54,7%. Total participants 198 (14–16 years M:14,16 SD: 0,80). Women 53,5%. Urban area sample	On-site, work sessions	6 months. 12 sessions of 1 h or an hour and a half approximately every 2 weeks	Schools	No follow-up	Periodical: Annals of Psychology	Peer reports	Not specified	Trained operators	Controlled non-randomized study

(continued)

Table 21.1 (continued)

1st author (year)	Program name	Location	Baseline sample (age, % female)	Intervention type (format)	Duration	Setting	Follow-up period	Published in	Reports	IC[a]	Who conducted the intervention	Design
Schonert-Reichl 2012 [28]	Roots of Empathy (ROE)	Vancouver and Toronto (Canada)	Intervention participants 306. Total participants 585. Women: 47%. (8–12 years M: 10, SD 0,87) vast social and cultural diversity of sample	On-site. 26 30–40 min lessons on different subjects	9 months. 26 30–40 min lessons during class hours	Schools	No follow-up	Periodical: School Mental Health	Teacher and peer reports	Yes	Trained Implementors	Controlled non-randomized study
Sukys (2016) [29]	Olympic Education Programme	Lithuania	381 (M: 17,06 SD:0,96) women: 52%. Total participants 783. Women: 53%. The majority of participants were Caucasian, middle class Catholics	On-site	3 years. Intervention integrated to school curricular activities: history, physical education, art, etc.	Schools	No follow-up	Periodical: European Journal of Sport Science	Self-reports	Yes	Teachers	Controlled randomized study
León Zarceño (2008) [30]	Not specified	Valencia, Spain	22 (11–13 years M:11,59) 50%. Total participants 41 (10–12 years) 46%. Area with lower-middle class residents with a growing number of immigrants	On-site. During physical education classes	3 months. During physical education classes	Schools	No follow-up	Dissertation	Self-report	Yes	Physical education teachers trained in intervention	Controlled non-randomized study

[a]*IC* informed consent

Bias Risk

Bias risk is summarized in Fig. 21.2. A majority of studies (eight out of the ten included) informed the randomized inclusion of participants to the experimental and control group. With regard to the allocation concealment, six studies informed having used this procedure. One study skewed participants in the experimental group from the intervention program, two of them were not clear as to their procedures, and the remaining seven did not skew participants. In any case, due to the characteristics of these interventions, it is often not viable to follow this procedure. Half of the studies informed that the evaluators had no knowledge about whether the children or adolescents had participated in an experimental or placebo group. One article failed to inform about the existence of lost data, another one is unclear about the treatment that it was given, and the remaining articles inform about lost data and the treatment they were given in terms of the analysis. It seems very unlikely that the authors omitted information on their study results or that they include other types of bias in their reports.

Heterogeneity

High levels of heterogeneity were found among those studies that analyzed the effectiveness of intervention programs in their promotion of prosociality (Q-value = 32.03, gl 9, $p \leq 0.001$, $I^2 = 71$). The same was found for heterogeneity among studies in which the effectiveness of intervention programs on the inhibition of aggressive behaviors was analyzed (Q-value = 67.03, gl 4, $p \leq 0.001$, $I^2 = 94$).

Intervention Effect: Prosocial Behavior

Ten (10) studies included in this meta-analysis analyzed the effectiveness of intervention programs on the promotion of prosocial behaviors. As mentioned above, prosocial behaviors were assessed in some studies through self-reporting provided in some cases by participants and, in other cases, by teachers, parents, and/or fellow classmates of children or adolescents. Given that in two of the studies [24, 28] more than one measurement was used to assess the prosociality variables, a combination of assessments was used to obtain a closer approximation to the assessment of the prosocial behavior of the participant. The forest plot results can be seen in Fig. 21.3. Effect sizes were of $g = 0.23$ (95% CI = 0.07, 0.39, Z-value = 2.86, $p \leq 0.01$) favoring the intervention condition using random model and $g = 0.23$ using fix model (95% CI = 0.16, 0.31, Z-value = 6.12, $p \leq 0.001$).

