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Exposure to Violent Contexts, Moral Cognitions, and Bullying Perpetration in Adolescence: Implementation and Evaluation of an Anti-Bullying Intervention Program

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CHAPTER I

GENERAL INTRODUCTION:

A REVIEW OF THE LITERATURE

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School Bullying in Adolescence

School bullying is one of the major social problems affecting children and adolescents in all parts of the world (Hong & Espelage, 2012). Indeed, during the school years, bullying has been commonly recognized as a widespread expression of violence in the peer context (Menesini & Salmivalli, 2017).

From a developmental perspective, the growing period during which these behaviors are more likely to occur is the transition from childhood and primary school to adolescence and secondary school (Pellegrini & Hong, 2002). Adolescence is a life cycle stage characterized by great psychosocial vulnerability (Riquelme, Garcia, & Serra, 2018) and has a critical role in terms of damages in several areas of adjustment and competence as relevant as self-esteem (Garcia, Martínez, Balluerka, Cruise, Garcia, & Serra, 2018), academic engagement (Veiga, Garcia, Reeve, Wentzel, & Garcia, 2015), school adjustment (Musitu-Ferrer, Esteban-Ibañez, León-Moreno, & García, 2019) and behavioral problems (Martínez, Fuentes, García, & Madrid, 2013). Such decrease in psychosocial competences, as well as the increase in behavioral problems, seem to be related to the changes that occur in peer influence, which significantly increases during adolescence as opposed to other socialization agents such as the family (Garcia, Serra, Zacares, & Calafat, & 2019; Veiga et al., 2015), putting youth at greater risk of involvement in deviant behaviors such as alcohol use and abuse (Garcia et al., 2019) or bullying behaviors (Gómez-Ortiz, Romera, Ortega-Ruiz, & DelRey, 2018).

Consistent with the considerations discussed above regarding both the criticism of adolescence in terms of psychosocial vulnerability (Riquelme et al., 2018) and the most influential effects of peers during this life period (Garcia et al., 2019; Veiga et al., 2015), a great deal of research on school bullying has focused on its correlates and predictors during middle and high school (Espelage, Bosworth, & Simon, 2000; Espelage, Hong, Rao, & Thornberg, 2015) jointly with a growing need for identifying effective prevention and intervention strategies which could counteract its adverse effects (Gaffney, Farrington, & Ttofi, 2019; Zych, Farrington, & Ttofi, 2019).

Definition, Prevalence Rates and Consequences of School Bullying

What is Bullying among Peers?

Despite some debate over the definition, bullying perpetration has been widely considered as a subtype of aggressive, intentional behavior carried out by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself (Olweus, 1993) and whose manifestations may take place in different patterns of interpersonal relationships (Rodkin, Espelage, & Hanish, 2015), especially within the school context.

Bullying behavior may involve both direct-, such as verbal attacks and physical aggressive behaviors, that ranges in severity from making threats to physical attacks causing injury, and indirect or relational/social- forms of aggression by excluding or ignoring someone from the peer group (Monks & Smith, 2006; Olweus, 1993; Smith, 2016) up to the most recent online forms of aggressive behaviors through the use of electronic means such as Internet and new Communication Technologies (ICTs), the so-called “cyberbullying” (Smith et al., 2008).

Regardless of the specific manifestations of bullying perpetration, there is broad consensus in the international scientific community to indicate three specific core criteria relevant in order to define an aggressive behavior as bullying: (i) the deliberate intention to harm the other person; (ii) the repetitive nature of aggressive acts; and (iii) an imbalance of physical or psychological power between the perpetrator(s) and the victim(s) (Farrington, 1993; Olweus, 1993).

How Widespread is the Phenomenon of School Bullying?

The spread of school bullying finds a fertile ground in adolescence given the great psychosocial vulnerability characterizing this life cycle stage (Riquelme et al., 2018). Longitudinal studies highlighted that the incidence of bullying episodes increases during the transition from elementary to middle school and gradually decrease during high school years (Holfeld & Mishna, 2018; Pellegrini & Long, 2002; Sourander, Helstelä, Helenius, & Piha, 2000). This may be because youth have to re-establish their social status during the transition from primary to secondary school and, consequently, bullying may be viewed as a deliberate strategy used to establish dominance as youth enter a new peer group (Pellegrini & Long, 2002).

A wide variation has been documented in prevalence rates of bullying across countries even though could be difficult to make a comparison across studies due to discrepancies in measurement methods and/or in the terminology or operationalization of bullying construct (Menesini & Salmivalli, 2017). Additionally, other authors (Elgar, Craig, Boyce, Morgan, & Vella-Zarb, 2009) noted that school bullying prevalence varied according to rates of income inequality with higher income inequality associated with more reports of school bullying amongst adolescents. After controlling for income inequality, family and school support were associated with lower levels of bullying perpetration (Elgar et al., 2009).

However, regardless of these geographical-based variations, a recent report published by the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2019) outlines that, globally, school bullying remains a widespread phenomenon which involves around one-third of children and adolescents. More specifically, one out four school children in Europe to nearly one out two children in sub-Saharan Africa report bullying victimization. Moreover, an extensive meta-analysis (Modecki, Minchin, Harbaugh, Guerra, & Runions, 2014) across 80 different countries reported a mean prevalence of 35% for bullying (both perpetration and victimization roles). A review by Juvonen and Graham (2014) noted that approximately 20-25% of youth were directly involved in bullying as perpetrators, victims, or both. Finally, in the World Health Organization's (WHO) Health Behavior in School-Aged Children survey (HBSC, see Currie et al., 2012), the average prevalence for the most severe forms of bullying in 38 countries around the world tended to be highly similar: 12% for victimization and 11% for bullying in 13 years old respondents, and 9% for victimization and 12% for bullying for 15 years old respondents.

Given these statistics on the phenomenon and its detrimental consequences for individuals and societies, as well as the high cost of anti-bullying interventions, it has become a growing imperative, over the years, implementing more effective school-based anti-bullying programs by establishing “what works” in these interventions to protect students from bullying and its potential adverse outcomes (Gaffney et al., 2019; Zych et al., 2019).

What are the Health Consequences of School Bullying?

Although with their distinctive features, both bullying perpetration and victimization bring negative health consequences that are well documented in the research literature (Gaffney et al., 2019; Menesini & Salmivalli, 2017). In the past three decades, a significant effort has been put forth by researchers to analyze the effects of bullying and victimization on physical, psychological, relational, and general wellbeing (Menesini & Salmivalli, 2017).

Starting from cross-sectional studies, has been found that bullying perpetration and victimization experiences are associated with both worrying mental health and educational outcomes, such as increased suicidal ideation (e.g., Hinduja & Patchin 2010; Holt et al., 2015; Klomek, Sourander, & Gould, 2010), higher levels of social anxiety (e.g., Hawker & Boulton, 2000) and depression (e.g., Ttofi, Farrington, Lösel, & Loeber, 2011) among victimized peers whilst bullies, on the other hand, are more likely to carry weapons (e.g., Valdebenito, Ttofi, Eisner, & Gaffney, 2017) or use drugs (e.g., Ttofi, Farrington, Lösel, Crago, & Theodorakis, 2016; Valdebenito, Ttofi, & Eisner, 2015). With regard to the educational field, an extensive meta-analysis (Fry et al., 2018) across 21 countries concluded that the experiences of bullying in childhood were significantly related to higher rates of school dropout and absenteeism and decrease in school graduation and lower academic achievement overall, although, the latter relationship was not statistically significant. A systematic review by Zych, Ortega-Ruiz, and del Rey (2015) evidenced that the involvement in bullying behaviors was prospectively associated with negative outcomes in adulthood (Arsenault, Bowes, & Shakoor, 2010) suggesting that experiences of school bullying may function as stepping stones towards many undesirable life outcomes. As argued by these authors (Arsenault et al., 2010), perpetration is associated, in the short-term, with severe symptoms of mental health problems which can persist until late adolescence. Ttofi et al. (2011) in a meta-analysis carried out on 28 longitudinal studies, found that bullying perpetration is a strong and specific risk factor for later criminal offending and psychotic symptoms, even after controlling for other major childhood risk factors. Similarly, the Pittsburgh Youth Study (Farrington, Loeber, Stallings, & Ttofi, 2011), concluded that bullying perpetration is followed by an increased risk of delinquency whereas bullying victimization is followed by an increased risk of depression.

Therefore, bullying represents a concern not only for parents and educators, but it is a public health concern (Masiello & Schroeder, 2013), and it is imperative that effective intervention efforts are put in place.

