Original article

The Effectiveness of Cyberprogram 2.0 on Conflict Resolution Strategies and Self-Esteem

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A B S T R A C T

Purpose: In recent years, the problem of youth violence has been a cause of increasing concern for educational and mental health professionals worldwide. The main objective of the study was to evaluate experimentally the effects of an anti-bullying/cyberbullying program (Cyberprogram 2.0; Pirámide Publishing, Madrid, Spain) on conflict resolution strategies and self-esteem.
Methods: A randomly selected sample of 176 Spanish adolescents aged 13–15 years (93 experimental, 83 control) was employed. The study used a repeated measures pretest–posttest design with a control group. Before and after the program (19 one-hour sessions), two assessment instruments were administered: the questionnaire for measuring conflict management message styles and the Rosenberg self-esteem scale.
Results: The analyses of covariance of the posttest scores confirmed that the program stimulated an increase of cooperative conflict resolution strategies, a decrease in aggressive and avoidant strategies, and an increase of self-esteem. The change was similar in both sexes.
Conclusions: The study provides evidence of the effectiveness of Cyberprogram 2.0 to improve the capacity for conflict resolution and self-esteem. The discussion focuses on the importance of implementing programs to promote socioemotional development and to prevent violence.
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IMPLICATIONS AND CONTRIBUTION

The study provides evidence of the effectiveness of Cyberprogram 2.0 to improve the capacity for conflict resolution and self-esteem (protective factors related to bullying/ cyberbullying). The results allow us to emphasize the importance of implementing programs during childhood and adolescence to promote socioemotional development, improve coexistence, and prevent/reduce violence.

In recent years, the media regularly report cases of bullying with negative consequences, especially for the victims, but also for the aggressors. Other forms of bullying currently emerge, such as cyberbullying, using information and communication technologies, mainly the Internet and cell phones, to bully classmates. In the same vein as authors [1,2], we define cyberbullying as a means of bullying in which electronic media are used to insult, threaten, harass, or intimidate a peer.

Peer violence is closely related to the difficulty resolving conflicts constructively and to self-esteem. Previous studies with adolescents [3] have confirmed that those involved in bullying/

cyberbullying situations (victims, and aggressors) used significantly more aggressive conflict resolution strategies. On the other hand, the link between victimization and low self-esteem levels has been widely studied, and some studies verify the protective role of self-esteem [4]. Findings confirm the deterioration of both self-esteem and self-confidence of students who are the targets of their classmates' continued bullying/cyberbullying. Studies show that cybervictims and cyberaggressors generally have lower levels of self-esteem [5,6].

Taking into account the results of these studies and the practical implications of positive conflict resolution strategies and self-esteem in the prevention of violence, the need to elaborate programs that contribute to their development seems desirable. Accordingly, in recent years, anti-bullying programs have been developed that have stimulated an increase in the use of positive-cooperative strategies to cope with conflicts [7–9], to

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the detriment of negative strategies used when facing a conflictive situation [10,11], programs that have contributed to improving self-concept/self-esteem [12–14]; increasing prosocial behaviors [15]; helping the victims [11]; increasing social competence [16], a sense of safety, and general self-efficacy [17]; and decreasing aggressiveness [18] and the prevalence of bullying and exclusion by peers [19]. Regarding gender, many programs promoting socioemotional development for the prevention of violence have stimulated a similar change in both sexes [20–23] although some anti-bullying interventions have confirmed a greater increase of helping behavior in females [24].

Multiple forms of victimization are negatively associated with adolescent well-being, and cyber-victimization can influence adolescents above and beyond traditional victimization [25]. Although many studies suggest that there is a decline in various types of peer victimization among school children [26], bullying remains a problem in schools today. The considerable prevalence of bullying/cyberbullying in the Basque Country [3] and its harmful effects reveal the need for programs to prevent this type of violence. Moreover, recent studies have shown an increase in online harassment [27]. Few evidence-based prevention interventions have been published despite the need for school-based prevention programs to improve peer relationships and reduce bullying/cyberbullying.

Within this contextualization, the study aims to assess the effects of an intervention program (Cyberprogram 2.0) on the capacity to resolve interpersonal conflicts and on self-esteem (protective factors related to victimization and perpetration). Although Cyberprogram 2.0 was designed to prevent and reduce peer bullying/cyberbullying [28], this work focuses specifically on interpersonal conflict and self-esteem. This study is part of a wider investigation that implemented Cyberprogram 2.0 and assessed its effects on many dependent variables. In previous evaluations, it has been confirmed that the program decreases bullying/cyberbullying behaviors [29,30], and the present study now attempts to reveal the important role played by the capacity to resolve conflicts constructively and by self-esteem in the efficacy of an anti-bullying program and the inhibition of bullying/cyberbullying. Regarding this goal, we propose the following three hypotheses: (H1) the intervention will increase the use of cooperative conflict resolution strategies based on dialogue and cooperation, decreasing the use of aggressive and avoidant strategies; (H2) the program will increase self-esteem; and (H3) the intervention will stimulate a similar change in both sexes.

