

Article

Short-term effects of an intervention to prevent bullying on first-grade secondary school children of Palermo, Italy: the "BIAS" study.

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Abstract: The Bullying in Sicilian School study aimed to investigate the prevalence of bullying and the short-term effects on the students' perception of bullying after a preventive intervention conducted among teachers of first-grade secondary schools of Palermo, Sicily (Italy). Between the 2017/2018 and 2018/2019 school years, a pre-post intervention study was conducted among ten schools sampled and categorized by neighbourhood socio-economic index. A questionnaire investigating physical, verbal and indirect bullying, observers role, prosociality and resiliency in bullying phenomena was administered before and after a formative cascade-training intervention on teachers of the selected classes. 428 students participated the study (70.8% response rate). A decrease in the bullying episodes after the intervention carried out was reported by students in all areas explored. The verbal bullying was the one that demonstrated the most significant decrease, together with physical bullying and observer area. In particular, a statistically significant decrease was reported for students of schools with an intermediate socioeconomic level. The encouraging results obtained in reducing bullying episodes, together with its low cost of human and economic resources, could suggest the research extension on a regional/national scale.

Keywords: bullying, prevention, health promotion, teachers, students, physical bullying, verbal bullying, indirect bullying.

1. Introduction

The bullying phenomenon affects the whole educational environment having an impact on the right to have a proper education. It represents the most common expressions of violence in the peer context during the school years [1]. Therefore, considering the existing strong amount of evidences of the negative health consequences for bullies, victims, and observers documented by several studies from different Countries, bullying in schools has become globally an important and complex public health issue [1, 2]. According to a widely used research definition of bullying, a student is being bullied or victimized when he or she is exposed, repeatedly and over time, to negative actions by one or more students [3]. Negative actions are further defined as when someone (the "perpetrator") intentionally inflicts, or attempts to inflict, injury or discomfort upon another (the "victim") [3]. Three criteria define aggressive behaviour as bullying: 1) repetition, 2) intentionality and 3) an imbalance of power. Given these characteristics, bullying is often defined as a systematic abuse of power by peers [4].

Negative actions can be verbal (including threatening, taunting, teasing, name-calling), physical (e.g. hitting, kicking, pushing, shoving or pinching), and relational/social (e.g. social exclusion,

rumour spreading), up to the most recent forms of attacks through Internet and new technologies (also referred to as cyber-bullying) [3, 5-8].

The effects of bullying and victimization have been widely studied during the past decades. Researchers have documented how bullying behaviour affects both victims and bullies, being associated with negative outcomes from all point of views: academic performance with poor achievements and more school days missed for victims, poor health outcomes, psychological maladjustment (psychological well-being, self-esteem, and self-confidence) and psychosomatic health problems [2, 9-11].

This is why, through the years, many efforts have been put in place to contrast this phenomenon and over the past forty years, a big amount of research on anti-bullying has been produced [12-17].

Most of them are school-based programmes, using the whole-school approach involving the individual students, parents, classrooms and the whole school in a complex structure. Moreover, even if there are been proved to be scientifically valid, their feasibility and capacity to fit in different context should still be tested on different fields.

In fact, sometimes both selection and implementation of evidence-based school violence and bullying prevention and intervention programs in schools have been problematic, maybe because programs often are chosen without any consideration for experiences and unique needs of every specific school, and to the context in which the program has proven to be successful [18,19].

In Italy, bullying involves a significant percentage of school-age children: 2 in 10 between 11-17 years reported to have been bullied two or more times in a month [20]. However, very few evidence on anti-bullying interventions implemented in Italy are available, and none in Sicily, the first Italian region by territorial extension and the fourth by resident population [21, 22].

The "Bullying In Sicilian Schools" (BIAS) study was designed with the aim to estimate the prevalence of the different forms of bullying observed, or perceived by teachers and students in a representative sample of first-grade secondary school children of Palermo, before and after the implementation of a bullying prevention intervention [23, 24].

