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Online and offline peer led models against bullying and cyberbullying

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The aim of the present study is to describe and evaluate an ongoing peer-led model against bullying and cyberbullying carried out with Italian adolescents. The evaluation of the project was made through an experimental design consisting of a pre-test and a post-test. Participants in the study were 375 adolescents (20.3% males), enrolled in 9th to 13th grades. The experimental group involved 231 students with 42 peer educators, and the control group involved 144 students. Results showed a significant decrease in the experimental group as compared to the control group for all the variables except for cyberbullying. Besides, in the experimental group we found a significant increase in adaptive coping strategies like problem solving and a significant decrease in maladaptive coping strategies like avoidance: these changes mediate the changes in the behavioural variables. In particular, the decrease in avoidance predicts the decrease in victimization and cybervictimization for peer educators and for the other students in the experimental classes whereas the increase in problem solving predicts the decrease in cyberbullying only in the peer educators group. Results are discussed following recent reviews on evidence based efficacy of peer led models.

Modelos online y offline contra el acoso y el acoso cibernético realizados por pares. El objetivo del presente estudio es describir y evaluar un modelo conducido por pares contra el acoso y el acoso cibernético realizado con adolescentes italianos. La evaluación del proyecto se realizó mediante un diseño experimental que consiste en un pre-test y un post-test. Los participantes en el estudio fueron 375 adolescentes (varones= 20,3%), matriculados en los grados 9-13. El grupo experimental envolvió 231 alumnos (42 pares educadores), y en el grupo de control participaron 144 estudiantes. Los resultados mostraron una disminución significativa en el grupo experimental en comparación con el grupo de control para todas las variables, excepto para cyberbullying. Además, en el grupo experimental se encontró un aumento significativo de estrategias adaptativas (problem solving) y una disminución significativa en las estrategias de afrontamiento desadaptativas como la evitación: estos cambios median los cambios en las variables de comportamiento. En particular, la disminución de la evitación predice la disminución de la victimización y cibervictimización en todo el grupo experimental, mientras que el aumento de problem solving predice la disminución de la ciber-intimidación solo en el grupo de pares educadores. Se discuten los resultados de acuerdo con las revisiones recientes sobre la eficacia, basada en la evidencia, de los modelos conducidos por pares.

Cyberbullying is one of the most frequent risks related to ICT use by young people. It has been defined as bullying perpetrated by the use of electronic devices (Smith et al., 2008). Results from a recent meta-analysis show a high prevalence of the problem in all countries (Garaigordobil, 2011): approximately, 40% and 55% of students are involved in some way (as victims, perpetrators, or observers).

In the face-to-face context, there are similar concerns. According to a recent Italian national study, up to 25.2% of all students have suffered some kind of victimization (AA.VV., 2011). These percentages of involvement demand attention because research has highlighted that bullying is a significant risk factor for the physical and psychological well-being of children and adolescents (e.g., in this special issue, Anderson & Hunter, 2012; del Rey, Elipe, & Ortega, 2012; Heirman & Walrave, 2012; Wachs, Wolf, & Pan, 2012). From a recent meta-analysis (Ttofi, Farrington, Losel, & Loeber, 2011) we know that bullying is associated with externalizing and delinquent behaviours (Paul, Smith, & Blumberg, 2012; Vandebosch, Beirens, D'Haese, Wegge, & Pabian, 2012) while being victimized is associated with the development of general psychological distress, increased levels of depression and anxiety (Arsenault, Bowes, & Shakoor, 2010) above and beyond previous psychological symptoms and other genetic, family and social risk factors. In addition, school bullying has a negative impact on bystanders and other children in the class (Gini, Pozzoli, Borghi, & Franzoni, 2008). Similarly, the growing literature about cyberbullying highlights the interconnection between online and offline bullying and similar trajectories for bullies and victims in the two contexts (Gradinger, Strohmeier, & Spiel, 2009; Menesini, Calussi, & Nocentini, 2012). Given these results, the need for interventions to limit the harm caused by bullying and cyberbullying is clear and urgent. From a recent meta-analysis (Ttofi & Farrington, 2011) there is evidence of

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the fact that prevention models can be effective to contrast bullying and victimization and the most efficacious components being: disciplinary methods, class and school rules, class management, awareness activities and parents training. On the contrary, working with peers showed controversial results. In particular, in the same meta-analysis (Ttofi & Farrington 2011) peer led models were associated with an increase in victimization. These authors express the need for future research with a more rigorous design and higher methodological standards (Flay et al., 2005) along with theoretically grounded intervention models.