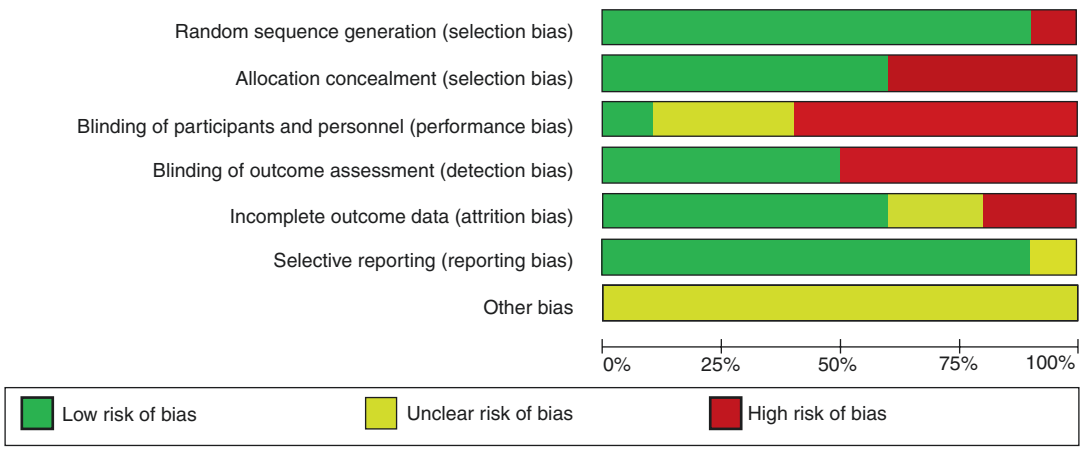
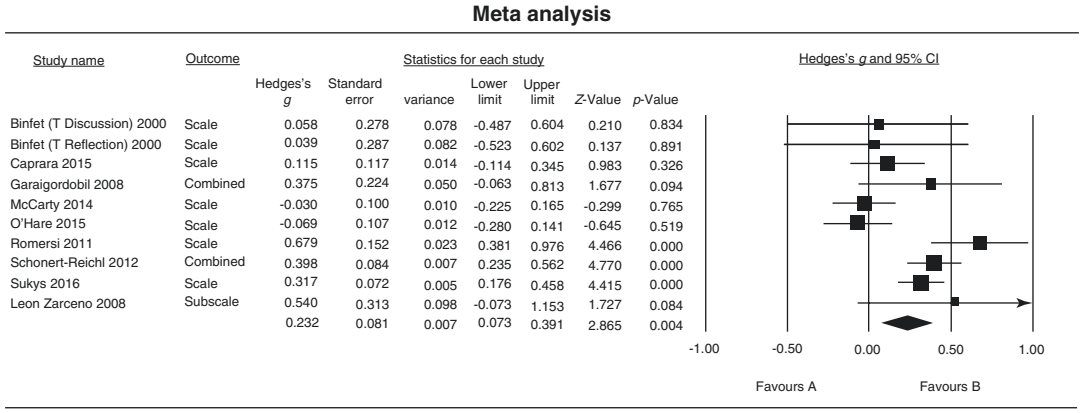
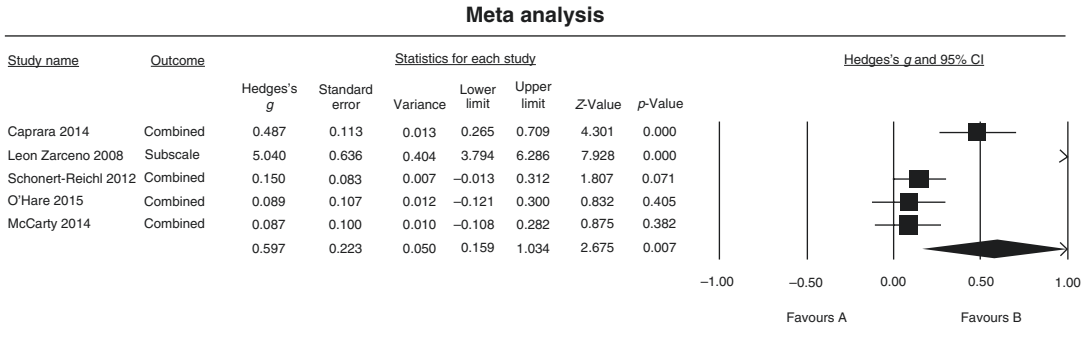