2. Materials and Methods

A pre-post intervention study, involving first-grade secondary schools in the city of Palermo (Sicily), was conducted during the 2017/2018 and 2018/2019 school years.

2.1. Study population

Ten schools have been selected, through a cluster sampling based on socio-demographic criteria and then categorized according to the neighborhood socio-economic index in high (A), intermediate (B) and low (C) level build on log of median household income, proportion of adults aged ≥ 25 years with high school diploma or college degree, and proportion of people employed [23]. Thirty-three second classes of first-grade secondary schools, for a total of 604 students, were enrolled at the beginning of the study.

2.2. Operating procedures and intervention

Figure 1 illustrates the time-line of all the study research activities. In October 2017, with the support of the Regional Bullying Observatory of Sicily (Italy), an operative meeting was organized involving each bullying referents of the enrolled schools, as well as medical doctors and researchers of the Department for Health Promotion and Mother to Child Care of the University of Palermo and health-care professionals of the Local Health Unit (LHU) of Palermo, with proven experience in children and adolescent mental health.

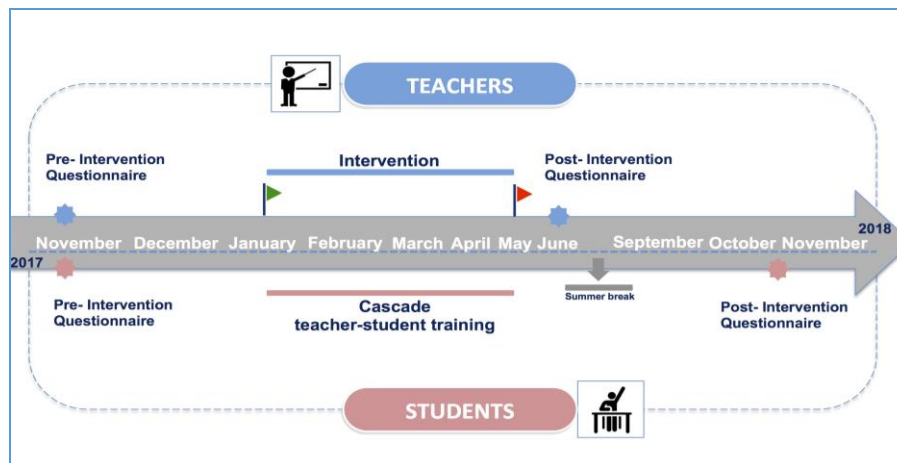


Figure 1. Timeline of the study

Following a baseline assessment of teachers' perception on the bullying in the selected classes through an online questionnaire performed in November 2017 [23], a specific intervention dedicated to the teachers (Box 1) was administered between January and May 2018, with training and informative sessions on topics closely related to bullying. Finally, in June 2018, a post-intervention questionnaire was administered with the same proceeding of the pre-interventional one, with the aim to detect any changes in bullying prevalence perceived by teachers [24].

At the same time, in December 2017, the baseline prevalence of bullying was assessed also from the students' perspective. After achieving the written consent from the parents, they were given a structured and previously validated questionnaire investigating the main six areas of practical interest and research on bullying: 1) physical bullying, 2) verbal bullying, 3) indirect bullying, 4) observers of bullying phenomena, 5) resiliency, and 6) prosociality area [23].

BOX 1. The intervention on teachers

The activities were implemented in 5 working groups (WGs), each one in charge of the two schools. In each group all the components of the research were represented (Bullying Regional Observatory, LHU, University). Overall, 4 meetings were organized, where the WGs met the teachers of the two schools assigned with the aim to reflect together on the data collected with the pre-intervention questionnaire and to conceive and plan effective activities to increase awareness of bullying and to promote preventive actions in their school context. Participatory approaches for planning (i.g. word café, role playing, goal oriented project planning) were so implemented to structure one activity for each WG. During the intervention timeframe, teachers voluntarily organized with their students initiatives, such as cooperative learning, peer education and role playing to address and prevent the bullying at school.

