The Effects of a Clinical Prevention Program on Bullying, Victimization, and Attitudes toward School of Elementary School Students

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[1] ABSTRACT: The purpose of the present study was to evaluate a bullying prevention program that involved eleven 90-minute, highly structured workshops conducted at the classroom level on a weekly basis. The intervention aimed at increasing student awareness of bullying and its impact, increase empathy toward victims, and enhance positive attitudes toward school and academic achievement. Participants were 666 students who were selected from 20 elementary schools using stratified random-sampling procedures from a large metropolitan area of southern Greece. Students were randomly assigned to experimental and control groups and were provided measures of bullying and victimization behaviors at pretest and posttest (Olweus, 1996). Results indicated that there were statistically significant decreases in bullying and victimization behaviors from pretest to posttest. Specifically, victimization rates in the experimental group were reduced from pretest to posttest by 55.4%. The respective decreases in the control group were 23.3%. Similarly, bullying rates decreased by 55.6% at posttest compared with pretest in the experimental group, and the combined type decreased by 66.7%. Furthermore, a latent class analysis provided qualitative means on the specific categories in which decreases of negative behaviors were observed. Additional positive effects were observed with increases in positive attitudes toward school (school liking). We conclude that the current prevention program effectively reduced bullying and victimization in the elementary schools in Greece and holds promise for influencing the overall school experience.

■ School bullying is a negative phenomenon that affects the life of numerous students worldwide. Research findings indicate that the percentage of school bullying varies as a function of age as well as across countries, from 6% in Sweden up to rates that in some cases exceed 50% in Lithuania and certain countries of Africa (Analitis et al., 2009; Due et al., 2005; Due, Holstein, & Soc, 2008; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004). Research in Greece shows that approximately 7% to 15% of students have experienced victimization at school and that more than 5% of students have engaged in bullying behavior (Giannakopoulou et al., 2010; Kokkevi, Stavrou, Fotiou, & Kanavou, 2011; Konstantinou & Psalti, 2007; Pateraki & Houndoumadi, 2001). The most common type of school bullying in primary Greek schools appears to be verbal bullying, whereas in secondary schools, forms commonly observed are sexual bullying, spreading rumors, and cyber bullying (Giannakopoulou et al., 2010; Kokkevi et al., 2011; Pateraki & Houndoumadi, 2001; Sapouna, 2008). Variation in percentages reported in Greek studies possibly reflects differences in age, sample characteristics, and methodologies employed in the various studies.

School bullying refers to violent and aggressive behaviors that are manifested by students in an intentional repetitive manner and aim at producing physical or psychological pain to other students inside or outside school grounds (Olweus, 1993; Rigby, 2002). School bullying and victimization lead to a wide range of physical and psychological health problems. Students who have experienced victimization have increased risk of developing headaches, stomachaches, depressed mood, sleep difficulties, nervousness, depression, anxiety, and posttraumatic stress disorder symptoms (Due et al., 2005, Hawker & Boulton, 2000; Idsoe, Dyregrov, & Idsoe, 2012) as well as severe academic deficits (Juvonen, Nishina, & Graham, 2000; Nishina, Juvonen, & Witkow, 2005; Schwartz, Gorman, Nakamoto, & Toblin, 2005). School bullying has been continually acknowledged as an issue affecting school students since the 1970s, when Dan Olweus, a pioneer in school bullying research, started to develop anti-bullying prevention programs in Scandinavian countries.

Those anti-bullying programs that are most commonly found to be effective implement a holistic approach (Olweus, 1993; Vreeman & Carroll, 2007). Their philosophy is based on a social-ecological perspective, under which multiple factors are responsible for the etiology of the phenomenon (J. D. Smith, Schneider, Smith, & Ananiadou, 2004). These types of programs view the school environment as a system of social relationships and networks that can be improved while aiming at changes on multiple levels concerning the entire school population (Cowie & Jenifer, 2008). By setting bullying prevention as a main objective, the actions that are implemented aim at strengthening the relationships between the members of the school community and enhancing the feeling of security in the school environment (Newman-Carlson & Horne, 2004). For instance, awareness raising and involvement of the whole school network that includes students, educators, parents, and members of the broader community are seen as significant aims (Swearer, Espelage, Vallancourt, & Hymel, 2010). Common elements of these programs involve training educators in recognizing and successfully intervening at bullying incidences, educating students at changing their attitudes toward bullying, and involving parents (Mishna, 2008; Newman-Carlson & Horne, 2004). Indicatively, the Olweus

Bullying Prevention Program, which has been widely applied in Europe and the United States, aims at improving interpersonal relationships in a safe school environment and reducing bullying incidents by intervening at the school, classroom, and individual level. Also, a holistic approach is followed by the KiVA anti-bullying prevention program that has as its main objectives the development of attitudes against bullying, increased empathy levels of the students who are bystanders in bullying incidences, and active supports to the students who have experienced victimization (Karna et al., 2011).

Results from the evaluations of the Olweus anti-bullying program indicate that they have been effective in reducing victimization and bullying. In some instances, the reductions have exceeded 50% (Olweus, 1997). However, replications of the program in other countries have produced more moderate results, typically ranging between 5% and 20% in reduced victimization rates (P. K. Smith, 2004). It should also be noted that recent meta-analytic studies show mixed results in the effectiveness of interventions targeting reductions in bullying (Merrell, Gueldner, Ross, & Isava, 2008; Vreeman & Carroll, 2007).