Moral Cognitive Processes Explaining Antisocial Behaviors among Peers: The Self-Serving Cognitive Distortions in the Framework of Moral Developmental Delay

Consistent with social-cognitive approach (e.g., Bandura, 1977, 1986), according to which people act upon their interpretation of social events, previous research claimed that moral cognitions represent a key factor for motivating moral or immoral acts such as bullying behaviors (Gini, Camodeca, Caravita, Onishi, & Yoshizawa, 2011). Based on this theoretical framework and being aware that given its systematic nature of power's abuse (Smith & Monks, 2008) to the detriment of weaker victim(s), school bullying may be considered a behavior of greater intrinsic moral relevance with respect to other aggressive behaviors (Arsenio & Lemerise, 2004; De Angelis, Bacchini, & Affuso, 2016; Rodkin et al., 2015), the present dissertation focused on exploring the role of moral cognitive processes underlying the engagement in bullying perpetration.

To date, several researchers have dedicated their efforts to understand how individual's cognitive processes can give root to and strengthen aggressive tendencies (Gini et al., 2011) reaching an agreement that the presence of deviant or immoral thinking patterns increase the likelihood of antisocial behavior (Gannon, Ward, Beech, & Fisher, 2007). In terms of such moral cognitive processes, the thinking patterns displayed by antisocial individuals are commonly referred to as “cognitive distortions”, a general umbrella term comprising a variety of theories consistent with a social-cognitive approach and constructs such as moral disengagement and social-cognitive biases, that link behavior to the way one thinks about situations. Each of these theories sought to address the same key theoretical question: “*Through which cognitive processes can an individual who is generally rule-abiding and compliant with moral standards minimize cognitive dissonance, threats to self-concept, and experiences of moral self-sanction when he or she transgresses those standards?*”, with each of them reaching only partially overlapping answers (Ribeaud & Eisner, 2010). The latter refer to three closely related concepts from different fields of research such as “neutralization techniques” (Sykes & Matza, 1957), “moral disengagement” from Bandura’s social cognitive theory (e.g., Bandura, Barbaranelli, Caprara, & Pastorelli, 1996), or “self-serving cognitive distortions” (Barriga & Gibbs, 1996; Gibbs, Potter, & Goldstein, 1995).

However, the three above-stated constructs which have been grouped under the general umbrella term “cognitive distortions” have their origins in Sykes and Matza’s (1957) theory of “neutralization” which posits that individuals who act in an antisocial way try to resolve the discrepancy between their behavior and internalized social norms and beliefs by cognitive rationalization processes that deny or minimize the seriousness of their acts or justify them in some way (Maruna & Mann, 2006). Such cognitive processes are viewed as preceding a particular delinquent act and are therefore conceived as being proximally involved in the causation of crime and violence (Sykes & Matza, 1957).

More than three decades after the first formulation of the moral neutralization framework, Bandura, like Sykes and Matza, starting from the observation that “*people do not ordinarily engage in reprehensible conduct until they have justified to themselves the rightness of their actions*” (Bandura et al., 1996, p. 365), claimed that moral disengagement mechanisms precede immoral acts, and are thus involved in their immediate causation. Overall, moral disengagement and neutralization techniques appear to be broadly conceptually congruent with only a few neutralization mechanisms that are lacking their respective counterparties in one or the other theoretical framework (Ribeaud & Eisner, 2010).

Finally, the third framework of moral neutralization is rooted in the concept of cognitive distortions (cf. “cognitive distortions”, Beck, 1963; “thinking errors”, Yochelson & Samenow, 1976, 1977, 1986; “faulty beliefs”, Ellis, 1977), generally defined as inaccurate or non-veridical schemas for perceiving events and was proposed in the context of young offender rehabilitation by Gibbs and colleagues (Barriga & Gibbs, 1996; Barriga et al., 2000; Gibbs et al., 1995). While both Beck and Ellis focused on “self-debasing” cognitive distortions, Gibbs and colleagues were interested in “self-serving” cognitive distortions, a construct developed in order to explain juvenile antisocial behaviors. Indeed, embedded in neo-Kohlbergian theoretical framework, Gibbs and colleagues’ “three *D*s” formulation (Gibbs, Potter, Barriga, & Liau, 1996) claim that self-serving cognitive *Distortions*— defined as “inaccurate or biased ways of attending to or conferring meaning upon experiences” (Barriga, Gibbs, Potter, & Liau, 2001, p. 1) together with sociomoral developmental *Delay*— that is persistence into adolescence of immaturity in moral judgment and egocentric bias, and social skills *Deficiencies* — defined as “imbalanced and unconstructive behavior in difficult interpersonal situations” (Gibbs et al., 1995, p. 165), the so-called three “*D*s”, represent common limitations characterizing antisocial youth’s social cognitions (Gibbs, 2013; Gibbs et al., 1995; Nas, Brugman, & Koops, 2005).

The main assumption of such model is that antisocial behavior can stem from perception structured by schemas of self-serving cognitive distortion. Indeed, like neutralization techniques and moral disengagement mechanisms, Gibbs and colleagues conceived cognitive distortions as potentially preceding antisocial action as in the case of *primary* cognitive distortions; however, they also suggested the possibility of multidirectional causality, so that self-serving cognitive distortions may also follow behavior as in the case of *secondary* cognitive distortions. More specifically, referring to Barriga and Gibbs’ (1996) typology, *primary* distortions (the category *Self-centered*) reflect more immature moral judgment stages as defined by Kohlberg (1984) and serve as main motivators or “pretexts” of aggressive behaviors. *Self-centered* cognitive distortions are represented by self-centered attitudes, thoughts, and beliefs (p. 334) through which the individual focuses on his/her own opinions, expectations, needs, and rights to such an extent that the opinions or needs of others are scarcely considered or are disregarded altogether. A typical example of self-centered attitudes could be the following quote from a male burglar: “[…] *My idea in life is to satisfy myself to the extreme. I don’t need to defend my behavior. My thing is my thing. I don’t feel I am obligated to the world or to nobody*” (Samenov, 2004, p. 86).

The *secondary* distortions support the self-centered attitudes (Gibbs, 2013) and have been characterized as pre- or post-transgression rationalizations or “excuses” for facilitating aggressive behaviors since their function is to cognitively overcome dissonance between individual moral standards and behavioral transgressions and neutralize potential feelings of guilt or empathy towards the victim, thus avoid damage to one’s self-image when engaging in antisocial conducts (Bandura, 1991; Sykes & Matza, 1957). Such post-rationalizations can be illustrated by the words of another individual described by Samenov (2004, p. 172): “*Just because I shot a couple of state troopers doesn’t mean I’m a bad guy*”. The *secondary* self-serving cognitive distortions can take the form of: (i) *Blaming others,* which involves “cognitive schemas of misattributing the blame for one’s own behavior to sources outside the individual (i.e., external locus of control) or misattributing blame for one’s victimization or other misfortune to innocent others” (Barriga & Gibbs, 1996, p. 334); (ii) *Minimizing/Mislabeling* by which antisocial behavior is depicted as not really harmful or even as an admirable outcome or referring to others with a belittling or dehumanizing label; and (iii) *Assuming the worst* which consists in gratuitously attributing hostile intentions to others, considering a worst-case scenario for a social situation as inevitable, or believing that improvement of one’s own or others’ behavior is impossible.

Such secondary distorted thinking patterns are assumed to block moral judgment development because one does not consider oneself to be responsible for one’s antisocial behavior, as those fulfill defensive or neutralizing role (Gibbs, 1991). Indeed, consistent with a cognitive-developmental approach to morality (Kohlberg, 1984), cognitive distortions are often associated with a delay in moral development (Gibbs, 2013) and have been theorized by Gibbs as relatively stable cognitive mechanisms that, once internalized, are applied by individuals in the interaction within the social environment; differently, Bandura claimed that moral disengagement mechanisms may be selectively activated or deactivated by individuals depending on their personal convenience and situational circumstances in the exercise of their moral (or immoral) agency. As a result, these self-regulatory mechanisms allow individuals to engage in self-serving behaviors that are in contrast with their moral principles, while continuing to advocate those principles and without incurring self-evaluative cognitive (e.g., cognitive dissonance) and emotional (e.g., guilt and shame) reactions that may otherwise serve to deter their misconduct (Paciello, Fida, Tramontano, Lupinetti, & Caprara, 2008).