During the teachers' intervention timeframe (January - May 2018), through the mechanism of cascade teacher-student training, teachers have re-proposed to their students the learned contents thought participative methods, such as cooperative learning, peer education and role playing, in order to organize dedicated activities to their students and to address and prevent the bullying phenomena at school.

At the end, during October and November 2018, a post intervention questionnaire was administered to the students who responded to the pre-intervention one, currently attending the third class during the 2018/2019 school year. The aim was to appreciate any short-term changes in bullying prevalence occurring among the students after the intervention conducted on their teachers.

Both questionnaires, completely anonymous, used to detect bullying prevalence for teachers and for students, have been previously published together with the complete BIAS protocol study

[23]. In Box 2 we report a brief resume of the students 'one and of the three different methods (sentinel question, the 5 questions and the score 7) of bullying prevalence analysis used [23].

2.3. Data collection and analysis

The questionnaires were self-administered by the students of the individual classes through the Google Forms® online platform. The data obtained were then exported in Microsoft Excel sheet and subsequently analyzed with statistical software Epiinfo® (ver. 7.2.2.6). Descriptive and comparative analysis, by socio-economic index of the schools, was performed. All categorical variables were reported as absolute and relative frequencies (percentages). Chi-square test (with the Fisher's correction when appropriate) was used to compare categorical variables.

The present study obtained the approval of the Palermo Ethical Committee 1 (session of the 12th of July 2017, protocol number: 07/2017).

BOX 2. The student questionnaire

The questionnaire consisted of different sections:

general information: gender, age, nationality, school and class attended;

5 questions investigated the area of verbal bullying (eg: being called with an offensive nickname);

5 questions investigated the area of physical bullying (eg: being attacked);

5 questions investigated the area of indirect bullying (eg: being left alone during the interval);

5 questions investigated the area of resilience (eg: talking to someone about bullying suffered);

5 questions investigated the role of observers (eg: seeing a mate teased and not intervening in his defense);

open-ended final section to freely express their own reflections on the contents of the questionnaire and on the phenomenon of bullying in general.

For the analysis

For each answer a score between 1 (Never) and 5 (Very often) was assigned. The score obtained was then used to detect the baseline level of bullying with the three methods:

1. the "sentinel question", the presence or absence of bullying was investigated through the yes / no answer to the most significant of the questions in the single area. Very often, often and occasionally have been considered as affirmative answer.

2. the "5 questions" method, on the other hand, the phenomenon of bullying was considered present whenever the student answered "Yes" (i.e. Occasionally, Often or Very often) to at least one of the items in the survey area.

3. the "Score 7" method, the answers to each individual question were added and then the presence or absence of bullying phenomena was determined, considering the value of 7 as a cut-off (in which case the boy could have answered at least "Occasionally" to at least one of the questions in the area).

Both the pre and post-intervention questionnaire were identical with only the difference that the "pre" investigated a interval period of "the last three months", while in the post the reference time frame concerned also the previous six months, before the summer break.

3. Results

Overall, up to the 604 students enrolled in the 33 selected classes and invited to participate the study, 86 (14.2%) were absent in one of the two days of the questionnaire's administration, in 78 (12.9%) cases parents denied the participation to the study, while 12 (1.9%) students could not participate for different reasons (e.g. not able to fully understand Italian, students with cognitive disabilities).

Thus, a total of 428 (70.8%) students participated the study, responding both the pre and post questionnaire. Of them, 220 (51.4%) were females, the mean age was of 12.7 (SD 1.3) years and 7 (1.6%) were of foreign nationality.

The results of the 6 areas referred to bullying surveyed were analyzed using the three methods of the sentinel question, the 5 questions and the score 7.

The prevalence of different types of bullying decreased after the intervention with percentage changes varying according to the different method of estimation used (Table 1).

Table 1: Prevalence of different types of bullying (physical, verbal and indirect), observers, prosociality and resiliency phenomena, in pre- and post-intervention, and percentage changes, among the 428 students of the ten first-grade secondary schools enrolled in the BIAS study.