Suggestive evidence about the most effective elements of anti-bullying programs is provided by two recent reviews (Ttofi & Farrington, 2011; Ttofi, Farrington, & Baldry, 2008). Important components that have commonly produced positive results in reducing bullying and victimization are intensity of program for children and teachers, teacher training, development of classroom rules, cooperative group work, and parental engagement such as meetings and information for parents. In addition, more effective programs attempt to incorporate Olweus's philosophy in tackling bullying (Ttofi & Farrington, 2011), which is a whole-school systems-based program rather than a curriculum one. Thus, the primary purpose of the present study was to evaluate the effects of a modified Olweus program on the victimization and bullying behaviors of elementary school students.

One proposition put forth recently involves the increase of factors that would potentially buffer and eliminate bullying and victimization behaviors (Erath, Flanagan, & Bierman, 2008). For example, improving school adjustment increases the likelihood that bullying and victimization behaviors will be extinguished (Boulton, Chau, Whitehand,

Amataya, & Murray, 2009; Troop-Gordon, & Kuntz, 2013), particularly given the fact that poor adjustment has been reported for more than 30% of the student population (Achenbach & Edelbrock, 1981). School adjustment has been defined as the result from students' efforts to adapt to the demands of the school setting (Ladd, 1990), and those demands are much more likely to be met when students have positive attitudes toward school (Boulton et al., 2009). Given the fact that the stress associated with students' inability to cope with the school environment has been implicated in incidents of bullying and victimization (Ryan & Ladd, 2012), positive attitudes toward school emerged as a salient predictor of school adjustment (Ladd, 1990). Early research work has pointed to significant positive correlations between school avoidance and victimization (Kochenderfer & Ladd, 1996), with longitudinal findings confirming that relationship (Ladd, Kochenderfer, & Coleman, 1997). Those findings have also been replicated in international studies (Boliang & Lei, 2003; Nansel, Haynie, & Simons-Morton, 2003; Skues, Cunningham, & Pokharel, 2005), with only one study reporting null associations between school liking and peer victimization (P. K. Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004). On the other side, negative linkages between school liking and victimization have been consistently reported (Troop-Gordon & Kuntz, 2013). Thus, a secondary purpose of the present study was to confirm the above findings with the expectation that an effective anti-bullying program would be associated with increases in school-liking attitudes and decreases in school avoidance.

In Greece, several prevention and intervention programs have been implemented the past decade. However, a national policy against bullying has been only recently adopted. A common element of these programs is teacher training, which aims at increasing knowledge about bullying and strengthening skills for tackling the phenomenon. Most programs follow a curriculum-based approach, in which relevant prevention and intervention actions are applied within the classroom by teachers (Andreou, Didaskalou, & Vlachou, 2007). Holistic-oriented programs have rarely been implemented, as they present with numerous difficulties and requirements. Peer-led programs are usually adopted by secondary education, as they involve students much more actively (Artinopoulou, 2010).

Based on these reviewed findings, we developed an anti-bullying prevention program. This program (i.e., ''Stop School Bullying''), which is evaluated here, follows a holistic approach. It was also developed according to the needs of primary school students in the Greater Athens area in Greece, which includes about 40% of the overall Greek population. A needs assessment previously carried out by our research group (Giannakopoulou et al., 2010) showed that nearly 14% of students in the last years of primary education in Athens were engaged in bullying (either as victims or bullies). Furthermore, only a small minority of students reported the bullying incidents to their teachers, whereas the vast majority of the teachers reported that they needed training for preventing bullying. Comparing primary to secondary education, younger students (here, 10–12 years old) are more likely to be victimized than older students, especially by their classmates (Sapouna, 2008). Thus, bullying seems persistent during the last years of primary school; therefore, the implementation of an anti-bullying prevention program targeting students of this age group seemed both timely and necessary.

The current study was designed and implemented by members of the Scientific Team of the Association of Psychosocial Health of Children and Adolescents (A.P.H.C.A.). The scope of the present study was to assess the effectiveness of the anti-bullying prevention program implemented in Grades 4 to 6. We expected that there would be a decrease in our outcome measures (i.e., percentages in bullying and victimization) after the implementation of the program. We were also interested in investigating the emergence of different clusters of students who had been involved in various forms of bullying and victimization due to the differences in the frequency of the various types of bullying that previous research in Greece has revealed (Giannakopoulou et al., 2010; Kokkevi et al., 2011; Sapouna, 2008; Pateraki & Houndoumadi, 2001). In addition to evaluating the program's effects on bullying and victimization, we also evaluated whether it had corresponding effects on school-related engagement. We considered these type of data to also be important because prior studies have repeatedly found that children with behavioral difficulties also experience learning difficulties (Morgan, Farkas, Tufis, & Sperling, 2008), as well as experience school more negatively (Wood &

TABLE 1
Intervention Effectiveness across Experimental and Control Groups

Group	Victims Pre/Post	Bullies Pre/Post	Bullies and Victims Pre/Post
Experimental group	56/25	18/8	6/2
Control group	27/21	13/11	4/2
Percentage decrease difference	32.100	40.220	16.700
Chi-square/CI[a]	**11.366**	**7.078**	**0.0064**
	(13.67–47.68)	(11.15–62.60)	(0–63.35)

[a]The chi-square test and its associated confidence interval.