The Need for Early Preventing and Counteracting Antisocial Behaviors among Peers as School-Bullying: The “EQUIP for Educators” Program

During the school years, one of the most common manifestations of violence in the peer context is represented by bullying behavior (Menesini & Salmivalli, 2017) which being considered an internationally ubiquitous problem has become a relevant topic for empirical research as well as for effective interventions (Gaffney et al., 2019; Zych et al., 2019). As well, bullying represents one of the specific manifestations of greater intrinsic moral relevance with respect to other aggressive or antisocial behaviors (Arsenio & Lemerise, 2004; De Angelis et al., 2016; Rodkin et al., 2015).

Overall, antisocial behaviors in adolescence may occur along an increasing severity continuum (Schaeffer, Petras, Ialongo, Poduska, & Kellam, 2003; Tremblay, 2006) in terms of psychosocial and legal consequences including a heterogeneous set of behavioral manifestations such as aggressive behaviors among peers as bullying until more severity antisocial behaviors as vandalism and many other delinquent acts. Since it is during adolescence that there is a dramatic peak in problem behaviors (Simons-Morton, Haynie, Saylor, Crump, & Chen, 2005) and these manifestations represent a substantial risk factor for severe problem behavior, psychopathological disorders, and crime later in life (Moffitt, 2003; Overbeek, Vollebergh, Meeus, Engels, & Luijpers, 2001) a growing amount of research concerning the origins and persistence of antisocial behavior as well as the development of early prevention aimed at meeting the needs of behaviorally at-risk youth substantially increased during the past decades (Verhulst, 2008).

Adopting the Developmental Psychopathology perspective (Cicchetti, 1984; Sameroff & Emde, 1989), many theorists have abandoned the claim of linking antisocial behaviors as bullying to a unique explanatory model, instead recognizing its multifactorial nature and the multidirectional causality direction of the association between risk factors and maladaptive behaviors (e.g., Dodge & Pettit, 2003; Ribeaud & Eisner, 2015). Accordingly, as regards the prevention and intervention efforts, it has been widely required to develop multicomponent interventions targeting the multifaceted needs of behaviorally at-risk youth at the same time (DiBiase, Gibbs, & Potter, 2011). Many interventions addressed in such direction have been designed to reduce antisocial behaviors and cognitive-behavioral programs have been shown to be relatively effective—although significant variations were found in the effect sizes across studies (e.g., Hollin & Palmer, 2009; Landenberger & Lipsey, 2005; Pearson, Lipton, Cleland, & Yee, 2002; Wilson, Lipsey, & Derzon, 2003). Such programs are based on the main assumption of cognitive-behavioral approach according to which dysfunctional thinking patterns contribute to the development and persistence of antisocial behavior. By altering this biased thinking patterns, it would be possible to modify antisocial aspects of personality and consequent behaviors (Owens et al., 2011; Van der Velden, Brugman, Boom, & Koops, 2010). Therefore, cognitive and behavioral changes are assumed to reinforce each other through the teaching of new skills in areas where at-risk youth show deficits (Milkman & Wanberg, 2007).

Overall, when implementing school-based anti-bullying prevention programs, has been recommended to adopt the three-tiered public health model which distinguished preventive actions into: (i) universal (Tier 1, schoolwide “green-zone”), (ii) selective or targeted (Tier 2, targeted “yellow-zone”), and (iii) indicated or clinical (Tier 3, intensive “red-zone”) levels (Bradshaw, 2015). Universal programs or activities affect all youth within a defined community or school setting and typically are expected to meet the needs of approximately 80% of students within a school; selective interventions focus on youth at great risk for becoming involved in bullying probably due to their pre-existing symptoms or problematic behaviors and they often represent approximately 10-15% of students not responding adequately to the universal system of support; finally, indicated preventive interventions may include more intensive supports and programs for those identified as a bully or victim, and they may be used with approximately 5% of the student population. Although many researchers encourage the use of a multitiered approach to address bullying, most of anti-bullying prevention efforts focused on the impact of universal programs, with limited consideration of selective and indicated prevention models.

The “Equipping Youth to Help One Another (EQUIP) for Educators” (EfE; DiBiase, Gibbs, Potter, & Spring, 2005) is one of the effective school-based cognitive-behavioral programs which results from an adaptation of the original treatment program EQUIP for juvenile offenders (Gibbs et al., 1995), and is dedicated to both primary and secondary prevention in an educational context. Developed within Gibbs’ (2013) theoretical framework which claimed that self-serving cognitive *Distortions* together with sociomoral developmental *Delay,* and social skills *Deficiencies,* represent common limitations characterizing antisocial youth’s social cognition (Gibbs, 2014; Gibbs et al., 1995; Nas et al., 2005), it is expected that by remediating these interrelated delays and deficiencies, a reduction in antisocial behaviors could occur (Gibbs et al., 1996). Indeed, the EfE program aims to equip young people at-risk or with behavioral problems in thinking and acting more responsibly by targeting their three core “limitations”, specifically, by: (i) decreasing self-serving cognitive distortions (particularly relating to anger management); (ii) improving social skills; and (iii) stimulating moral judgment development, in the context of a positive peer culture (Potter, Gibbs, & Goldstein, 2001). Nevertheless, at the heart of EfE psychoeducational curriculum is the correction of “thinking errors” or self-serving cognitive distortions (DiBiase et al., 2011) since, at a high level of prevalence, facilitate aggression and other types of antisocial behavior (Barriga, Morrison, Liau, & Gibbs, 2001).

Overall, beyond the specific program components, formats, and modalities (e.g., behavioral-, cognitive-, and emotional-oriented programs), has been recognized that the effect size varies depending on the context where the programs take place with the school providing an excellent context to implement empirically based prevention and intervention programs targeting antisocial behaviors (Cunningham & Henggeler, 2001). Indeed, school provides a setting in which a lot of problem behaviors (e.g., relational and physical aggression, vandalism, and bullying) may occur and be counteract (Cho, Hallfors, & Sánchez, 2005; Wilson et al., 2001) also considering the most influential effects of peers during adolescence both in terms of negative peer pressure and positive prosocial peer influence among at-risk students (Dishion, McCord, & Poulin, 1999).

Although many school-based prevention programs have been developed and applied in recent years (Gottfredson & Gottfredson, 2002), there is a growing need for rigorously evidence-based evaluation of these programs, especially when regarding aggressive behaviors among peers such as bullying (e.g., Eisner & Malti, 2012; Gottfredson et al., 2015). Specifically, it is important to follow high level standards in order to have programs that can be defined “evidence-based” (Eisner & Malti, 2012; see Gottfredson et al., 2015 for a detailed review of the high-quality standards of evidence).

Moreover, in order to make bullying prevention efforts more effective, there is a clear need for evidence-based prevention programs based on the correct identification of the causal risk factors and mechanisms that lead to such behaviors, as well as knowledge regarding the protective factors (Zych et al., 2019). Other relevant issues concern the deepening of which specific components may moderate intervention effectiveness. In this regard, the researchers emphasized the need to improve knowledge about the mechanisms and active components of preventive interventions. Understanding the principles of “what and why, for whom, and under what circumstances” some interventions work is essential for further progress in this field (Smith, Salmivalli, & Cowie, 2012).

However, across Europe, there is still a paucity of high-quality research and effective efforts on preventing bullying and violence are still being overlooked (Eisner & Malti, 2012).

General Aims and Outline of the Present Dissertation

Starting from the considerations discussed above, the main aims of the present dissertation were to provide a contribution on understanding how the experiences of violence exposure across different contexts, specifically within the more proximal (i.e., the family) and distal (i.e., the neighborhood/community) *microsystems*, and individual pro-violence moral cognitions (i.e., the self-serving cognitive distortions) could be involved in explaining the perpetration of school bullying over time, also testing whether a cognitive desensitization mechanism, that the literature has supposed to develop in response to chronically violent contexts (Dodge, Bates, & Pettit, 1990; Huesmann & Kirwil, 2007; Mrug, Loosier, & Windle, 2008; Ng-Mak, Stueve, Salzinger, & Feldman, 2002; see the 2nd chapter of the present dissertation for further deepening), could be invoked to account the relation between violence exposure and bullying perpetration. Furthermore, guided by the growing need for evidence-based prevention programs as for clarifying the potential mechanisms involved in explaining “why, for whom, and under what circumstances” some interventions work, a following aim of the present dissertation was to evaluate, for the first time in the Italian school context, the effects of EfE– implemented as universal prevention program – in counteracting both law-breaking supporting attitudes and bullying perpetration, trying to remedy to the key moral cognitive limitations of the students and examining the potential mediation and moderation mechanisms involved.