Area	Method	Pre n (%)	Post n (%)	% change
Physical bullying	<i>Sentinel question</i>	16 (3.7)	9 (2.1)	-1.6
	<i>5 questions</i>	112 (25.9)	99 (23.1)	-2.8
	<i>Score 7</i>	152 (35.2)	133 (31.1)	-4.1
Verbal bullying	<i>Sentinel question</i>	56 (13)	52 (12.1)	-0.9
	<i>5 questions</i>	157 (36.3)	141 (32.9)	-3.4
	<i>Score 7</i>	241 (55.8)	221 (51.6)	-4.2
Indirect bullying	<i>Sentinel question</i>	43 (10)	41 (9.6)	-0.4
	<i>5 questions</i>	123 (28.5)	123 (28.7)	+0.2
	<i>Score 7</i>	181 (41.9)	169 (39.5)	-2.4
Observers	<i>Sentinel question</i>	67 (15.5)	36 (8.4)	-7.1
	<i>5 questions</i>	124 (28.7)	95 (22.2)	-6.5
	<i>Score 7</i>	183 (42.4)	141 (32.9)	-9.5
Resiliency	<i>Sentinel question</i>	132 (30.6)	145 (33.9)	+3.3
	<i>5 questions</i>	207 (47.9)	237 (55.4)	+7.5
	<i>Score 7</i>	266 (61.6)	241 (56.3)	-5.3
Prosociality	<i>Sentinel question</i>	48 (11.1)	20 (4.7)	-6.4
	<i>5 questions</i>	335 (77.6)	304 (71)	-6.6
	<i>Score 7</i>	374 (86.6)	345 (80.6)	-6.0

In particular, the prevalence of physical bullying decreased when estimated with the sentinel question method (% changes: -1.6), with the 5 questions method (% changes: -2.8) and using the score 7 method (% changes: -4.1). As for the prevalence of verbal bullying, it decreased between the pre and the post intervention with all the three methods used (% changes: -0.9, -3.4, -4.2 respectively). The prevalence of indirect bullying was substantially unchanged using both the sentinel question (-0.4%) and the 5 question method (+0.2%), while using the score 7 method decreased from 41.9% to 39.5% with a % changes of -2.4 between the pre and post intervention. The data about observers also followed the same direction with a decrease reported with all the three methods: from 15.5% to 8.4% after the intervention (% changes: -7.1) with regard to the sentinel question, from 28.7% to 22.2% after the intervention (% changes: -6.5) with the 5 questions method and from 42.4% to 32.9% after the intervention (% changes: -9.5) with the score 7 method. A

reduction has been reported also concerning the prosociality area, consistent with all the three methods considered (-6.4%, -6.6%, -6.0% respectively). Finally, the prevalence of resiliency increased with both the sentinel question (+3.3%) and 5 questions (+7.5%), while decreased with the score 7 (-5.3%).

Table 2 shows the results for each area explored before and after the intervention according to the neighborhood socio-economic index of the ten first-grade secondary schools enrolled.

A statistically significant change between the pre- and the post- intervention was reported for students attending the schools with socioeconomic index level B (intermediate level) with regard to: physical and verbal bullying using the 5 questions method (respectively from 29.0% to 17.4%; p-value: 0.01, and from 36.6% to 25.8%; p-value: < 0.05) and for all the three types of bullying using the score 7 method (physical from 39.8% to 24.2%, p-value: < 0.01; verbal from 57.0% to 43.2%, p-value: 0.01 and indirect from 46.2% to 33.2%, p-value: 0.01).