In reviewing literature about intervention on cyberbullying we found that it is a relatively new type of intervention and there is a paucity of studies on its effectiveness. One of these was carried out with Italian adolescents using a peer education approach (Menesini & Nocentini, 2012). The evaluation of the efficacy highlighted a decrease in cyberbullying but mainly in a subgroup of participants (male peer educators) and an increase in awareness of some protective coping strategies.

How can cybervictims handle a cyberbullying attack? Coping strategies useful to deal with cyberbullying are relevant to this regard. For example, some victims may remove themselves from the website, stay offline, talk about their experience with a friend or inform an adult about what they experienced (Hinduja & Patchin, 2007). In England, pupils aged 11 through 16 years suggested blocking/ avoiding messages and telling someone as the best coping strategies though many cybervictims had told nobody about it (Smith et al., 2008). Similar coping strategies were identified for different types of traditional bullying using interviews with pupils in England and Japan (Kanetsuna, Smith, & Morita, 2006). Although help seeking was often recommended as the most effective coping strategy, we know that often pupils do not do it spontaneously. Problem solving coping strategies and perceived peer normative pressure for bystanders are positively associated with active help towards a victim and negatively related to passivity (Pozzoli & Gini, 2010). Bullying is often considered a social type of aggression because it involves a group of peers in which each member plays a specific role. This group dimension shows that the bystanders can potentially influence the situation in different ways: they can reinforce the bully, joining or passively accepting the situation, or conversely they can dissociate themselves from the bullies, defending the victims (Salmivalli, 2010).

As potential targets of intervention, bystanders are easier to address as compared to bullies and victims because they often report anti-bullying attitudes although they might have problems to intervene directly. Literature on victims' support and on bystanders' role has underlined the value of involving the group and specifically uninvolved children, i.e. the so called "silent majority" to change the dynamics of bullying and to stop negative behaviors (Menesini, Codecasa, Benelli, & Cowie, 2003). Given that, an approach focused on peer involvement appears to be relevant and suitable to be used for anti-bullying and anti-cyberbullying interventions. Peer education and peer support models are based on the assumption that peers learn from each other, have significant influence on each other, and that norms and behaviors are most likely to change when liked and trusted group members take the lead in changing the situation (Maticka-Tyndale & Barnett 2010; Naylor & Cowie 1999; Turner & Shepherd, 1999).

Starting from these considerations, the aim of the present study is to describe and evaluate an ongoing peer-led model called *Noncadiamointrappola!* (Let's not fall into the trap!) –2nd edition, carried out with Italian adolescents. This intervention consists in both online and face-to-face activities to prevent and contrast bullying and cyberbullying. In order to understand possible mechanisms we will analyse the role of different coping strategies that can mediate the effects of the project on bullying and cyberbullying behaviours. In particular, specific aims and hypotheses are:

1. We aim to evaluate if the experimental group and the control group have a different change across time in relation to the target variables (bullying, cyberbullying, victimization and cybervictimization): to this regards we hypothesize a significant decrease of the target behaviours across time in the experimental group and a non-significant change in the control group.
2. We aim to evaluate if both components of the experimental group (peer educators and the rest of the experimental group) have a different change across time in relation to the target variables (bullying, cyberbullying, victimization and cybervictimization) and to the process-mediating variables (coping strategies): to this regard we hypothesize a significant decrease of the target behaviours, a significant decrease of maladaptive coping strategies and a significant increase of adaptive strategies across time in both components of experimental group, although this change could be more consistent for the peer educators group.
3. Finally, focusing on the experimental group, we aim to evaluate if the change in the target variables is affected by the change in the process-mediating variables: to this regard we hypothesize that the decrease in the target behaviour should be influenced by the increase in the adaptive and the decrease in the maladaptive coping strategies.