To achieve these purposes, three independent studies have been carried out whose objectives are presented below. For each study, a specific chapter of the present dissertation has been dedicated, as follows:

- **Chapter II (Study 1)** aims to evaluate a comprehensive explanatory model of bullying perpetration in a sample of adolescents. To date, only a few studies have investigated the environmental precursors, as the exposure to violent contexts, of school bullying in adolescence.

Accordingly, guided by the social-ecological model of the development of conduct problems in adolescence (Bronfenbrenner, 1979; Dodge & Pettit, 2003), we tested two four-wave cross-lagged panel mediation models, one for each specific daily life violent context (i.e., the family and the neighborhood/community, respectively) to control for baseline values of all variables in each wave and to examine the transactional nature and likely causal direction of the pathways linking domestic and community violence exposure, through witnessing and victimization, self-serving cognitive distortions and school bullying perpetration. Moreover, we tried to provide evidence that a cognitive desensitization process occurs after repeated experiences of violence within the family and the community and that the engagement in bullying perpetration over time is most likely to occur as a result of such cognitive desensitization to violence. Adolescent gender and social desirability were included in the models as control variables, given their potential confounding effects on all study variables;

- **Chapter III (Study 2)** whose intent was to provide a culturally-appropriate assessment tool of adolescents antisocial thinking by developing a new measure of "Attitudes towards Law-Breaking Behaviors" (AtLBBs) able to capture the multiple dimensions from which antisocial acts may drawing on in the high-risk local context under consideration. Once we built the measurement scale, our aim was to test the factorial structure of the scale by performing a series of Confirmatory Factor Analyses, specifically to compare the hypothesized four first-order factors model with two alternative models: a single-factor model in which all items load onto a general factor representing the general AtLBBs measure and a second-order factor model specifying a general AtLBBs latent factor underlying the four first-order factors. Subsequently, we analyzed the psychometric properties of the developed measurement scale by: (i) examining reliability, considering both internal consistency and test/retest reliability; (ii) evaluating the measurement invariance across gender-groups and across time; and (iii) corroborating the criterion-related validity, testing both convergent, divergent, and predictive validity, in a community sample of Italian adolescents coming from a high-risk urban area of Southern Italy;

- **Chapter IV (Study 3)** represents the first attempt to evaluate the efficacy of EfE program with a community sample of Italian middle and high school students. Specifically, the effects of EfE program on both social-cognitive processes (i.e., self-serving cognitive distortions and AtLBBs) and behavioral (i.e., bullying perpetration) outcomes were investigated using a quasi-experimental pre-test/ post-test with control group design. In addition, guided by the *Vantage Sensitivity* framework (Pluess, 2015; Pluess & Belsky, 2013) we also examined the moderating role of individual differences in environmental sensitivity, that is the inherent ability to perceive and process environmental stimuli (Pluess, 2015), in enhancing the effects of EfE program on expected outcomes. Moving towards the analysis of potential mediation processes involved in explaining "why" the EfE program could promote the development of less positive AtLBBs as well as the reduction of bullying perpetration and based on the social-cognitive approach according to which by altering individual biased thinking patterns, it would be possible to modify antisocial aspects of personality and consequent behaviors (Owens et al., 2011; Van der Velden et al., 2010), we tested whether changes in the AtLBBs as well as in bullying outcomes after intervention would be attributed to the decrease in the tendency to make self-serving cognitive distortions, whose correction is at the heart of the EfE psychoeducational curriculum (DiBiase et al., 2011). Furthermore, informed by findings of previous studies (e.g., Nocentini et al., 2018) highlighting a moderating role of both environmental sensitivity and gender to enhance the effects of anti-bullying intervention program, and given gender-based differences in both self-serving cognitive distortions (e.g., Lardén, Melin, Holst, & Långström, 2006; Owens, Skrzypiec, & Wadham, 2014) and bullying perpetration (e.g., Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996), we examined whether the indirect intervention effects on expected social-cognitive and behavioral outcomes were moderated by both adolescent gender and individual differences in environmental sensitivity. To this end, a moderated mediational model using structural equation modeling with latent variables was tested. All the effects on T2 mediator and outcomes were controlled for their baseline values (T1), with all variables at T1 allowed to covary;

- Finally, in **Chapter V**, we reached the general conclusions of the present dissertation summarizing and integrating the findings from the three studies and suggesting several implications for practice as well as directions for future research.

A Brief Description of the Samples

For the present dissertation, data used in the studies previously described were collected from two independent samples of Italian adolescents. More specifically, the sample used for the Study 1 consisted of 778 adolescents (346 males, M_{age} at T1 = 14.20, *SD* = .58) who took part of an Italian longitudinal research project ("Arzano Longitudinal Project", ALP; Principal Investigators: Proff. Bacchini from University of Naples "Federico II" and Affuso from University of Campania "Luigi Vanvitelli"). The project aimed to investigate the main determinants and pathways of successful development and maladjustment from early to late adolescence. The study design began in 2013 and originally involved two cohorts of 6th and 9th graders of all middle and high schools in Arzano, a relatively small town located in the metropolitan area of Naples. The neighborhood served by these schools is characterized by serious social problems such as high unemployment, school-dropout, and the presence of organized crime with rates that are among the highest in Italy [Istituto Nazionale di Statistica (ISTAT) 2016]. National statistics are also supported by findings of prior empirical research, documenting that adolescents growing up in Naples are massively exposed to neighborhood violence in their everyday life (Bacchini & Esposito, 2020).

As outlined in Table 1, for the Study 1 we used both cohorts of adolescents who were enrolled in 9th grade in 2013 and 2016 (T1 of the study), both longitudinally assessed from 2013 to 2016 and from 2016 to 2019 (4 data points, 1-year intervals), respectively.

Instead, participants in the Study 2 and 3 were part of a quasi-experimental trial carried out during the 2018/2019 school year aimed at investigating the effects of EfE program in the school context (DiBiase et al., 2005; see the 4th chapter of the present dissertation for further details about the sample selection). The sample consisted of 354 adolescents (51.7% males), ranging in age from 11 to 21 (M_{age} = 14.86, SD = 2.54) and enrolled in 7th (n = 156) and 12th (n = 198) grades of three middle and three high schools located in several areas of Campania (provinces of Caserta and Naples). For each school, two classes followed the EfE program (i.e., the experimental group) while the others did not receive any kind of intervention (i.e., the control group) for a total of twenty-four classes globally involved in the research project.

Table 1. Longitudinal Design of the Dissertation (Study 1): "Arzano Longitudinal Project"

	School Years						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
	Adolescents' Age						
Cohort 1: **Younger cohort**	M_{age} 11	M_{age} 12	M_{age} 13	M_{age} 14	M_{age} 15	M_{age} 16	M_{age} 17
Cohort 2: **Older cohort**	M_{age} 14	M_{age} 15	M_{age} 16	M_{age} 17	M_{age} 18	M_{age} 19	*Missing by design*

Note. The highlighted cells indicate the age ranges included in the sample of the 1st study of the present dissertation.

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CHAPTER II:

STUDY 1

CHAPTER II

Cross-Lagged Pathways Linking Exposure to Violent Environmental Contexts, Self-Serving Cognitive Distortions and School Bullying Perpetration: A Four-Wave Study in Adolescence[1]

School Bullying in the Framework of Bronfenbrenner's Ecological Systems Theory

Since understanding specific factors that may lead youth to bully others is essential to prevent their involvement in bullying as well as its negative outcomes among perpetrators and victims, most of research in the last decades focused on the potential developmental precursors which could facilitate the involvement in school bullying behaviors. Despite the primary context in which bullying occurs is school (Olweus, 1993) and this manifestation is undeniably linked to personality characteristics (Swearer & Doll, 2001), there is a recent call in the literature (Hong & Espelage, 2012) for considering bullying as a social phenomenon stemming from a complex and bidirectional interplay between the individuals and the environments they inhabit, from the most intimate home ecological system to the larger school and community systems and the most expansive system which is society and culture (Swearer & Hymel, 2015). Therefore, the more comprehensive framework represented by the social-ecological model of the development of conduct problems in adolescence (Bronfenbrenner, 1979; Dodge & Pettit, 2003) has been quite recently used to review the documented risk and protective factors associated with involvement in school-related bullying during childhood and adolescence (see Espelage, 2014). In the area of bullying and peer victimization, this social-ecological model focused on understanding how individual characteristics interact with environmental contexts or systems to promote or prevent victimization and perpetration (Espelage, 2014; Hong & Espelage, 2012) assuming that bullying victims and perpetrators are part of the complex, interrelated multiple system levels that shape the individual — that is *micro*-, *meso*-, *exo*-, *macro*-, and *chronosystem* levels (Bronfenbrenner, 1994).