Methods

Participants

This study was carried out with a sample of 176 adolescents, aged between 13 and 15 years, who studied compulsory secondary education; 77 (43.8%) were male, and 99 (56.3%) were female. Of the total sample, 93 (52.8%) were randomly assigned to the experimental condition and 83 (47.2%) to the control condition. No significant sex differences were found between experimental and control participants; $\chi^2 = .26$, $p = .607$. The sample was chosen using a random sampling technique applied to the list of schools in Gipuzkoa (Basque Country, Spain) and the type of center (public–private). Block randomization was performed with a computer-generated random-number list of schools prepared by the Department of Education of the Basque Government. The sample was recruited from three schools

(socioeconomic levels: low, medium, and high). The sampling unit was the school class. In each center, the classrooms were numbered and randomly assigned to the groups (experimental or control). To determine sample size, we also carried out a prior power analysis, presuming a low-medium effect size ($f = .25$), with a power of .90 ($\alpha = .05$, $1 - \beta = .90$) for the univariate F tests among the dependent variables. The required minimum sample size was 171 participants.

Procedure

The study used a repeated measures pretest–posttest design with a control group. The procedure was divided into phases as follows: (1) a letter was sent to the directors of the randomly selected schools from the list of educational centers in Gipuzkoa, explaining the project and requesting their collaboration; (2) an interview was held with the directors who agreed to collaborate to present the project and distribute the informed consent forms for signing by parents of the study participants; (3) after receiving the parents' consent, the pretest was administered to the experimental and control participants, using two assessment instruments to measure the dependent variables that the program was expected to affect (September); (4) subsequently, the intervention program was applied with five experimental groups (19 one-hour sessions), whereas the four control groups received the usual tutoring classes of their center (October–May); and (5) after the intervention, during the posttest phase, the same instruments were administered as at pretest to the experimental and control groups (June). The study complied with the ethical principles for research with human beings (Helsinki Declaration) and received the favorable report of the Ethics Committee of the University of the Basque Country (CEISH/112/2012).

Measures

To measure the effects of the intervention before and after the program, we administered two assessment instruments with psychometric guarantees of reliability and validity.

Conflictalk. Conflictalk is an instrument for measuring youth and adolescent conflict management message styles [31]. The test measures three conflict management styles: (1) aggressive or self-oriented (wanting to do everything one's own way, being aggressive and authoritarian when dealing with conflict); (2) cooperative or problem-oriented (being interested in finding the cause of the conflict and specifically identifying the problem in collaboration with the other, the focus is on finding the best solution and cooperative action); and (3) avoidant or other-oriented (thinking that conflict is always bad, dealing passively with conflict). The questionnaire presents 18 sentences that people might use in a conflictive situation, and the adolescents are asked to rate each sentence on a five-point Likert-type scale ranging from 1 (*I never say things like that*) to 5 (*I almost always say things like that*). The internal consistency of Conflictalk is adequate (Cronbach's alphas: problem-oriented $\alpha = .87$; self-oriented $\alpha = .81$; other-oriented $\alpha = .63$), and this was confirmed with our sample ($\alpha = .94$, .74, and .81, respectively). Validity studies with the Spanish version [32] have found positive significant correlations between communication skills and cooperative conflict management style and negative correlations with aggressive conflict management style.

Rosenberg self-esteem scale. Rosenberg self-esteem scale [33] assesses general self-esteem with 10 statements focusing on global feelings of self-appraisal. The respondent reads the statements and reports the extent to which they apply to him/her, using a Likert-type scale with four response categories (ranging from *strongly agree* to *strongly disagree*). The reliability of the test has been broadly documented in literature (Cronbach's α ranging from .74 to .77 and test–retest reliability of .85) [34]. Several studies have also confirmed the validity of the scale as a one-dimensional measure of self-esteem [33,35]. Reliability analysis with this study's sample showed satisfactory internal consistency ($\alpha = .88$).