Fig. 21.2 Risk of bias ratings across included studies



Note: Favors A = favor control, and Favors B = favor intervention

Fig. 21.3 Effect sizes for prosocial behaviors



Note: Favors A = favor control, and Favors B = favor intervention

Fig. 21.4 Effect sizes for aggressiveness

Intervention Effect: Aggressiveness

Five (5) studies included in this meta-analysis analyzed the effectiveness of their intervention programs in aggressive behavior inhibition. Given that four out of the five studies included [23, 25, 26, 28] used more than one measurement for the assessment of the aggressiveness variable, a combination of assessments were used to obtain a closer approximation to the estimated aggressive behavior of participants. The forest plot results can be seen in Fig. 21.4. Effect sizes were of $g = 0.60$ (95% CI = 0.16, 1.03, Z-value = 2.67, $p \leq 0.001$) favoring the intervention condition using random model and $g = 0.22$ using fix model (95% CI = 0.12, 0.31, Z-value = 4.37, $p \leq 0.001$).

Publication Bias

Publication bias was not detected, as the funnel plot shapes were symmetrical for all analyses (see Fig. 21.5). Moreover, the fail-safe number was calculated to assess the potential impact of unpublished studies on the analysis. The fail-safe number obtained in this meta-analysis was 70, which indicated the number of studies that would be required to reverse our conclusions regarding intervention. Because it is unlikely that 70 studies

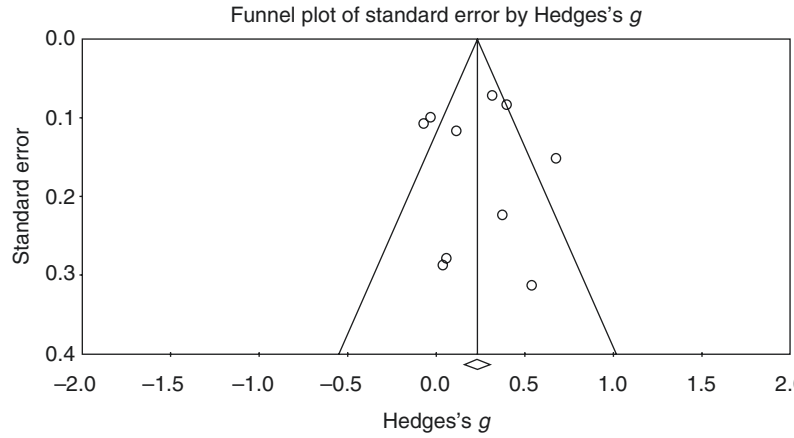


Fig. 21.5 Funnel plot

would be found with a more extensive literature search, it is estimated that there is no publication bias.