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[1] Some of the work described in this chapter has been previously published in *International Journal of Environmental Research and Public Health* (first on line in 2019, December).

The most direct influences in bullying behavior among youth are within the *microsystem*, which is composed of both immediate or proximal, such as family, peers, schools, and distal settings, such as neighborhood/community, with whom youth have direct interactions (Hong & Espelage, 2012). To date, a large body of research on school bullying has mainly focused on the individual and immediate *microsystem* levels, such as the family (Baldry, 2003), the peer group (Hong & Espelage, 2012) and the school context (Espelage, Hong, Rao, & Thornberg, 2015). More specifically, as regards the family context, most studies focused on specific aspects of the parent–youth relationships as well as on youth's exposure to interparental or domestic violence finding that lack of parental involvement (e.g., Barboza et al., 2009; Flouri & Buchanan, 2003; Georgiou, 2009), and lack of parental support (Holt & Espelage, 2007), as well as youth's experiences of domestic violence were more likely associated to bullying and victimization at school (e.g., Baldry, 2003; Bowes et al., 2009).

Conversely, despite the extensive literature on bullying and the context in which it takes place, relatively few studies (Espelage, Bosworth, & Simon, 2000; Swearer & Doll, 2001) have investigated how school bullying is influenced by experiences in environments outside of more immediate or proximal settings (e.g., school and family), and by the perceptions of the neighborhood/community where youth live. Only recently, studies focused on broader contextual factors have investigated specific aspects of the urban environment associated with school bullying, such as community violence exposure (Dragone, Esposito, De Angelis, Affuso, & Bacchini, 2020). feeling of unsafety, poverty, or gang affiliation within the neighborhood (Swearer & Hymel, 2015).

Specifically, bullying was found to be associated to both violent family and community contexts although the causal nature of these relationships remains unclear (Swearer & Hymel, 2015). A possible explanation concerns the mediating role of acceptance of violence cognitions or biased social-information processing between exposure to violent contexts with aggressive behavior

(Allwood & Bell, 2008; Bradshaw, Rodgers, Ghandour, & Garbarino, 2009; Calvete & Orue, 2011). Specifically, according to social learning theory (Bandura, 1978), children exposed to violence within the family and/or the neighborhood/community may learn, via an observational process of repeated modeling and reinforcement, that violence is an effective way to deal with conflict (Dodge, Bates, & Pettit, 1990; Monks et al., 2009).

When exposure to violence is repeated over time, a process of “cognitive desensitization to violence” is likely to occur (e.g., Dodge et al., 1990; Mrug, Loosier, & Windle, 2008; Ng-Mak, Stueve, Salzinger, & Feldman, 2002). Such cognitive desensitization would result in more approving violence beliefs, in more positive moral evaluations of aggressive acts, and in more justification for inappropriate aggressive behavior inconsistent with social and an individual’s moral norms (Huesmann & Kirwil, 2007), such as bullying behaviors.

Taking into account the social-ecological model (Bronfenbrenner, 1979) as guiding framework, the purpose of the current study was to investigate the longitudinal and simultaneous pathways linking youth’s violence exposure across different settings, specifically within the more proximal and distal family and neighborhood/community *microsystems*, respectively, and across multiple forms (through direct victimization and witnessing), individual pro-violence moral cognitions (here represented by self-serving cognitive distortions – hereinafter CDs) considered in Gibbs’ model (2013) as an inaccurate way to interpret morally-relevant interpersonal situations, with school bullying perpetration.

In this regard, while there is a strong evidence that both exposure to domestic (e.g., Bacchini, Affuso, & Aquilar, 2015; Cao et al., 2016; Ehrensaft et al., 2003; Evans, Davies, & DiLillo, 2008) as well as community violence (e.g., Chen, Voisin, & Jacobson, 2016; Esposito, Bacchini, Eisenberg, & Affuso, 2017; Mrug & Windle, 2009) and self-serving CDs (Barriga, Hawkins, & Camelia, 2008; Gini, Camodeca, Caravita, Onishi, & Yoshizawa, 2011; Helmond, Overbeek, Brugman, & Gibbs, 2015) are associated with externalizing behaviors (i.e., aggression, conduct problems, delinquency), only a few studies, most of them are cross-sectionals, have systematically examined how bullying behavior (as a specific subtype of aggression) is influenced by experiences of domestic (e.g., Baldry, 2003; Bauer et al., 2006; Voisin & Hong, 2012) as well as community violence exposure (e.g., Bacchini, Esposito, & Affuso, 2009; Chaux, Molano, & Podlesky, 2009; Davis, Ingram, Merrin, & Espelage, 2018; Dragone et al., 2020; Schwartz & Proctor, 2000; Valdés Cuervo, Tánori Quintana, Martínez, Alonso, & Wendlandt Amezaga, 2018). Moreover, the associations between violence exposure and moral CDs (Dragone et al., 2020), according to the Gibbs' model, as well as how such pro-violence moral cognitions are related to the involvement in bullying behavior (Owens, Skrzypiec, & Wadham, 2012) have been poorly investigated.

Finally, this study sought to test the cognitive desensitization hypothesis that the literature has supposed to develop in response to chronically violent contexts (Dodge et al., 1990; Huesmann & Kirwil, 2007; Mrug et al., 2008; Ng-Mak et al., 2002), by considering the moral CDs as indicative of cognitive desensitization that would occur after repeated experiences of violence within the family and community. Specifically, we have investigated the role of domestic as well as community violence exposure in predicting the development of self-serving CDs as intended in their moral dimensions, and the mediating role of such CDs in the relationships between domestic and community violence exposure with bullying perpetration. In this respect, most of the evidence comes from investigating the mediating role of acceptance of violence cognitions or biased social-information processing between exposure to violence and aggressive behavior (Allwood & Bell, 2008; Bradshaw et al., 2009; Calvete & Orue, 2011); however, it is noteworthy that, to date, only a few studies have investigated the environmental precursors of moral attitudes underlying externalizing behavior in adolescence (Dragone et al., 2020; Hyde, Shaw, & Moilanen, 2010).

Exposure to Violence within the Family and Community as Social-Environmental Risk Factor for School Bullying Perpetration

Starting from a social-ecological perspective (Bronfenbrenner, 1979), understanding the factors that promote bullying behavior requires a close examination of experiences adolescents daily live in environments they inhabit outside of school, such as the experiences of violence within high-risk family and neighborhood/community contexts. Indeed, an early violence exposure and adversity within the main social agencies (i.e., family and community) may be part of overarching multi-systemic environmental interactions and promotes contexts for perpetuating transmission of aggression (Bronfenbrenner, 1977).

Most individuals are exposed to violence throughout their lives, but it is during adolescence that there is a dramatic peak in violence exposure (Cyr et al., 2012; Finkelhor, Ormrod, Turner, & Hamby, 2005; Kilpatrick et al., 2003), most likely due to the increasing of environmental sensitivity during this life period (Dodge & Pettit, 2003).

Exposure to violence may be experienced across multiple, sometimes overlapping, contexts or settings which refer to the multiple ecological levels of the *microsystem*, that are the family, school, and neighborhood/community. Overall, research differentiates between exposure to violence at home (i.e., *domestic*, *intra-family* or *familial* violence exposure) and violence exposure in other settings, commonly referred to as “community violence exposure”.

Although there has been a lack of consensus among researchers and practitioners regarding a universal definition for “*Domestic Violence*” and such term is often used interchangeably with the other “*Intimate Partner Violence*” (IPV), it is necessary to distinguish between the two terms; while IPV is defined as physical, sexual, or psychological abuse inflicted by a current or former partner or spouse (Centers for Disease Control and Prevention, 2010), the term “family or domestic violence”, may also include child maltreatment, sibling abuse, or elder abuse (Corvo & deLara, 2010). For the purpose of the present study, the term “domestic violence” will be used to refer to all documented forms of violence (i.e., emotional/ psychological, physical violence, sexual assault/abuse, controlling/threatening behavior, and coercion) that occurs between intimate partners (e.g., boyfriend and girlfriend, married, long-term relationships), and towards children by a parent/primary caregiver (biological or non-biological).