Cronin, 1999) as they age. Glassberg, Hooper, and Mattison (1999) reported comorbidity levels between learning disabilities and behavioral disorders (BD) of 53.2%, whereas Luebke, Epstein, and Cullinan (1989) reported that students with BD were academically lagging across all content areas. Other research has found that lower engagement-related behaviors are predictive of later academic difficulties (Li, Morgan, Farkas, Hillemeier, Cook, & Maczuga, this issue).

Method

Participants

Data collection took place before the onset of the intervention program (Time 1: November 2011) as well as just after the completion of the program (Time 2: May 2012) from 666 students (fourth, fifth, and sixth grade) of 20 public elementary schools. Stratified random sampling was used, with seven regions comprising the geographical area of the district of Attica (i.e., Greater Athens) and with schools serving as the randomization unit. Subsequent matching adjustments were made to ensure equivalence between school units in their levels of bullying and victimization. Schools that participated in the study agreed to implement a supervised 6-month bullying prevention program. Explicit, written parental consent was a prerequisite for participation of the students. The attrition rate was estimated at 6.9% and was mainly due to students' being absent from school at one of the two phases of data collection. Descriptive information is shown in *Table 1*.

Procedures

The questionnaire was group administered 1 week before the start of the intervention (Time 1) and immediately after the end of the intervention (Time 2) by trained research staff, during scheduled class hours. Two trained research staff members were present in each classroom, and the questions were dictated twice prior to completion by the students. Before the completion of questionnaires, the research staff informed students about the purpose of the intervention, the anonymity of data collection, and the administration process. The time required by the students to complete the questionnaire was approximately one class period (45 min in total). Class teachers were not present in the classroom during the administration of the questionnaire, and standardized instructions were followed throughout.

Only students who participated in Time 1 were allowed to complete the questionnaire at Time 2. Case matching was ensured by using each pupil's school record number that was known only to school staff, one of whom helped administer the prenumbered questionnaire to the corresponding student, as each data collection procedure began and consequently left the room. Furthermore, the principal of each school was asked to confirm whether any changes had taken place in relation to classroom teachers during the past 6 months. The members of the research/implementation team received supervision by a Child Psychiatrist and Psychoanalytic Psychotherapist.

A set of leaflets (in Greek, available upon request) for children, teachers, parents, and the community were developed and distributed as part of the intervention package to increase the awareness of school bullying. Further to that, an interactive website with four microsites (for children, adolescents, teachers, and the community) was also developed (www.antibullying.gr). After the completion of the intervention program, control schools received a 2-hour talk, carried out by the members of the implementation team, which aimed at increasing awareness in relation to school bullying.

Measures

Bullying and Victimization

Students completed in both phases of data collection the Greek version (Deliyanni-Kouimtzi, Athanasiadou, Konstantinou, Papathanasiou, & Psalti, 2005) of the Revised Olweus Bully/Victim Questionnaire (Olweus, 1996). It consists of 39 questions with a five-point scale assessing the frequency of several types of bullying and victimization (i.e., physical, verbal, racial, sexual, electronic/cyber, indirect bullying, social exclusion, stealing/damaging of belongings, threat/coercion, and other types). Children respond on a five-point scale: ''it hasn't happened to me in the past couple of months,'' ''only once or twice,'' ''two or three times a month,'' ''about once a week,'' and ''several times a week.'' The questionnaire also includes items about other facets of bullying, such as the places where it occurs; the duration of bullying; children's attitudes toward it; the extent to which children have told teachers, peers, and parents about it; and the extent to which these individuals have attempted to deal with it, and so on. By averaging the responses to Questions 4 to 13 and 24 to 33, the ''tendency to be bullied'' and the ''tendency to bully other students'' are calculated, respectively, according to the instructions provided by Olweus (1996). Also, according to the same instructions, on the basis of two key questions (4 and 24), children were classified as victims, bullies, bullies/victims, and nonbullies nonvictims. High scores reflect high rates of bullying and victimization. Cronbach alphas in the present study ranged between .83 and .87 for victimization across groups and time measures and between .65 and .88 for bullying.

School Liking/Avoiding

Students' attitudes toward school (liking or avoiding) were assessed using Ladd's School Liking and School Avoiding subscales (Ladd, Buhs, & Seid, 2000). The instruments assess 14 items measuring two opposing aspects of the school experience, liking (6 items) and avoidance (8 items) using a five-point Likert-type scale. Cronbach's alpha was .89 for school liking and .83 for school avoidance, demonstrating very small amounts of measurement error for both constructs. The instrument was also subjected to confirmatory factor analysis (CFA), and the two-factor correlated simple structure was tested for adequacy (Browne &

Cudeck, 1993). Results indicated that (a) all factor loadings were significantly differnet from zero and all descriptive fit indices greater than .900 (e.g., CFI = .958). The unstandardized residuals (i.e., root mean square error of approximation [RMSEA]) were only 6.1%, with a recommended cutoff for good model fit being 5% to 8% (Steiger, 1990; Steiger & Lind, 1980). Further evidence regarding the adequacy of the model was provided by testing the divergent relationship between the two constructs. The latent variable correlation coefficient was equal to $-.86$, suggesting remarkable divergence.