Discussion

Given the importance that prosocial behaviors have on psychological development and the proper functioning of children and adolescents in the contexts of family, school, and society, it was imperative to study the effectiveness of intervention programs for their promotion. To our knowledge, this is the first meta-analysis focusing on the study of prosociality intervention programs, although there is a previous meta-analysis that examines both published and unpublished randomized controlled trials to report on the effects of positive youth development interventions on multiple outcomes. However, this previous meta-analysis focused on analyzing results such as academic adjustment, sexual health outcomes, problem behavior, psychological adjustment, and behavioral adjustment; under this last category, an intervention program was analyzed for the prevention of behavioral problems which studied the effectiveness of the promotion of prosocial behaviors, but this was not its main objective [17]. This gap in the scientific literature is accompanied by the lack of empirical evidence supporting the effectiveness of applied research for the promotion of prosocial behaviors conducted by psychologists in different areas. At the same time, being able to count on meta-analysis on these topics can contribute to better decision-making regarding the selection of better intervention strategies in the event of wanting to apply some of these programs in our contexts.

Through our work we were able to observe that while certain programs devoted to the promotion of prosociality existed prior to the emergence of positive psychology [31–33], it is starting 2000 that the greatest number of interventions appear with a particular increase in 2010. However, there continue to be relatively few interventions, and it would be advisable to develop new programs or increase the empirical evidence of existing programs. Additionally, another important aspect that needs to be underscored is the fact that prosociality intervention programs are scarce beginning earlier than 8 years of age, and in our review, we were only able to identify the one developed by Piek and collaborators [34], while the majority focuses on the 8- to 18-year-old age range. Likewise, most of them have been conducted within the school context whether it be during the class schedule or outside of it. It is thus convenient to also develop certain programs that allow us to exercise these positive practices in other contexts such as in the family or society in general.

The results obtained from this meta-analysis maintain that intervention programs aimed at promoting prosocial behaviors showed a moderate effectiveness in the promotion of them. These results would be providing empirical evi-

dence on the usefulness and effectiveness of these programs from a positive viewpoint prone to strengthen positive resources. According to our studies, from the intervention programs analyzed here, those that showed greater effectiveness in the promotion of prosocial behaviors were the programs developed by Romersi in 2011, Schonert-Reich and collaborators in 2012, and Sukys in 2016 [27–29]. Additionally, our findings also allow us to confirm that intervention programs focused on the promotion of prosocial behaviors were highly effective in the prevention of aggressive behaviors. This allows us to infer that the strengthening of positive resources is effective in the prevention of behaviors that could be disruptive for children as much as adolescents themselves and for their interpersonal relationships. Of the programs analyzed in this meta-analysis, the programs that showed greater effectiveness in the prevention of aggressiveness were those developed by Caprara and collaborators in 2015 and León Zarceño in 2008 [23, 30].

Nonetheless, it must be highlighted that the levels of heterogeneity found in this meta-analysis were very high both in terms of analyzing the effects of intervention on the prosociality variable and on the aggressiveness variable. This is an important limitation of this study, and therefore the results discussed above must be handled with caution. The high levels of heterogeneity may have a number of causes, one being the fact that we compared different intervention programs that use different strategies for the promotion of prosocial behaviors and for secondly mitigating aggressive-type behaviors. The study developed by Binfet [22] uses indirect intervention strategies, for example, discussion and moral reflection, for promoting prosocial behaviors, since there is previous empirical evidence showing a relationship between these variables. By contrast, for example, Romersi [27] uses direct intervention strategies for prosocial behaviors such as the analysis of movies, the personal development of a plan for prosociality with a registration sheet, etc. Another important source of heterogeneity among studies may be attributable to the assessment instruments utilized for measuring variables, and assessment ranges were very dissimilar among themselves which may contribute to broader confidence intervals producing greater heterogeneity among studies. Another possibility may be due to the extensive age bracket of participants (ranging from 8 to 18 years of age), unfortunately due to the scarcity of intervention programs focusing on prosociality, whereby we were forced to include studies applied to children as well as adolescents without having the possibility of analyzing subgroups according to age as was originally planned.

In order to solve the heterogeneity difficulties addresses above, it is necessary to rely on a greater number of primary investigations allowing the performance of more accurate analyses focusing on different age groups of participants, taking into account the assessment instruments or counting on a more numerous response for these intervention programs on the basis of different samples and in different social and cultural contexts.

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