Otherwise, the term “community violence” is generally defined and measured by researchers as instances of deliberate threat or to the use of strength with the purpose of hurting or damaging another person, generally an extraneous person, in an environment of life that is not that of the family (World Health Organization, 2002) and excludes related constructs such as domestic violence, physical maltreatment, sexual abuse, peer bullying, and media and video game violence (Kennedy & Ceballo, 2014).

Despite exposure to violence is ubiquitous in poor urban areas and a co-occurrence of multiple contexts where youth experienced violence has been noted (i.e., the concept of “poly-victimization”; Finkelhor, Turner, Hamby, & Ormrod, 2011) community and school are the principal sources of violence exposure in childhood and adolescence (Flannery, Wester, & Singer, 2004). This may be due to the changes that occur in family influences which significantly decrease during adolescence in favor of others socialization agents such as peers and community (Garcia, Serra, Zacares, Calafat, & Garcia, 2020).

A further aspect that needs to be taken into account concerns the multiple forms through which exposure to violence can take place (Buka, Stichick, Birdthistle, & Earls, 2001; Gibson, Morris, & Beaver, 2009). Indeed, violence exposure may be experienced by youth through three main levels, specifically, through a form of direct victimization (the so called “primary victimization”, i.e., “happens to them”), witnessing without being directly involved (the so called “secondary victimization”, i.e., “saw it happens to someone else”), and learning of a violent death, serious harm, or threat of death or injury to another person (the so called “tertiary victimization”), within their daily life contexts (Brennan, Molnar, & Earls, 2007).

Consistent with the theoretical considerations discussed above, a large body of research has investigated the differential effects of multiple sources and forms of violence exposure on child–

adolescent adjustment raising conflicting findings. Indeed, as regards the context-specific effects of violence exposure, while some studies suggested a sort of equifinality of violence exposure across different contexts which seems to eventuate in the same outcomes, the others emphasized a stronger impact of violence exposure within some *microsystems* in respect to the others on a wide range of developmental outcomes. This may be due to the differential proximity to the child within the hierarchically ordered social ecology (Bacchini & Esposito, 2020). More specifically, comparing the effects of violence exposure within the more immediate or proximal and distal *microsystems*, i.e., home, school, and neighborhood/community, respectively, some studies have emphasized the stronger impact of exposure to violence in the family than in other settings. For example, some studies (e.g., Margolin, Vickerman, Oliver, & Gordis, 2010; Mrug & Windle, 2010; Mrug et al., 2008) found that violence exposure at home was a more robust predictor of adjustment problems (e.g., anxiety, depression, aggression, and antisocial conducts) than exposure to community violence. In contrast, other studies found that community violence seems to have a unique role in predicting a number of externalizing behaviors accounting for other sources of violence exposure (Bacchini et al., 2015; Chen et al., 2016; Guerra, Huesmann, & Spindler, 2003). In this regard, Bacchini et al. (2015) showed that being a witness of school and neighborhood violence as well as being a victim of family violence had stronger concurrent associations with antisocial behavior than witnessing violence at home; otherwise, Ho and Cheung (2010) found that behavioral problems were predicted only by being victimized in the community, whereas violence at school and at home predicted other types of problems.

Another key issue regarding the differential effects of violence exposure on child–adolescent adjustment concerns the status of “witness” or “victim” of violence. Although a co-occurrence of witnessing or victimization experiences has often been found, they appear to affect child development differently (Horowitz, McKay, & Marshall, 2005). Overall, witnessing violence has been shown to be linked to externalizing behaviors (e.g., Gorman-Smith & Tolman, 1998) mainly through a social learning process that leads to the acquisition of deviant social information patterns, such as selective attention to hostile peer cues, attributions that others are being hostile towards the self, rapid accessing of aggressive responses, and positive evaluations of aggressive responses, which, in turn, increase the likelihood of aggressive behavior (e.g., Crick & Dodge, 1994; Guerra et al., 2003; Schwartz & Proctor, 2000; Shahinfar, Kupersmidt, & Matza, 2001). Conversely, direct victimization appeared to be more strongly associated with the development of internalizing symptoms (e.g., Cooley-Quille, Boyd, Frantz, & Walsh, 2001) through impairments in emotional self-regulation that compromise the more general ability of individual's adaptive behavior (Schwartz & Proctor, 2000). Other studies have found no significant differences in the specific outcomes associated to witnessing and victimization experiences (Aisenberg et al., 2008).

Moving more specifically towards the research concerning the link between exposure to violent contexts with bullying behaviors, although most of research highlighted that violence exposure within the family and the community places youth at great risk for negative peer experiences such as bullying perpetration, the findings vary considerably across studies.

Regarding domestic violence exposure, has been found that it is associated with a variety of maladaptive outcomes as problems in interpersonal relationships (Hlavaty & Haselschwerdt, 2019) which, especially in adolescence, are largely focused on bullying (e.g., Baldry 2003; Espelage, Low, & De La Rue, 2012; Holmes, 2013). Based on a review by Voisin and Hong (2012), some studies provide empirical evidence that youth who are exposed to inter-parental violence at home are likely to perpetrate school bullying, as well as become victims of bullying (e.g., Baldry 2003; Bowes et al., 2009; Cluver, Bowes, & Gardner, 2010; Ferguson, Miguel, & Hartley, 2009; Holt, Kantor, & Finkelhor, 2009; Moretti, Obsuth, Odgers, & Reebye, 2006; Mustanoja et al., 2011), while others have found an association of domestic violence exposure with other types of problematic behaviors rather than relational bullying behaviors (Bauer et al., 2006). More specifically, Baldry (2003) documented that, among a large sample of Italian school students, boys and girls who witnessed violence between their parents were significantly more likely to bully their peers compared to those who were not exposed to interparental violence, over and above age, gender, and child abuse. Other cross-sectional studies reported similar findings revealing that domestic violence witnessing represents a risk factor for bullying peers (Cluver et al., 2010; Ferguson et al., 2009; Holt et al., 2009; Moretti et al., 2006; Mustanoja et al. 2011). Moreover, among longitudinal studies, Bowes et al. (2009) using a nationally representative community-based sample of children and distinguishing the differential effects of direct victimization (i.e., child maltreatment) and exposure to interparental domestic violence, found that over and above other socioenvironmental factors and children's behavior problems, youth who were victim of parents' maltreatment were at increased risk for bullying victimization, whereas those who witnessed domestic violence were at increased risk for bullying perpetration.

Conversely, a longitudinal study using a community-based sample of children found that witnessed domestic violence was related to several problematic behaviors (i.e., externalizing behavior or physical aggression and internalizing behaviors) but not to child-reported relational bullying behaviors or victimization by peers (Bauer et al., 2006). Referring again to the study by Bowes et al. (2009) who investigated whether school, neighborhood, and family factors were independently associated with children's involvement in bullying, it was shown that, over and above other socioenvironmental factors and children's behavior problems, problems with neighbors was associated with an increased risk for being a bully-victim but not with being a pure bully or victim. In contrast, other research examining the associations between community factors and school bullying has shown that youth who live in neighborhoods judged to be less safe (i.e., characterized by more violent behaviors) and who access to guns and gang membership (Bradshaw, Waasdorp, Goldweber, & Johnson, 2013; Espelage, Bosworth, & Simon, 2000; Swearer & Hymel, 2015; Youngblade et al., 2007) are more likely than those who live in safer neighborhoods to engage in bullying behaviors.

Nevertheless, to our knowledge, only a few studies have investigated the predicting role of community violence exposure on school bullying. Some studies, without distinguishing the differential effects of community violence witnessing and victimization, found a significant association between violence exposure within the community and bullying perpetration (Bacchini et al., 2009; Valdés Cuervo et al., 2018) over and above other socioenvironmental factors, such as poverty, inequality, and political violence (Chaux et al., 2009). A seminal cross-sectional study by Schwartz and Proctor (2000) found that children who had been a witness to or victim of community violence were more likely to bully their classmates. More in detail, witnessing community violence influenced school bullying through the mediation of social-cognitive biases supporting positive evaluation of violent behavior.

Other studies have focused on the experience of violence witnessing or victimization with only a few studies on both forms of violence. For example, using a latent transition mixture analysis, Davis et al. (2018) reported that the largest proportion (25%) of youth who experienced heightened level of community violence as witnesses were more likely to be perpetrators of school bullying. Nonetheless, Andershed, Kerr, and Stattin (2001) found that bully others in school was related to a heightened risk of being violently victimized when out on the streets among both boys and girls. The study by Dragone et al. (2020) showed that being exposed to community violence as a witness but not as a victim promoted the perpetration of bullying over time.