Method

Participants

Participants in the study were 375 adolescents (males= 20.3%), enrolled in 9th to 13th grades of 4 high schools in Tuscany. 53.1% of the students attended Lyceum high schools, 31.5% Technical Institutes and 15.5% Vocational high schools. The majority of students were from Italian background (90.4%). The experimental group was composed by 231 adolescents (Males= 15.4%; mean age= 16.8; SD= 1.92) attending 10 classes of 3 high schools. 42 students (Males= 23.8%) were enrolled as peer educators. Compared to the other students in the experimental classes, they participated in peer educators' training. The control group was composed by students who did not receive any kind of intervention (N= 144; Males= 20.8%; mean age= 15.15; SD= .90). The schools were selected using a self-selection inclusion process and the classes were selected by the school staff. Self-report questionnaires were administered in class by trained researchers during school time (in December 2010 and in May 2011). Consent procedure for research consisted of approval by the schools and consent by the parents: 100% of the families agreed to their children's participation in the research.

Instruments

Outcome behaviours

Bullying and Victimization. In order to analyze the involvement in bullying and victimization we used the Bullying and Victimization

Scales (Menesini, Calussi, & Nocentini, 2012). This questionnaire is composed by two scales: one for perpetration and one for bullying received (victimization). Each scale consists of 11 items, asking how often adolescents had experienced in the past couple of months several behaviours as perpetrators or victims (e.g. "I threatened someone"; "I beat and pushed"; "I was threatened", "I was beaten and pushed"). Each item was evaluated along a 5-point scale from "never" to "several times a week". Reliability coefficients showed acceptable values: for bullying alphas were 0.75 at T1 and 0.82 at T2 and for victimization alphas were 0.74 at T1 and 0.71 at T2. A mean score was used in the following analyses.

Cyberbullying and Cybervictimization. In order to evaluate cyberbullying and cybervictimization, a revised version of the Cyberbullying Scale (Menesini, Nocentini, & Calussi, 2011) was used. It is composed by two scales, one for perpetration and one for victimization. Each scale consists of 18 items, asking how often in the past couple of months adolescents had experienced several behaviours ("I sent email with threats and insults"; or "I received email with threats and insults"). Each item was evaluated along a 5-point scale from "never" to "several times a week". Reliability coefficients showed acceptable values: for cyberbullying alphas were 0.79 at T1 and 0.82 at T2 and for cybervictimization alphas were 0.80 at T1 and 0.87 at T2. A mean score was used in the following analyses.

Process variables

Coping strategies. In order to analyze the role of coping strategies as possible mediators of the program efficacy, we used the Coping Strategy Indicator (Amirkhan, 1990). The CSI is a standardized measure which assesses general coping styles in the presence of stressful events. It consists of 33 items belonging to three scales that measure three different styles of coping: (a) Problem Solving Scale (T1 α= .85; T2 α= .85); (b) Seeking Social Support (T1 α= .85; T2 α= .87); (c) Avoidance (T1 α= .69; T2 α= .69). A mean score was used in the following analyses.

Procedure

Noncadiamointrappola is an ongoing intervention project started in 2008. Each year it has been enriched by adding and modifying components following the results found in the previous editions. In *Noncadiamointrappola 2nd edition* we improved the model: 1) paying stronger attention to the victim's role in each step; 2) involving bystanders more; 3) working on coping strategies that adolescents may use in bullying and cyberbullying situations; 4) requesting greater collaboration of curricular teachers on specific class activities; 5) creating a facebook group complementing the webpage forum.