The results follow the same trend also for prosociality and observers' area, documenting a statistically significant decrease for the students of schools with an intermediate (level B) socioeconomic index using all the three methods. Specifically, for the students attending schools of level B, prosociality decreased from 12.9% to 2.6% (p-value: <0.01) using the sentinel question, from 76.9% to 65.3% (p-value: 0.01) using the 5 questions and from 86.6% to 75.8% (p-value: 0.01) using the 7 score. Therefore, also schools of level C (low level) reported a statistically significant change in prosociality using the score 7 only (93.3% pre vs 81.7% post intervention; p-value: <0.05). With regard to observers' area, in students from level B (intermediate level), the decrease was from 15.1% to 6.3% (p-value: 0.01) using the sentinel question method, from 29.0% to 20.0% (p-value: < 0.05) with the 5 questions method and from 47.9% to 30.5% (p-value: <0.001) using the score 7 method.

Table 2: Prevalence of different types of bullying (physical, verbal and indirect), observers, prosociality and resiliency phenomena, in pre- and post-intervention, among the 428 students in the BIAS study, according to the neighborhood socio-economic index (SEI) of the ten first-grade secondary schools enrolled.

Method	School SEI	Physical			Verbal			Indirect		
		Pre n (%)	Post n (%)	p-value	Pre n (%)	Post n (%)	p-value	Pre n (%)	Post n (%)	p-value
Sentinel question	A	3 (1.8)	3 (1.8)	0.98	19 (11.1)	21 (12.6)	0.68	15 (8.8)	24 (14.4)	0.11
	B	8 (4.3)	2 (1.1)	0.05	26 (14)	15 (7.9)	0.06	16 (8.6)	7 (3.7)	0.05
	C	5 (6.7)	4 (5.6)	0.80	11 (14.7)	16 (22.5)	0.22	12(16)	10 (14.1)	0.75
5 questions	A	33 (19.3)	39 (23.4)	0.36	55 (32.2)	60(35.9)	0.47	41(24)	53 (31.7)	0.11
	B	54(29)	33 (17.4)	0.01	68 (36.6)	49(25.8)	<0.05	52(28)	44 (23.2)	0.29
	C	25 (33.3)	27 (38)	0.56	34 (45.3)	32(45.1)	0.97	30(40)	26 (36.6)	0.68
Score 7	A	45 (26.3)	54 (32.3)	0.22	86 (50.3)	94(56.3)	0.27	58 (33.9)	69 (41.3)	0.16
	B	74 (39.8)	46 (24.2)	<0.01	106 (57)	82(43.2)	0.01	86 (46.2)	63 (33.2)	0.01
	C	33(44)	32(45.1)	0.90	49 (65.3)	45(63.4)	0.81	37 (49.3)	37 (52.1)	0.74
Method	School SEI	Prosociality			Observers			Resiliency		
		Pre n (%)	Post n (%)	p-value	Pre n (%)	Post n (%)	p-value	Pre n (%)	Post n (%)	p-value
Sentinel question	A	12(7)	7(4.2)	0.26	16(9.4)	11(6.6)	0.35	47 (27.5)	51 (30.5)	0.54
	B	24 (12.9)	5(2.6)	<0.01	28 (15.1)	12 (6.3)	0.01	58 (31.2)	65 (34.2)	0.53
	C	12(16)	8 (11.3)	0.41	23 (30.7)	13(18.3)	0.08	27(36)	29 (40.9)	0.55
5 questions	A	129(75.4)	128(76.6)	0.80	31 (18.1)	26(15.6)	0.53	76 (44.4)	75 (44.9)	0.93
	B	143(76.9)	124(65.3)	0.01	54(29)	38(20)	<0.05	91 (48.9)	80 (42.1)	0.18
	C	63(84)	52 (73.2)	0.11	39(52)	32 (45.1)	0.40	40 (53.3)	36 (50.7)	0.75
Score 7	A	143(83.6)	143 (85.6)	0.61	48 (28.1)	46(27.5)	0.91	96 (56.1)	89 (53.3)	0.60
	B	161(86.6)	144 (75.8)	0.01	89 (47.9)	58(30.5)	<0.001	118(63.4)	106(55.8)	0.13
	C	70 (93.3)	58 (81.7)	<0.05	46 (61.3)	35(49.3)	0.14	52 (69.3)	45 (63.4)	0.45

4. Discussion

This study aimed to investigate short-term effects on the students' perception of bullying and bullying related positive attitudes after a prevention intervention made on teachers of a sample of ten first-grade secondary schools of Palermo.