From a social-ecological systems perspective and consistent with transactional developmental model of conduct problems (Dodge & Pettit, 2003) both family and community violence exposure and their effects on child development can be understood as resulting from reciprocal interactions between the individual and environment that are continuously influenced by experiences and conditions across multiple interrelated systems over time (Bronfenbrenner & Morris, 1998). In this regard, previous research corroborating the hypothesis that externalizing behavior could influence exposure to violent contexts over time (Esposito et al., 2017; Mrug & Windle, 2009) come from the literature on aggressive or delinquent behavior. More specifically, there is some empirical support for causal, bidirectional influences between violence exposure (both witnessing and victimization) and externalizing problems such that the more young people engage in aggressive and delinquent behavior the more they are likely to put themselves in high-risk situations in which they are more likely to witness violence or to be victims of violence. However, these transactional effects seem to vary across different settings of violence exposure with both witnessing and victimization in the community more likely predicted by delinquency than in the home (Mrug & Windle, 2009).

Finally, the causal nature of the relationships between exposure to violence, both in the family and the neighborhood/community, with bullying remains unclear, given the limited number of studies that have examined the mechanisms through which violence exposure could affect involvement in bullying behavior.

Self-Serving Cognitive Distortions as Individual Social-Cognitive Risk Factor for School Bullying Perpetration

Referring to the cognitive processes, moral cognitive variables such as self-serving CDs well represent schemas that influence the individual’s encoding, interpretation, attribution, and evaluation - and thereby impact on the individual’s behavior – in social situations (Barriga, Gibbs, Potter, & Liau, 2001), such as bullying behavior.

However, despite an increasing number of researchers (Barriga et al., 2008; Gini et al., 2011; Helmond et al., 2015) having found a link between self-serving CDs and externalizing behaviors, only a few studies (Dragone et al., 2020; Owens, Skrzypiec, & Wadham, 2014) have examined the association between CDs and bullying at school. The study by Owens et al. (2014) carried out with Australian adolescents found that bullies and bully-victims showed a higher tendency than victims and not-involved persons in assuming the worst, exhibiting minimizing-mislabeling and self-centered CDs, whereas only bullies were higher in blaming others. Similarly, Dragone et al. (2020) showed that the development of CDs promoted the perpetration of bullying over time. Overall, this research—which seems to confirm the role of distorted thinking patterns in the enactment of bullying behaviors—is consistent with a large body of studies developed within the theoretical framework of moral disengagement (Bandura, 1977, 1986), finding such construct to be an important predictor of bullying-related behaviors, from those of perpetrators (Gini, Pozzoli, & Hymel, 2014; Teng, Bear, Yang, Nie, & Guo, 2020) to those of bystanders (Gini, Thornberg, & Pozzoli, 2020).

Moreover, such findings are consistent with both theoretical frameworks (i.e., Sykes & Matza's neutralization theory and Bandura's social cognitive theory) discussed above (see the 1st chapter of the present dissertation for deepening) which agree that cognitive processes should be conceived as preceding detrimental behavior and as being causally involved in its generation (for a description of the assumed causal model, see Bandura, Barbaranelli, Caprara, & Pastorelli, 1996, pp. 366–367) since individuals are more likely to be involved in reprehensible conduct only after they have justified to themselves the rightness of their actions (see Bandura et al., 1996, p. 365).

However, a transactional developmental model (Dodge & Pettit, 2003) would be better equipped to explain the emergence of chronic antisocial behavior across time. This model taking into account the reciprocal influences among dispositions, contexts, and life experiences suggests the possibility of a multidirectional causality between individual cognitions and behaviors providing support to the Gibbs' conceptualization of secondary CDs as a form of post-rationalizations or "excuses" serving to emotionally and cognitively overcome dissonance between individual moral standards and behavioral transgressions.

Based on these considerations, disentangling the temporal order is important in order to provide key evidence on the causal direction of the link between moral cognitions and aggression and other detrimental behaviors (Ribeaud & Eisner, 2015). However, the experimental or longitudinal designs suited to test assumptions of temporal order and to confirm or refute possible causal links that relate aggression and moral cognitions (Maruna & Copes, 2005, p. 45) are still rather scarce in and the present study seeks to address this gap.

Specifically, some efforts to investigate the longitudinal and reciprocal associations between moral cognition and behavior came from Aquilar, Bacchini, and Affuso (2018) who found reciprocal influences over time among values, moral judgment, considered similarly to CDs as a moral motivator (Schwartz, 1996) of externalizing behaviors (i.e., “aggression”, Benish-Weisman & Mcdonald, 2015, “bullying”, Menesini, Nocentini, & Camodeca, 2013) and antisocial behaviors. Moreover, Ribeaud and Eisner (2015) within the framework of two-period path models tried to carry out a systematic test of causality in early adolescence between moral neutralization and aggressive behavior, finding that there were no substantial long-term independent causal effects in either direction indicating that there was no one that could be seen as genuinely exogenous but rather moral neutralization could be conceived as the cognitive and aggression as the behavioral expression of the same phenomenon. Specifically, moral neutralization such as might be envisaged as facilitating aggressive behavior by providing *ex ante* justifications, whereas aggressive behavior would in turn induce *ex post* legitimizations that allow a smooth integration of norm-breaking behavior into an apparently intact moral self-concept.

Examining how the Cognitive Desensitization Process Could Link Exposure to Violent Contexts, Self-Serving Cognitive Distortions and School Bullying Perpetration

How could violence exposure within the family and the neighborhood/community increases the risk for antisocial behaviors among peers such as bullying perpetration? A potential answer to this question comes from the Bandura’s (1977, 1986) social cognitive theory which assumes that there is a continuous interaction between the social environment (e.g., witnessing others’ behaviors), internal stimuli (e.g., cognitions and feelings), and behaviors. This triadic interaction (i.e., social environment, internal stimuli, and behaviors) referred to as “reciprocal determinism” (Bussey & Bandura, 1999; Orpinas & Horne, 2006) occurs when individuals make cognitive evaluations of their behaviors in the social environments and the consequences that follow those behaviors (Bussey & Bandura, 1999). In this regard, social cognitive theory represents an updated and expanded version of social learning theory (Bandura, 1978) according to which children who are chronically directly or indirectly exposed to antisocial models in their daily life environment, learn not only specific behaviors from models but also more generalized, complex social scripts through observational learning mechanisms. Once internalized, such scripts are easily retrieved from memory to serve as cognitive guides for behavior (Dodge, Coie, & Lynam, 2006). Moreover, through an inferential process, children growing up in a violent environment and who are repeatedly exposed to observation of violent models, are more likely to develop beliefs about the world – of life and interpersonal relationships, – as being hostile and dangerous and about what kind of behavior is acceptable considering that violence itself may be a useful mean for conflict resolution (Dodge et al., 2006).

This process resulting from a chronic violence exposure and facilitating more approving violence beliefs, more positive moral evaluations of aggressive acts, and more justification for inappropriate behavior inconsistent with social and individual's moral norms has been defined by Huesmann and Kirwil (2007) "cognitive desensitization to violence". Overall, desensitization is defined as "the reduction of cognitive, emotional, and/or behavioral responses to a distressing situation leading to apathy concerning others" (Funk, 2015, p. 65). More usually, the term "desensitization" refers to emotional changes occurring when individual is repeatedly exposed to violence. However, when changes occurring because of chronic violence exposure involve cognitive aspects such as beliefs about violence – from the belief that violence and aggression are rare and unlikely behavior to the belief that violence is common, mundane, and inevitable – the process is sometimes called "cognitive desensitization" (Funk, Baldacci, Pasold, & Baumgardner, 2004). As a result of such cognitive desensitization process, the individual may develop stronger pro-violence attitudes (i.e., attitudes approving violence as a mean of regulating interpersonal contacts) because "children who are repeatedly exposed to violence during childhood inhabit it and experience it as less adverse" (Huesmann, 1998, p. 1561, as cited in Guerra et al., 2003).

Consistent with this idea, Ng-Mak and colleagues (2002) formulated a "pathologic adaptation" model according to which repeated exposure to high level of violence in inner-city urban neighborhoods leads to cognitions that normalize violence through mechanisms of neutralization of moral standards which, in turn, facilitate an active engagement in future episodes of violence, thus, perpetuating the cycle of violence.