Intervention

Cyberprogram 2.0 [28] comprises activities aimed at preventing and/or intervening in bullying situations. The intervention consisted of 19 one-hour sessions carried out during the school term. The program's activities have the following four main goals: (1) to identify and conceptualize bullying/cyberbullying and the three roles involved in this phenomenon; (2) to analyze the consequences of bullying/cyberbullying for victims, aggressors, and observers, promoting the capacity for critical thinking and the capacity to report such actions when they are discovered; (3) to develop coping strategies to prevent and reduce bullying/cyberbullying behaviors; and (4) to achieve other transversal goals such as developing positive variables (empathy, active listening, social skills, strategies to control anger-impulsivity, constructive conflict resolution, tolerance to accept a diversity of opinions, etc.).

The methodological framework of the intervention for applying the program to a group implies four variables of constancy: (1) *intersession constancy*, which implies performing a weekly 1-hour session; (2) *spatial-temporal constancy*, applying the program on the same weekday, at the same time, and in the same physical space, a large room without any obstacles (gymnasium, etc.); (3) *constancy of the program director*, an adult with psychopedagogical training; and (4) *constancy of the session structure*. The sessions begin with the group members sitting in a circle on the floor. The adult explains the activity, its goals, and so forth, and the participants carry out the action. Subsequently, the adult leads a discussion and guided reflection, promoting critical reflection by asking nonjudgmental questions. The program uses diverse group dynamic techniques to stimulate the performance of the activity and the debate: role-playing, brainstorming, case study, guided discussion through questions, and so on. The published program manual [28] presents the activities and methodology for implementation with a group, and, therefore, for replicating the study.

As an example, we present the activity "*The impact of cyberbullying.*" Its goals include analyzing real cases of cyberbullying that have had severe consequences, promoting empathy toward the victims, fostering observers' involvement, identifying positive coping strategies for bullying/cyberbullying, analyzing the aggressor's behavior, and promoting active listening and cooperation. After dividing the group into teams, each team receives a card presenting a real case of cyberbullying (theft of password and identity, dissemination of an intimate personal video, bullying after the victim's death, slandering, distribution of a video to ridicule someone…) that had very serious consequences (suicide, profound and enduring psychological problems…). Each team analyzes the case received, and the team members propose ways to cope with the situation. Subsequently, by consensus, they choose the coping strategy considered the most efficacious and constructive from the victim's perspective. Taking turns, each team dramatizes the situation described in the card received, demonstrating through its representation the coping strategy selected as the most effective for resolving the problem situation. After the dramatizations, the group members sit on the floor in a circle and analyze what happened in each representation; the impact of the situations on the victim, the aggressors, and the observers; and the most effective strategies contributed by each team. They also explore the possible existence of similar cases that may have occurred in their own environment.

Data analysis

After verifying the basic assumptions, first, we performed descriptive analyses (means and standard deviations) and univariate and multivariate analyses of variance (ANOVA and MANOVA) with the experimental and control participants' pretest scores on the Conflictalk and the Rosenberg self-esteem scale. Second, to assess the impact of the intervention, we conducted descriptive analyses and analyses of covariance of the posttest scores (posttest MANCOVA, ANCOVA), using the pretest group differences as covariates. To analyze possible sex differences in the change experienced, first, we performed ANOVAs on the pretest scores and, subsequently, ANCOVAs on the posttest scores of the dependent variables for both sexes. We also calculated the effect size (Cohen's *d*: small < .50, moderate .50–.79, large ≥ .80) in each variable, at pretest and posttest. Statistical analyses were performed using SPSS 20.0 software (IBM Corp., Armonk, NY).

Results

Effects of the program on conflict resolution style and self-esteem

With regard to the conflict resolution strategies, first, we performed MANOVA on the pretest Conflictalk scores. The results for the series of conflict resolution strategies, Wilks' lambda, $\Lambda = .972$, $F(3, 169) = 1.62$, $p = .185$, did not show statistically significant group differences at pretest, and the effect size was small ($\eta^2 = .028$, $r = .16$). The results of the pretest ANOVAs (see Table 1) yielded no statistically significant group differences in any of the three assessed interpersonal conflict resolution strategies.

Subsequently, MANCOVA was conducted on the posttest Conflictalk scores (covarying the pretest scores). The results for conflict resolution, Wilks' lambda, $\Lambda = .849$, $F(3, 166) = 9.87$, $p = .000$, showed significant group differences, with a moderate effect size ($\eta^2 = .151$, $r = .38$). The results of the ANCOVAs in each type of strategy (see Table 1) revealed statistically significant posttest group differences in the three conflict resolution styles, with the experimental group obtaining higher scores in cooperative conflict resolution and lower scores in avoidant and aggressive resolution. The effect size was moderate.