Description of Prevention Program

Teachers of Grades 4 through 6 of the schools that agreed to participate in the intervention program were invited to a 2-day training seminar in November 2011. The seminar consisted of both theoretical presentations and group activities (role-playing, etc.). The training aimed at facilitating the implementation of the Teacher's Manual (Tsiantis, 2011). The particular manual describes in a detailed and systematic way the various activities to be implemented in the anti-bullying intervention program described in the present study. The Teacher's Manual (Tsiantis, 2011) was based on the extensive experience that A.P.H.C.A. developed with the coordination of two European DAPHNE funding programs and involves students, teachers, and parents as well as the whole community. Finally, teachers were informed that they would be supported throughout the implementation of the intervention by two mental health professions, who would act as their program coordinators.

The intervention consisted of 11 weekly workshops that were conducted by the class teacher in 90 minutes (i.e., over two school periods) as well as of two meetings with parents that aimed at increasing parental participation and were also organized by the teacher. In the first meeting, parents were informed about the objectives and the procedure of the intervention program. In the second meeting, students presented to their parents work and learning outcomes accomplished throughout the program (for the specific aims of the meetings with parents, see Appendix A). The content of the 11 student workshops, which were described in detail in the Teacher's Manual (Tsiantis, 2011), spanned from discussing and eventually signing class rules, conducting discussions with the students that were related to issues around

bullying, to playing active games. Students participated in related group activities (art, drama, etc.) that were supervised but not strictly guided by the teacher (for a more detailed description of the workshops, see Appendix A).

The intervention fidelity (that is, the frequency with which various program components were implemented) was assessed. A high degree of implementation was ensured through a standard set of procedures and safeguards that included (a) the highly structured nature of the program, (b) the use of a Teacher's Manual that described in a detailed manner the various workshops, and (c) the systematic monitoring of teachers (i.e., support and consultation) by the program instructors. The latter was assessed via the completion of a self-reported checklist by teachers and via an evaluation by the program coordinators. Specifically, teacher checklists were developed that described each step of each workshop in the Teachers' Manual and were then used to assess whether teachers carried out each component of the intervention. Program coordinators also recorded their own evaluation after each support/consultation meeting with the teacher group of each school. The evaluation included information in relation to procedural aspects of the intervention, such as group dynamics, trust and security, ability to express oneself within the team, cohesion, and creativity. Furthermore, program coordinators evaluated their own ability to be flexible, motivate the group, and be supportive. Finally, the degree of participation of each group member and the degree of collaboration, both within the group and between the group members and the program coordinators, were recorded.

Treatment Fidelity

Each workshop was evaluated for accurately implementing all necessary phases. There was a two-stage approach for evaluating treatment fidelity. First, the necessary steps were monitored and percentage implementation was calculated. At a second, more advanced level, treatment fidelity involved inducing the necessary conditions for intervention effectiveness. These included evaluating (a) team's climate, (b) the attitude of the coordinator, (c) member engagement, (d) cooperation between members, and (c) cooperation between coordinator and members.

For the first stage, percentage implementation was calculated for each workshop by independent raters who underwent rigorous

procedures to ensure reliability. The percentage of properly implemented steps was as follows: Workshop 1 = 89.87%, Workshop 2 = 86.44%, Workshop 3 = 93.72%, Workshop 4 = 85.78%, Workshop 5 = 94.44%, Workshop 6 = 95.28%, Workshop 7 = 86.60%, Workshop 8 = 89.59%, Workshop 9 = 89.41%, Workshop 10 = 81.25%, and Workshop 11 = 83.59%.

For inducing the necessary conditions in each workshop, an instrument was devised containing 25 items, allocated onto the five categories: (a) team's climate, (b) the attitude of the coordinator, (c) member engagement, (d) cooperation between members, and (e) cooperation between coordinator and members. Example of items were (a) members of the team freely express their emotions, (b) the coordinator acknowledged and adapted the content of the workshop to the special interests and abilities of the members, (c) the members participated actively on all exercises, (d) there were positive interactions between members, and (e) there were positive interactions between the members of the team and the coordinator. Responses were anchored on a 1 to 5 Likert-type scaling option ranging from *not at all* to *very much so*. Thus, the maximum score of 5 would be indicative of successful implementation of all phases, adequately. The mean response for each category was as follows: climate ($M = 3.85$, $SD = 0.48$), attitude ($M = 4.16$, $SD = 0.35$), engagement ($M = 4.39$, $SD = 0.40$), cooperation between members ($M = 4.36$, $SD = 0.45$), cooperation between members and coordinator ($M = 4.50$, $SD = 0.51$). The present findings suggest high levels of treatment fidelity across categories of treatment implementation.

Data Analyses

Intervention Effectiveness

To assess the effectiveness of the intervention, the decreases in rates at posttest, from pretest, for both the experimental and control groups were subjected to an odds ratio test. The magnitude of these statistics indicates how many times is the decrease in victimization and bullying at posttest for the experimental group, accounting for the specific decrease in the control group. Odd ratios greater than 4 express large effect sizes (Fergusson, 2009).