In particular, the second edition was carried out through the following stages:

1. Initial evaluation and needs analysis.
2. Launch of the project and awareness developing. Presentation of the project and first communication on issues related to bullying and cyberbullying.
3. Selection of peer educators from each participating class through self-nomination.
4. Day training for peer-educators (focussing on: communication, empathy, coping strategies and social skills in real and virtual interactions).
5. Face-to-face peer educator's activities: in each class the intervention was carried out in collaboration with teachers and its aim was to produce a final product such as: a short movie, a peer counselling service, a new guideline for ICT use, a poster advertising the project.
6. Online peer educators intervention was carried out for a period of two weeks as forum moderators (http://www.squarciagola.net/cyberbullismo/) and as facebook group administrators.
7. Final evaluation.

Data analyses

Analyses were conducted in three steps. First, we evaluated longitudinal differences (pre and post-intervention) in bullying, victimization, cyberbullying and cybervictimization between the control and experimental group by using repeated measures ANOVA. Effect size was evaluated using partial eta squared (η^2_p).

Second, we focused on the experimental group differentiating peer educators and the other students of the experimental classes. In particular, we evaluated differences in behaviours and differences in processes (coping strategies) that could be involved in this change, by using repeated measures ANOVA (pre and post-intervention) between peer educators and the other students of experimental classes. Unfortunately, due to schools difficulties we don't have the data on the coping strategies in the control group.

In order to analyze the relation between these changes in processes and the outcome behaviours we used the residualized change in a two-wave mediation model (MacKinnon, 2008). The first step in the calculation of the residualized change score is to obtain predicted values of the post-intervention measure by using the pre-intervention measure. The residualized change score is the difference between the observed score at post-intervention and the predicted score at post-intervention, where the pre-intervention measure was used to predict the post-intervention measure. We obtained the residualized change scores separately for both the behaviours and the mediators (coping strategies) and they were analyzed as if there were a single measure of each variable. In order to evaluate the mediation role of the coping strategies in the changes of the behaviours we regressed the residualized change score of the coping strategies on the residualized change score of the behavioural variables, considering the interactions between the processes variables and the groups (peer educators or experimental classes).

Results

Experimental vs. Control group: the intervention effects

Table 1 shows descriptive analyses for both groups in behavioural variables (pre- and post- intervention). Repeated measures ANOVA were carried out in order to evaluate the effect of time on these variables across the two groups. For bullying and victimization results showed no significant effect of time and a significant interaction time*group for bullying ($F_{(1, 375)}$= 5.993; p<.05; η^2_p= .016) and for victimization ($F_{(1, 375)}$= 11.848; p<.01; η^2_p= .031). For cyberbullying and cybervictimization, results showed a non-significant effect of time and a non-significant interaction time*group for cyberbullying. For cybervictimization, results showed a significant interaction for time*group ($F_{(1, 375)}$= 5.706; p<.05; η^2_p= .015).

Table 1
Means and standard deviations of the behavioral variables pre and post- intervention (Wave 1 and Wave 2) in the experimental group and in the control group

	Experimental group		Control group	
Criterion	**Wave 1**	**Wave 2**	**Wave 1**	**Wave 2**
Bullying				
M	1.20	1.17	1.24	1.29
SD	.27	.28	.33	.36
Victimization				
M	1.22	1.17	1.24	1.28
SD	.31	.26	.27	.29
Cyberbullying				
M	1.04	1.03	1.11	1.12
SD	.07	.07	.19	.25
Cybervictimization				
M	1.12	1.08	1.19	1.20
SD	.20	.12	.18	.30

Table 2
Means and standard deviations of the behavioral variables and of coping strategies pre and post- intervention (Wave 1 and Wave 2) in the experimental group (peer educators and the other students in the experimental classes)

	Peer educators		The other students in the experimental classes	
Criterion	**Wave 1**	**Wave 2**	**Wave 1**	**Wave 2**
Bullying				
M	1.23	1.19	1.19	1.17
SD	.31	.38	.26	.26
Victimization				
M	1.24	1.20	1.22	1.17
SD	.38	.31	.28	.25
Cybervictimization				
M	1.15	1.09	1.11	1.08
SD	.34	.11	.15	.12
Problem solving				
M	2.33	2.36	2.20	2.31
SD	.45	.41	.42	.44
Seeking social support				
M	2.18	2.21	2.19	2.20
SD	.48	.50	.46	.51
Avoidance				
M	2.23	1.95	1.99	1.85
SD	.40	.37	.40	.37

Peer educators vs. the other students in the experimental classes: changes and mediation analyses.