Comparing the pretest–posttest change in the experimental and control groups in the three conflict resolution types, we observed that: (1) in avoidant resolution, the experimental group decreased ($M = -1.25$), whereas the control group increased their scores ($M = .35$); (2) in aggressive resolution, the experimental group's scores decreased ($M = -2.51$), and the control group's scores practically remained the same ($M = -.02$); and (3) in cooperative resolution, the experimental group increased ($M = 2.35$), and the control group slightly decreased their scores ($M = -.04$).

Table 1
Means (M's); standard deviations (SDs); results of pretest ANOVAs, posttest ANCOVAs, and effect size (*d*); conflict resolution strategies; and self-esteem in experimental and control groups

| | Pretest | | | | Posttest | | | | Pretest ANOVA | | | Posttest ANCOVA | | |
| | Experimental | | Control | | Experimental | | Control | | | | | | | |
	M	SD	M	SD	M	SD	M	SD	F(1, 174)	p	d	F(1, 174)	p	d
Avoidant conflict resolution	12.02	4.79	12.12	4.25	10.77	4.10	12.47	4.46	.02	.885	.02	7.32	.007	.39
Aggressive conflict resolution	10.59	4.65	9.45	3.28	8.08	2.47	9.43	3.84	3.41	.066	.28	16.89	.000	.41
Cooperative conflict resolution	18.26	8.11	17.71	6.51	20.61	6.66	17.67	5.91	.24	.622	.07	10.74	.001	.46
Self-esteem	30.80	6.79	31.67	5.92	34.82	4.74	30.86	5.97	.79	.374	.13	30.07	.000	.73

ANOVA = analyses of variance; ANCOVA = analyses of covariance.

With regard to self-esteem, first, we performed ANOVA on the pretest RSE scores, finding (see Table 1) no significant pretest group differences. Subsequently, we conducted ANCOVA on the posttest scores (covarying the pretest scores), which yielded (see Table 1) statistically significant group differences, with higher scores in the experimental group, and a moderately large effect size. Comparing the pretest—posttest change, the experimental participants increased their self-esteem (*M* = 4.02), whereas self-esteem decreased in the control group (*M* = −.81).

Effects of the program as a function of sex

To determine whether the program resulted in a differential sex effect, first, we conducted MANOVA on the pretest Conflictalk scores of the experimental group. The results for the conflict resolution strategies, Wilks' lambda, Λ = .927, $F(3, 87)$ = 2.27, p = .086, did not show any significant pretest sex differences, and the effect size was small (η^2 = .073, r = .27). The results of the pretest ANOVAs (see Table 2) confirm that females used significantly more cooperative strategies, but no sex differences were found in passive and aggressive strategies.

Subsequently, we performed MANCOVA on the posttest scores (covarying the pretest scores), the results of which confirm a similar level of change in males and females, Wilks' lambda, Λ = .949, $F(3, 84)$ = 1.49, p = .221. The ANCOVAs for each variable did not yield sex differences in any of the conflict resolution strategies, indicating that the change motivated by the program was similar in both sexes. Regarding self-esteem, the results of the pretest ANOVA and posttest ANCOVA (covarying the pretest scores; see Table 2) show that both the pretest level of self-esteem and the pretest—posttest change were similar in both sexes.

Discussion

The purpose of the study was to assess the effects of Cyberprogram 2.0 on adolescents' conflict resolution capacity and self-esteem. The study presented herein complements previous evaluations of Cyberprogram 2.0 that confirmed that the program stimulated a significant decrease in bullying victimization, an increase of positive social behaviors (help collaboration, prosocial leadership…) [29], a decrease in the amount of bullying and cyberbullying behaviors received and/or perpetrated, and an increase in the capacity for empathy [30].

The results reveal that the program produced a positive effect, promoting an increase in positive conflict resolution strategies based on dialogue and cooperation and a decrease of negative strategies (aggressive and avoidant). These results ratify Hypothesis 1, confirming the results of other studies that found an increase in cooperative conflict resolution skills [8,9] and a decrease of negative conflict resolution strategies [10,11].

These positive results can be explained by the characteristics of the program activities, given that many of these activities involve debating about problems and seeking positive, constructive solutions based on dialogue and communication, and avoiding aggressive forms of interpersonal conflict resolution. Cyberprogram 2.0 stimulates awareness, reflection on, and anticipation of the effects of one's behavior on others, in both short and long term, with reference to bullying, particularly cybernetic bullying, which by combining anonymity, Information and Communication Technologies, and the physical absence of the victim at the time of the aggression hinders awareness of the harm caused.

Second, the results show that the program stimulated an increase in self-esteem, confirming Hypothesis 2, consistent with other studies verifying that anti-bullying programs improve self-concept/self-esteem [13,14,17]. Logically, we conclude that the changes in self-esteem are a result of the behavioral improvement caused by the intervention.