Within the theoretical framework of the teacher-student training cascade effect, teachers were identified as primary target of anti-bullying intervention, subsequently translating strategies and methodologies for bullying prevention in the classrooms [25-27]. In order to assess the short-term impact of this intervention a pre-post intervention questionnaire was administered to 428 students and then analyzed using three different methods: the sentinel question, the 5 questions and the score 7 for each of the variable in study [23].

A decrease in the bullying episodes between the pre and the post intervention survey was reported by students in all areas explored (verbal, physical, indirect), and was confirmed by each of the three methods used for the estimation. In particular, the verbal bullying was the one that demonstrated the most significant decrease together with physical bullying and observer area where the decrease documented also appears encouraging. On the contrary, data concerning indirect bullying changed slightly. Among the positive attitudes explored, resilience shows a marked increase with two of the three methods used, although the prosociality area showed a decrease, differently from other evidence [22]. These results could be partially explained since the reduction of the bullying episodes inevitably has, as consequence, a reduction also of the positive attitudes related to them (eg. reporting the case to the parents/teachers).

Differently from other experiences estimating bullying prevalence with a single item method (sentinel question), the present study provide not only different measures of bullying prevalence but also a more detailed analysis of the different type of bullying (physical, verbal, indirect), that could represent a difficult in comparing prevalence [12, 21, 22].

Analyzing the changes between pre and post intervention by single socio-demographic level, the decrease of physical, verbal and indirect bullying was statistically significant for students attending schools with an intermediate socioeconomic index. This evidence could suggest the different effectiveness of the intervention conducted in each class by teachers, which were leave free to adapt the contents acquired during the formative intervention with their students, according to the peculiarity of the context. The use of a non pre-structured intervention for students, but the focus on the class, could also has been important in considering specific aspects of the Sicilian cultural background (eg: violence especially in neighbourhood disadvantage contexts) within the genesis of phenomenon of bullying in this specific settings.

In line with other experiences, the working groups of experts and researchers from various disciplines (education, mental health, public health) that conducted the anti bullying interventions successfully contributed in the reduction of the bullying prevalence [12].

Some limitations should be considered for the present study. First of all, the study only evaluated self-reported perception of bullying from students, and this could have biased the results. Even if this aspect could be in part overcome integrating these results with the teachers' perspective, in future official bullying report should also be considered for a wider interpretation of the phenomenon, especially in future when a mandatory law will oblige teachers to officially report every single episode of bullying occurred in school context [28, 29]. In fact, students' results differ from the teachers ones in particular for the physical bullying where teachers reported zero prevalence in the post intervention periods [24]. This discrepancy highlights how the teachers could not be aware of some episodes occurring in their absence or occurring in the school context but not in classrooms (e. g. bathrooms, halls, outside areas, ...).

Moreover, the selection of the school sample were addressed only from urban setting, introducing a potential selection bias that has to be prevented by extending future research also to suburb and rural areas. But from the other side, the schools selected represented equally different socio-economical backgrounds, as an important aspect for the generalizability of the intervention.

Finally, only short-term effects are been evaluated and will be also difficult to follow up on a longer period since this aspect was not considered in the study structure and no individual link has been foreseen.

5. Conclusions

In conclusion, even if many school-based interventions have been implemented to reduce school bullying all over the world, this is one of the first conducted in Europe, assessing the effectiveness among students of an anti bullying intervention tailored for teachers.

The encouraging results obtained in reducing bullying episodes, together with its low cost in term of human and economic resources, could suggest the research extension on a regional basis and on different school's grades, in order to propose a common strategy to face one of the most important and actual public health issue at school.

Lastly, for further researches, the integration of the research with the cyberbullying area could allow a combined preventive strategy [30, 31], and the involvement of parents, already known to be effective [12], should also be considered.

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