Table 2 shows descriptive analyses for both groups in behavioural variables (pre and post- intervention) and in process variables (coping strategies).

We found significant effects of intervention in both groups in relation to behavioural and processes variables.

Changes in behaviours: For the three variables results of repeated measures ANOVA showed a tendency to the significance of the effect of time for bullying ($F_{(1, 231)}$= 3.453; p= .06) and a significant effect of time for victimization ($F_{(1, 231)}$= 4.178; p<.05; η^2_p= .018) and cybervictimization ($F_{(1, 231)}$= 8.919; p<.01; η^2_p=. 037). Non-significant interaction effects for time*group were found.

Changes in processes: for the three coping variables, results of repeated measures ANOVA showed a significant effect of time for avoidance ($F_{(1, 228)}$= 37.719; p<.001; η^2_p=.143) and problem solving ($F_{(1, 228)}$= 4.747; p<.05; η^2_p= .021) and a non-significant effect of time for seeking social support. Non-significant interaction effects for time*group were found.

Mediation analyses

We conducted three multiple regression analyses with the residualized change score of bullying, victimization and cybervictimization as the dependent variable. Independent variables were the residualized change score of avoidance and problem solving and the group (peer educators or other students in the experimental classes); finally, interaction between coping strategies and group (peer educator vs. other students in the experimental classes) was considered.

In the model predicting bullying non significant predictors were found. Table 3 summarize results of the regression analyses on victimization and cybervictimization. The model predicting victimization was significant (R^2= 0.32, $F_{(5, 222)}$= 20.71, p<0.001). The residualized change score of avoidance (B= .254, p<.05) predicted positively the residualized change score of victimization, meaning that a greater reduction in avoidance predicts a greater reduction in victimization. None of the interactions were significant above and beyond the main effects. The model predicting cybervictimization was significant (R^2=0.19, $F_{(5, 222)}$= 10.549, p<0.001) and a significant effect of residualized change score of avoidance (B= .075, SE= .033, p<.05) on the residualized change score of cybervictimization was found. We found also a significant interaction between group and problem solving (B= .056, SE=

Table 3
R^2, B, standard errors (SE) and F resulted from the regression models

	Victimization				Cybervictimization			
	R^2	**B**	**SE**	**F**	**R^2**	**B**	**SE**	**F**
	.318			**20.705*****	.192			**10.549*****
Group		-.023	.021			-.009	.006	
Problem solving		-.118	.130			**-.112****	**.036**	
Avoidance		**.254***	**.119**			**.075***	**.033**	
Problem solving × group		.058	.068			**.056****	**.019**	
Avoidance × group		.004	.065			-.021	.018	

Note: *p<.05; **p<.01; ***p<.001

.019, p<.01). In order to interpret this interaction we calculated the regression effects separately for the two groups, which showed that the change in problem solving, for the other students in the experimental classes (R^2=0.08, $F_{(2, 184)}$= 7.435, p<0.01) controlling for avoidance (B= -0.033, SE= 0.008, p<.001) didn't predict the change in cyberbullying (B= .000, SE= 0.006, ns). In contrast, for peer educators (R^2= 0.51, $F_{(2, 184)}$= 19.335, p<0.001) the change in cybervictimization was negatively predicted by the change in problem solving (B= -0.056, SE= 0.018, p<.01), controlling for avoidance (B= 0.054, SE= 0.016, p<.01): it means that for peer educators a greater increase in problem solving predicts a greater decrease in cybervictimization.