Hence, the empirical evidence confirms the efficacy of the anti-bullying program (Cyberprogram 2.0) for increasing self-esteem and positive conflict resolution strategies and for decreasing aggressive strategies. Given that previous studies [3] have shown that individuals (victims and perpetrators) involved

Table 2
Means (M's); standard deviations (SDs); results of pretest ANOVAs, posttest ANCOVAs, and effect size (*d*); conflict resolution strategies; and self-esteem in males and females

| | Pretest | | | | Posttest | | | | Pretest ANOVA | | | Posttest ANCOVA | | |
| | Males | | Females | | Males | | Females | | | | | | | |
	M	SD	M	SD	M	SD	M	SD	F(1, 91)	p	d	F(1, 91)	p	d
Avoidant conflict resolution	11.39	5.52	12.47	4.18	11.32	4.70	10.36	3.53	1.12	.293	.22	1.46	.230	.23
Aggressive conflict resolution	11.34	5.05	10.06	4.30	8.63	2.81	7.53	1.64	1.70	.195	.27	3.59	.062	.47
Cooperative conflict resolution	16.26	7.81	19.70	8.09	20.66	5.80	20.87	7.12	4.10	.046	.43	.27	.604	.03
Self-esteem	32.34	6.61	29.72	6.77	36.05	4.12	33.96	5.03	3.39	.069	.39	3.10	.082	.45

ANOVA = analyses of variance; ANCOVA = analyses of covariance.

in bullying/cyberbullying situations use significantly more aggressive conflict resolution strategies and have lower self-esteem, this may indicate that a decrease in aggressive strategies and an increase in self-esteem can positively affect coping with bullying. In previous evaluations, it has been confirmed that Cyberprogram 2.0 decreases bullying/cyberbullying behaviors [29,30], and this main effect is very probably related to the improvement of self-esteem and the ability to resolve conflicts. The results of the present study provide empirical evidence of the relevant role that the two variables may play in the inhibition of bullying/cyberbullying.

Lastly, the results have shown that the intervention affected male and female adolescents similarly. The data ratify Hypothesis 3, supporting the results of other studies that did not find significant sex differences in bullying after the intervention [22,23]. However, they disagree with those obtained in other studies finding that females increased their helping behaviors more than males [24].

In view of the results, we emphasize the importance of implementing programs during childhood and adolescence to promote socioemotional development, improve coexistence, and prevent/reduce violence. All schools should implement a harassment protocol and a violence prevention plan to promote peaceful coexistence. All students should participate in preventive programs to inhibit all kinds of bullying.

However, it is important to note that the results of antibullying programs are inconsistent. Some show evidence of positive effects [9,36], others fail to confirm significant changes [37], and still others, contrary to expectations, show increases in bullying [see review 38]. Even Olweus' program has been replicated unsuccessfully. In this sense, some meta-analyses disagree about these programs' effectiveness. Ferguson et al. [39] concluded that global anti-bullying programs produce little discernible effect on youth participants, whereas Ttofi and Farrington [40] showed that global school-based anti-bullying programs are effective.

Among the possible reasons for greater program efficiency are: (1) the time devoted to the intervention; (2) the characteristics of the included activities (more effective programs include activities that stimulate empathy, peaceful conflict resolution, group members' self-esteem…); (3) the involvement and training of the teachers who implement the program; and (4) the parents' participation (their involvement reinforces the effects of the psychoeducational intervention).

This work validates the impact of an anti-bullying intervention tool that stimulates conflict resolution capacities and self-esteem (protective factors against victimization and perpetration). Adolescents must deal with conflicts within the family and the peer group; therefore, skills for resolving interpersonal conflicts constructively will be very useful for their personal and social development. The prevalence of cyberbullying presents noteworthy percentages, just one click away from our youth, underlining the importance of preventing this type of violence and of ensuring an optimal 2.0 education that promotes students' socioemotional development (dialogue, listening, cooperation, respect, emotion regulation, empathy…). This study confirms that programs focusing on the peer environment to cope with bully victim problems can successfully change attitudes and behaviors within the peer group. Further research is required to understand more fully how peer intervention can change attitudes and behaviors.

The use of self-reports is one of the limitations of this study, given their inherent social desirability bias. For future research, we recommend using behavioral questionnaires to be completed by the adolescents' parents and teachers and/or using observational techniques to ratify the effects of the intervention. In addition, we suggest that future program assessments use larger sample sizes and include follow-up assessments (at 6 and 12 months) to appraise the maintenance of the program's positive effects over time.

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