Identification of Classes

Data were also analyzed by means of latent class mixture models in an effort to identify

classes of students who shared the same experience with regard to various forms of bullying. The latent class models express relationships between continuous and categorical variables in class formation (Magidson & Vermunt, 2001), and they were initially developed to account for categorical only latent variable classifications using log-linear methods (Goodman, 1974). Subsequently, they were able to account for combinations of continuous and categorical variables in latent class formation. In the present study, model fit of the clusters was judged using the magnitude of R^2 values, correct classifications based on prior group membership (e.g., victims versus nonvictims and bullies versus nonbullies), and significance of independent variables in defining cluster group combinations. For Likert-type indicators (as were the predictors in the present study), each latent class is assumed to have its own mean and variance estimates, as shown below:

The distribution of a dependent variable y is a function of a set of unknown parameters θ. In the right side of the equation, π defines the probability of an individual to belong to latent class τ, with each latent class having its own mean (μ_τ) and variance and covariance estimates (Σ_τ). In the present study, one to three class models were fit to the data. The superiority of a cluster model was judged by means of a likelihood ratio chi-square test based on the unbiased bootstrap distribution (Magidson & Vermunt, 2002). The level of significance was set to 5%.

Results

Prevention Program's Effectiveness: Academic-Related Variables

A latent means model (Browne & Arminger, 1995) was fit to the data to test the hypothesis that the latent means of school liking and school avoidance changed as a function of the prevention program (Loehlin, 2004). The proposed CFA model fit the data well, as demonstrated by all descriptive fit indices (CFI = 0.953, GFI = 0.931, RMSEA = 0.066, confidence interval [CI] = 0.058–0.074). All measurement paths were stochastically measuring the hypothesized unobserved constructs[1] (Hu & Bentler, 1995, 1999; Yuan, 2005). The latent means coefficients were all significantly different from zero (see *Figure 1*). Specifically, school avoidance was decreased by $b = -.112$

standardized units, $p < .05$, and school liking was enhanced by $b = .097$ units, $p < .05$. Thus, the program was effective in promoting positive attitudes toward school and in decreasing negative attitudes.

Prevention Program's Effectiveness: Bullying and Victimization

The results from the effectiveness of the program are shown in *Table 2*. The decrease in the number of victims from pretest to posttest was equal to 55.4% for the experimental group and 23.3% for the control group. That difference was significantly more than observed by chance, $\chi^2(1) = 11.366$, $p < .05$. Similarly for bullying, decreases due to the program were equal to 55.6% for the experimental group, and the respective estimates for the control group were 15.38%. That difference was again significant, $\chi^2(1) = 7.078$, $p < .05$. No such differences were observed for the combined type, due, most likely, to the low frequencies observed and the correspondingly low levels of power.

Exploring the Presence of Subgroups Based on the Probability of Being a Victim or a Bully Using Latent Class Modeling

Profiling Victims

Initially, a one-class, baseline model was fit to the data for comparative purposes as it by default cannot inform the presence of subgroups. This model was compared with a two-class model. The two-class model provided a mediocre fit to the data and suggested that there is a class to which 74.36% of the victims belonged. That class had high probabilities on verbal (72%) and indirect bullying (61%), respectively (see *Table 3* for nested model comparison).

Subsequently, a three-class model was fit to the data at pretest. This model provided a good fit to the data, through examining the bivariate residuals[2] and by testing its efficiency in comparison to the two-class solution (Magidson & Vermunt, 2001, 2002). The difference between a three-class and a two-class model was evaluated using the log-likelihood–2LL statistic based on the bootstrap distribution and using 500 replications (Efron, 1982, 1985). Results indicated that the three-class model provided superior fit to the data compared with the two-class model ($-2LL_{Diff} = 63.825$, $p < .001$). This model suggested that there was
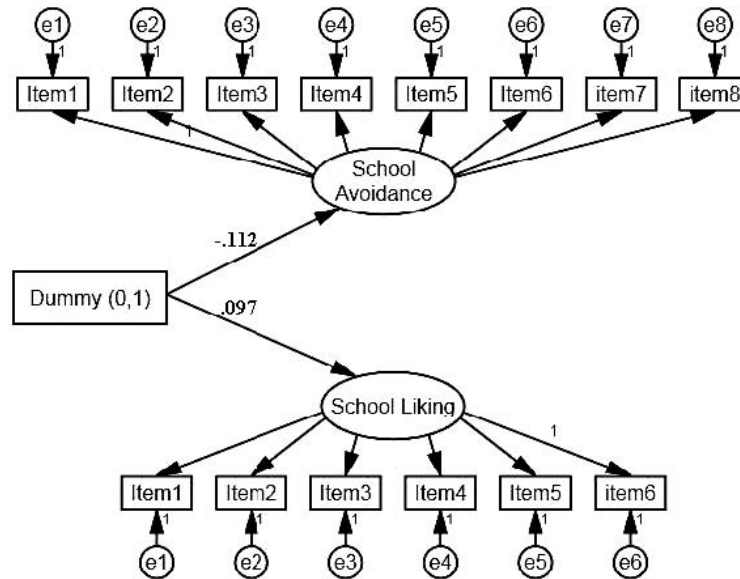
Figure 1. *Latent means model for the change in school liking and school avoidance as a function of the program under evaluation. The dummy variable evaluated changes in means from pretest to posttest. Only latent means are shown for clarity.*

a specific class of individuals with *N* size = 48, from which 64.9% of the victims belonged to, and a smaller class of *N* = 12 of which 89.2% were victims. Thus, Classes 2 and 3 were mainly composed of victims. Behaviors of high frequency were verbal, social, and indirect victimization with rates greater than 80% (for Class 3), with the same pattern being observed for Class 2. With regard to the posttest latent class analysis, again the three-class solution was superior to the two-class solution ($-2LL_{Diff}$ = 28.614, p < .001). However, there was a salient difference in

the rates observed at posttest. This qualitative difference is described in detail below in the section on qualitative findings.