Discussion

The present study aimed to evaluate the effectiveness of the *Noncadiamointrappola* 2nd edition program. On the whole, the results give clear support of the efficacy of this intervention: they show a significant pattern of decrease in bullying, victimization and cybervictimization in the experimental group in comparison with the control group (albeit the effect size is not very strong). Differently from the first edition (Menesini & Nocentini, 2012) we found effects in the whole experimental classes without differences related to the roles played by the students. In particular, the peer educators were able to be agents of change in their classes: they were not simply the direct beneficiaries of the intervention. These results are apparently in contrast with a meta-analysis on the effectiveness of school-based programs to reduce bullying (Ttofi & Farrington, 2011). The authors suggested that this approach is not useful. Probably this conclusion does not take into account that there are different components that can play a role in the effectiveness of a program. The same authors found that the most important program elements that were associated with a decrease in victimization were also videos and cooperative group work and we used them within the framework of a peer- led model.

Besides, we can understand that within a peer education- peer support model the type of roles peer educators play is highly relevant. If they undertake a process of personal change and cannot involve the other students, this approach may have limited effects (Menesini & Nocentini, 2012). On the contrary, if they are supported in their capacity to promote initiatives and active participation of other students, the process of change can involve the entire class.

The present study also aimed to understand which processes could explain the observed results. Starting from what students think about coping strategies (Hinduja & Patchin, 2007; Smith et al., 2008; Kanetsuna, Smith, & Morita, 2006) and from literature findings (Pozzoli & Gini, 2010) we decided to work intensively during the program on the coping strategies that could be used by victims and bystanders in order to tackle bullying and cyberbullying. We found a significant increase in the experimental sample between pre- and post-intervention measures in the use of an adaptive coping strategy such as problem solving and a significant decrease in a maladaptive coping strategy such as avoidance. Regression analyses show that these two strategies can mediate the efficacy of the program: the greater decrease in avoidance predicts the greater reduction in victimization and cybervictimization. This result is the same across groups (peer educators and the other students in the experimental classes). Conversely, problem solving is a mediator of the change in cybervictimization but only in the peer educators group. We can speculate that it could be the effect of the specific training attended by peer educators.

An unexpected result we found was a non significant increase in seeking social support as a positive coping strategy despite our focus during the project. Looking at descriptive analyses (table 2), we can see that there is an increasing – though not significant - trend in both groups. Probably, we can hypothesize that it is easier to change coping strategies that depend on individuals such as problem solving or avoidance. On the contrary, in order to adopt a coping strategy based on seeking social support an individual needs first to be able to trust other people of his/her social contest, process that we were not able to catch in the time length of the intervention.

Coping strategies are not involved in mediating the reduction in bullying. This is not a surprising finding because we expected that other individual and contextual variables (e.g. attitudes, beliefs and moral disengagement) play a role to this regard. We also did not work directly on this role but we focussed more on victims and bystanders. Further analyses are needed to understand if the efficacy of the project in reducing bullying was caused by an increase in defending behaviours acted by the bystanders. In support of this hypothesis, we can speculate that in our experimental group there was an increase in problem solving and we know that this strategy is positively associated with active help towards the victims and negatively related to passive roles (Pozzoli & Gini, 2010).

Finally, some limitations of the study have to be discussed: 1) in terms of method, we did not follow up the outcomes after a few months, while we know that it is important to determine the stability of changes according to the standards of evidence of prevention science (Flay et al., 2005); 2) the analyses on mediational processes are restricted to the experimental group because we didn't have data about coping strategies for the control group: the control schools didn't allow us to administer the complete set of questionnaires. However, the changes in the coping strategies show how these processes can affect bullying and cyberbullying similarly or differently across the two sub-groups: peer educators and the other students of the experimental classes; 3) we don't have a placebo group and a randomized control trial because schools decided to take part in the intervention and we tried to find a control group with similar characteristics.

Despite these limitations, the present study integrates previous knowledge and gives some relevant suggestions to researchers and practitioners working on bullying and cyberbullying. In particular, starting from the standards of evidence as defined by international research (Flay et al., 2005), we evaluated the efficacy of a project highlighting different components that can explain a reduction of the phenomenon, and we focused on possible mechanisms responsible for changes and/or the stability of the problem.

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