Profiling Bullies

When looking at respective latent class models for bullies, results suggested that a three-class model best fit the data for the bullies at pretest (see *Table 4*). The difference between the two-class and three-class solutions was significant ($-2LL_{Diff}$ = 17.872, p < .05) in favor of the three-class model. The three-class solution

TABLE 2
Nested Latent Class Models Suggesting the Superiority of a Three-Class Solution for the Profiling of Victims

Model	BIC_{LL}	LL^{a}	*df*	Class Error	*p* Value
Pretest					
One class	1884.243	−913.111	321	.0000	<.001**
Two classes	1488.770	−683.463	310	.021	.96
Three classes	1488.769	−651.551	299	.033	1.00
Posttest					
One class	1035.725	−489.261	295	.0000	<.001**
Two classes	811.392	−345.633	284	.004	1.00
Three classes	845.702	−331.326	273	.033	1.00

[a]Bootstrap *p* values suggested significant differences between the three-class and two-class models in favor of the former.
*p < .05; **p < .01.

Model	BIC_{LL}	LL^a	df	Class Error	p Value
Pretest					
One class	889.891	−415.935	321	.000	<.40
Two classes	728.407	−303.282	310	.007	1.00
Three classes	774.360	−294.346	299	.030	1.00
Posttest					
One class	382.015	−162.389	296	.000	1.00
Two classes	366.579	−123.192	285	.007	1.00
Three classes	429.317	−123.081	274	.465	1.00

[a]Bootstrap p values suggested significant differences between the three-class and two-class models in favor of the former. Probability values in italics represent those associated with the bootstrap class distribution with 500 replications. These estimates are more conservative compared with sample estimates.
*p < .05; **p < .01.

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pointed to the presence of a class consisting mostly of bullies (i.e., Class 3: 68.9% of the total sample's bullies) who were described by bullying behaviors related to verbal, social, physical, and indirect bullying. Other forms of bullying related to racism, sexuality, and electronic means were not salient characteristics of the present sample and reflected low-frequency behaviors. Another 26.4% of the bullies belonged to Class 2, which was characterized by rather low probabilities of bullying behaviors (maybe a suppressed or low-incidence bully type), with the exception of social bullying, which characterized 53.8% of the cases; thus, it was mostly a social bullying class. All classes were defined by ample participants, thus, the three-class model was well identified. When looking at the respective solutions at posttest, results indicated that the three-class model was not superior to the two-class model ($-2LL_{Diff} = 0.821$, $p > .05$). However, it was kept as the preferred model for comparative purposes, particularly for the qualitative profiling.

Prevention Program's Effectiveness: Qualitative Findings

Effects on Victimization Profiles

We attempted to evaluate the extent to which the intervention was effective by comparing differences in the profiles of bullies and victims observed at pretest and posttest (see *Figures 2 and 3*). Given that in all three-class solutions, one class was associated with null victimization or bullying behaviors, the remaining two classes were plotted at pretest and posttest for clarity. *Figure 2* shows the effects of the intervention on the behaviors and respective rates on victimization. The two classes on top reflect the most prominent class of victims at pretest and posttest, and the two bottom classes the least prominent classes. Apparently, the classes that emerged at posttest had both lower incidence as a function of the intervention and saliently different profiles. When comparing the proportions of decrease from pretest to posttest, results indicated significant decreases in threat (42%, $\chi^2[1] = 7.476$, $p < .05$) and racial (45%, $\chi^2[1] = 6.452$, $p < .05$) forms of victimization.

Effects on Bullying Profiles

The profiling of bullies' behaviors was compared as for the victims above. *Figure 3* shows the differences in their profiles from pretest to posttest. The results were even more impressive compared with those on victimization, with the bullying behaviors approaching zero levels. Specifically, using a chi-square test, significant decreases at posttest were observed for verbal (74%, $\chi^2[1] = 11.823$, $p < .01$), physical (76%, $\chi^2[1] = 12.572$, $p < .05$), and social (53%, $\chi^2[1] = 6.742$, $p < .05$) forms of bullying. These findings further strengthen the program's effectiveness and its premise as a behavioral intervention by demonstrating a significant decline in the core bullying behaviors (i.e., physical and verbal bullying).
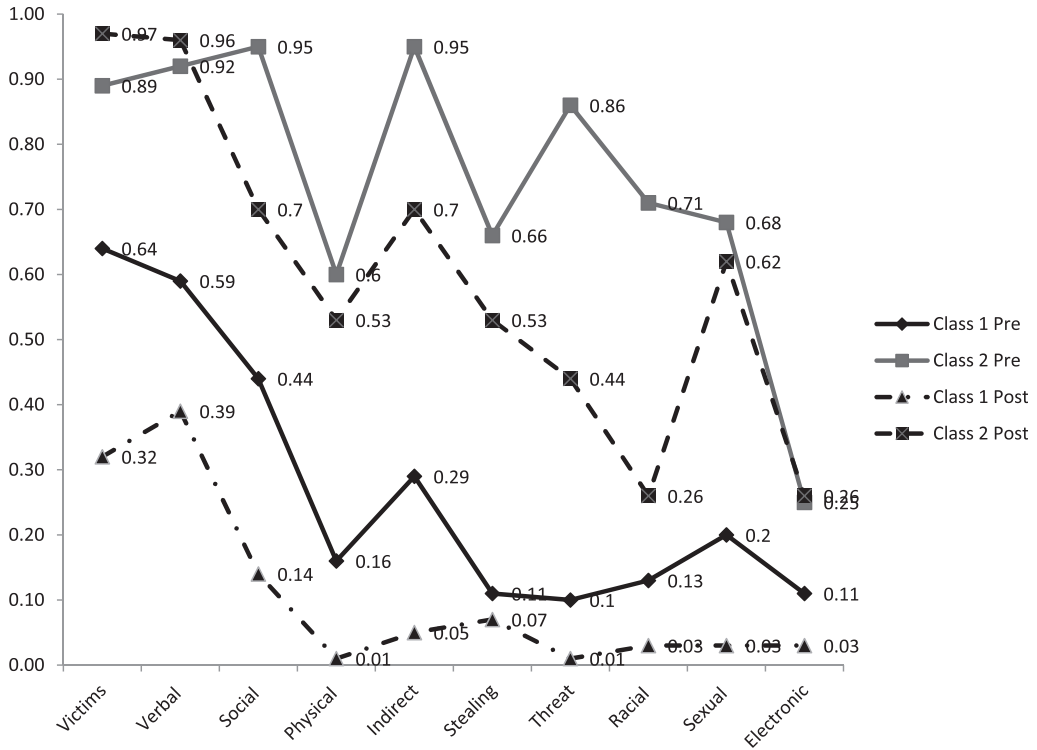
Figure 2. Latent class model estimating the presence of two classes for the profile of victims at pretest versus posttest as a function of type of victimization.

Figure 3. Latent class model estimating the presence of two classes for bullies as a function of each of the bullying behaviors.

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Figure 2. Latent class model estimating the presence of two classes for the profile of victims at pretest versus posttest as a function of type of victimization.
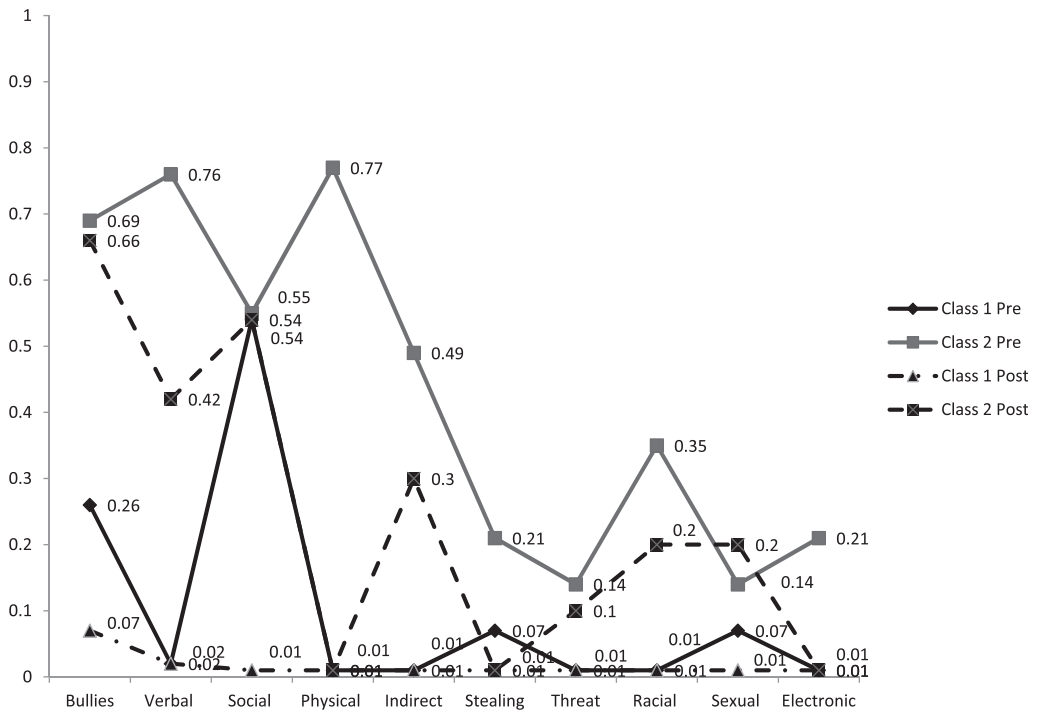

Figure 3. Latent class model estimating the presence of two classes for bullies as a function of each of the bullying behaviors.

Discussion

The purpose of the present study was to evaluate the efficacy of an anti-bullying prevention program that involved eleven 90-minute, highly structured workshops conducted at the classroom level on students' academic and nonacademic behaviors (i.e., bullying and victimization as well as attitudes toward school). A secondary purpose was to profile the types of victims and bullies observed at school and evaluate changes in the profiles as a function of the prevention program.

In terms of the first goal of the study, significantly greater reductions were observed in victimization and bullying rates in the experimental group as compared with the control group. This pattern of findings is in agreement with our hypothesis and provides positive evidence in relation to the effectiveness of the program. The additional analyses using latent class modeling further supported the efficacy of the program by indicating a reduction in various forms of bullying and victimization. Specifically, significant decreases were found, after the implementation of the intervention, in threat and racial forms of victimization. Respectively, significant reductions were found for verbal, physical, and social forms of bullying.

In relation to the second goal of our study, a group of students was identified that had a frequency greater than 80% of experiencing verbal, social, and indirect victimization. After the implementation of the program, the likelihood of victimization for this group of students decreased. More than two-thirds of the total sample's bullies exhibited bullying behaviors related to verbal, social, physical, and indirect bullying. Interestingly, racial, sexual, and electronic bullying were not part of the spectrum of bullying behaviors shown by this group of students. Another group of students who bullied emerged, which mainly used social exclusion, whereas other types of bullying behavior were not commonly employed. The frequency rates of bullying behaviors for these groups of students showed noticeable reductions after the end of the intervention. This pattern of findings could be useful in identifying subgroups of students who engage in particular forms of bullying behavior. Specific types of bullying could be related to different etiological factors, which, if identified, could then lead to more targeted interventions.

In our view, a critical component of the prevention program that enhanced its effectiveness was the systematic support and consultation that was provided to the teachers by the program instructors throughout the implementation process. The provision of knowledge and ongoing support could have increased teachers' commitment, which has been found to be related to the outcome of anti-bullying programs (P. K. Smith, Pepler, & Rigby, 2004). This view is supported by the high levels of intervention fidelity in relation to aspects, such as engagement, climate, and degree of cooperation both among the teachers of the intervention groups and between teachers and coordinators.

One of the targets of the program was to increase the positive climate in the school environment. Teachers were provided with training before the implementation of the program, which included both theoretical and experiential knowledge, through a variety of specifically designed exercises, in topics regarding school bullying and the development of skills related to increasing effective communication within the classroom. Teacher training has been found to be one of the important components in whole-school approach programs for reducing bullying and victimization (Newman-Carlson & Horne, 2004; Ttofi & Farrington, 2011), with research purporting that teacher support buffers the relationship between peer victimization and later emotional and behavioral problems (Yeung & Leadbeater, 2010; for other moderated relations, see Darwich, Hymel, & Waterhouse, 2012; Ma, Phelps, Lerner, & Lerner, 2009). Likely due to that emphasis, there was a significant change in attitudes toward school. Specifically, school liking was enhanced, and school avoidance was significantly dropped. This finding is in accord with previous research on the effects of positive school attitudes on school success (Entwisle & Hayduk, 1988) and specifically on the reduction of victimization (Davidson & Demaray, 2007). With regard to the latter, it is not surprising that victimization experiences with frequent instances of humiliation and bullying episodes by peers would be associated with low levels in school liking, with the potential moderating mechanism being negative emotionality (Nishina & Juvonen, 2005).

The program also involved other common elements used in whole-school approach programs, namely, educating students at

changing their attitudes toward bullying and involving parents (Mishna, 2008). It also incorporated elements that have been found to be effective in recent reviews (Ttofi et al., 2008; Ttofi & Farrington, 2011), involving the creation and implementation of classroom rules, working in groups, and parental involvement, which was achieved via meetings and information provided for parents.

Limitations

Several limitations of the current study should be kept in mind. First, the pilot nature of the current study that included a sample of 20 schools is a limitation that should be considered. There was a random allocation of the schools into the experimental and control conditions of the study; however, the participating schools covered only the region of Attica, Greece. Hence, the results of the study should be replicated with the use of a nationally representative sample. Second, pretest and posttest questionnaires were administered at different time periods of the school year. The pretest phase occurred during the beginning of the school year in autumn, whereas the posttest phase took place at the end of the school year in spring. Seasonal changes, such as amount of group activities, type of between-peer interaction, and critical events such as Christmas and Easter recess and summer break could lead in fluctuation in bullying/victimization prevalence (Olweus, 2005). Third, gender differences were not systematically explored, although the literature has pointed to discrepant amounts of bullying episodes across gender (Griezel, Finger, Bodkin-Andrews, Craven, & Yeung, 2012) as well in same gender or cross-gender comparisons (O'Brien, 2011). Nonetheless, the present findings cannot be fully explained by the role of time, as the measures in the experimental and control groups took place at the same time points and differences still emerged in favor of the experimental group. Because the measurements in the experimental and control group occurred during the same time periods, the aforementioned potential confounding variables do not seem to affect intervention fidelity.

Finally, Olweus' Bullying Prevention program was carried out during a time period in Norway when bullying had received a lot of media attention. A group of researchers have argued that the observed positive effects could be partly a consequence of the broader social awareness above and beyond the outcomes of the specific intervention (Olweus, 2005; Stevens, de Boudeaudhuij, and Van Oost, 2000). Similarly, our study was carried out in Greece during a period when bullying had received a lot of exposure, and therefore, a possibility that cannot be ruled out is that the present findings are the product of the intervention as well as of more general societal trends.

In conclusion, the current program seems to be effective in reducing levels of bullying and victimization and in enhancing positive attitudes toward school. The detrimental effects of the socioeconomic crisis on psychosocial health support the value of the study, which was carried out during a period of high burden for a large part of the Greek society. The present prevention program provided support to a large number of primary school students, in schools covering the area of Attica in Greece. However, the results should be treated with caution and should be replicated in a larger and nationally representative sample. The sustainability of the intervention over time is another factor that would be worth investigating.

NOTES
1. The chi-square test exceeded conventional levels of significance because of excessive power (MacCallum & Hong, 1997).
2. Reflecting chi-square statistics regarding the conditional independence assumption. They are bivariate correlations of error between pairs of independent variables. Their expected value is 1.0 when no significant correlation is present.

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AUTHORS' NOTES

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