Moreover, the depiction of moral cognitive processes as mediators of life experiences and as proximal mechanisms for externalizing behaviors is consistent with the biopsychosocial perspective on the development of adolescent conduct problems (Dodge & Pettit, 2003). According to this perspective, it is assumed that as a function of the aggressogenic life experiences, such as the repeated experience of being witness or victim of violence within the family and/or the neighborhood/community, children develop idiosyncratic social knowledge about their world and social-information processing patterns that justify the appropriateness of behaving aggressively in problematic social situations. Therefore, the child's patterns of social-information processing lead directly to specific social (or antisocial) behaviors and mediates the effect of early life experiences on later antisocial behavioral problems.

However, despite the link postulated by social learning theory (Bandura, 1978) and its crime-related extension (Dodge & Pettit, 2003) between chronic violent experiences that directly or indirectly expose children to antisocial models and the development of weaker internal moral standards, relatively few studies have investigated such social-cognitive processes mediational hypothesis finding limited support for it and highlighting how it could be different for victimization and witnessing violence (e.g., Schwartz & Proctor, 2000). Specifically, as regards the violence exposure within the family, it has been proposed that the transmission of violence among adolescents who directly suffer maltreatment or are indirectly exposed to violence between their parents could be cognitively mediated (Nickoletti & Taussig, 2006). Indeed, exposure to domestic violence would contribute to the development of cognitive structures or schemas in the victims which, in turn, would influence their subsequent behavior. Such schemas adopt the form of normative beliefs about the social appropriateness of aggression (Huesmann & Guerra, 1997) including the idea that the use of the aggression is justified (e.g., because the other deserves it) and leads to positive outcomes for the individual (e.g., because it serves to obtain respect from others).

In order to clarify which specific dysfunctional cognitive schema might be involved in the transmission of violence among both victims and witnesses of domestic violence, some studies (e.g., Calvete, 2007; Calvete & Orue, 2013; Herrenkohl, Huang, Tajima, & Whitney, 2003) found that while experiencing witnessing was more likely associated to the schemas of justification of violence which, in turn, lead to aggressive behavior, direct victimization was linked with less aggressiveness and more depression, through the schema of mistrust (Calvete & Orue, 2013) as well as with later bullying victimization in the school through the development of maladaptive schemas of rejection (Calvete, Fernández-González, González-Cabrera, & Gámez-Guadix, 2018).

Nevertheless, it was found that also direct victimization experiences within the family such as childhood maltreatment and physical abuse may have relevant effects on social-cognitive processes; more specifically, children and adolescents who experienced maltreatment and physical abuse could be more likely to display aggressive behaviors via several biases in social-information processing, especially towards perceiving threat and attributing hostile intent to others rather than benign interpretations when faced with the ambiguous intentions of others in social situations (Lee & Hoaken, 2007). Moreover, being subjected to maltreatment as a child was linked to the tendency to accept violence as normative in adult relationships; specifically, individuals who reported childhood maltreatment were more likely to display distortions in their cognitive schemas and those individuals with disrupted schemas were more likely to accept relationship violence (Ponce, Williams, & Allen, 2004).

Also with regard to the link between violence exposure within the neighborhood/community and social-cognitive processes, research findings have been mixed. The study by Wilkinson and Carr (2008), for example, tried to raise this point using qualitative data from male violent offenders, finding that individuals respond to exposure to violence, without distinguishing between violence witnessing or victimization, in many ways, some of which would be consistent with traditional concepts of moral disengagement. In the same direction were the results of Hyde et al. (2010) who found a positive association between neighborhood impoverishment and moral disengagement.

Nonetheless, several studies have found significant associations between community violence and acceptance of violence cognitions, or bias of social-information processing (see, for example, Allwood & Bell 2008; Bradshaw et al., 2009), whereas Bacchini, Affuso, and De Angelis (2012) showed that higher levels of exposure to community violence as a witness, along with the perception of higher levels of deviancy among peers, reduced the strength of moral criteria for judging moral violations. Only a few longitudinal studies have specifically focused on examining community violence exposure as environmental precursor of self-serving CDs. In their longitudinal study, Esposito, Affuso, Dragone, and Bacchini (2020), using a Growth Mixture Modeling Approach (GMMs), showed that a high frequency of exposure to community violence, without distinguishing between violence witnessing or victimization, was a significant risk factor for being in the class with higher and tendentially stable CDs, relative to the moderate and decreasing class. In the same direction, Dragone et al. (2020) found a longitudinal relationship between community violence witnessing and the development of CDs.

Other findings obtained by Schwartz and Proctor (2000) have shown distinct mediational pathways linking each form of violence exposure to social difficulties with peers suggesting that the impact of victimization on aggressive behavior takes place through impairments in emotion regulation, whereas witnessing influences aggressive behavior through social-cognitive biases about aggression when involved in processing social situations. These social-cognitive biases take the form of hostile attributional bias, hostile social goals, and approval of aggression, thus influencing the individual’s ability to solve social problems and to correctly assess the negative consequences of their actions (Dodge et al., 2006).

Taking this evidence as a starting point, further longitudinal research is needed to clarify whether both experiences of violence exposure, as a victim and/or as a witness, are associated with constructs of moral cognitions such as CDs which, in turn, promote the involvement in aggressive behaviors such as school bullying perpetration.

The Present Study

Aims and Hypotheses

The main aim of the present study was to investigate the mediating role of self-serving CDs in the relationship between violence exposure and school bullying perpetration over time. Specifically, we have taken into account violence exposure across two different contexts, i.e., the family and the community, and through two different status, i.e., as a witness and as a victim, in a sample of Italian adolescents.

A four-wave cross-lagged panel mediation design was used, which allowed us to control for baseline values of all variables in each wave and to examine the transactional nature and likely causal direction of the pathways linking exposure to domestic and community violence, CDs, and school bullying perpetration. More specifically, we expected that: (i) being exposed to violence within the family and the neighborhood/community increased the likelihood that adolescents would develop self-serving CDs and perpetrate bullying; (ii) making use of CDs would promote the engagement in future episodes of bullying perpetration; and (iii) consistent with the transactional developmental model, the associations between both domestic and community violence exposure with CDs and bullying perpetration, as well as between CDs and bullying perpetration would be reciprocal over time.

As regards the specific hypotheses we made about the differential effects of direct victimization and witnessing, while for domestic violence exposure, no *a priori* hypotheses were formulated due to the limited and conflicting prior literature, with regard to community violence exposure, we hypothesized significant associations between violence witnessing and both CDs and bullying perpetration, whereas no *a priori* hypotheses were formulated for violence victimization, due to the limited prior literature.

Given that gender differences have been observed in violence exposure and its developmental effects as well as in CDs and bullying behavior in previous research, adolescent gender was included as control variable. Overall, as regards domestic violence exposure prior studies have consistently found that adolescent gender may be a relevant potential moderator (e.g., Holt, Buckley, & Whelan, 2008) for mitigating or exacerbating the strength of relation between domestic violence and problem behaviors with males having more likely to display externalizing behaviors, such as aggression and violent behaviors, while females shows the tendency to exhibit internalizing behaviors, such as depression and low self-esteem (see Voisin & Hong, 2012, for a review). Furthermore, males are at greater risk for community violence exposure (e.g., Ahlin & Lobo Antunes, 2017) although research on the moderating role of gender in the relation between community violence and psychological outcomes has been mixed with some findings suggested that exposure to community violence is more strongly associated with aggression and internalizing symptoms, among males (e.g., Bacchini, Miranda, & Affuso, 2011) and females (Bacchini et al., 2011; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Zinzow et al., 2009), respectively, whereas other evidence contradicted the existence of gender differences (Kliewer, Lepore, Oskin, & Johnson, 1998; Salzinger, Rosario, Feldman, & Ng-Mak, 2008; Schwab-Stone et al., 1999). Moreover, males were found to report more likely bullying perpetration (e.g., Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996) and CDs than females (Lardén, Melin, Holst, & Långström, 2006; Owens et al., 2014).

Beside adolescent gender, research examining individual pro-violence attitudes, beliefs, and cognitions as well as behavioral patterns highlighted the need to consider the potential influence of social desirability bias when individuals self-report such psychological constructs. Indeed, people are sometimes unwilling or unable to provide accurate reports of their own psychological attributes due to their unconscious nature or due to deliberate dissimulation and self-presentational concerns (Gawronski & De Houwer, 2014). In this regard, referring to the tendency to make self-serving CDs and to involvement in bullying behaviors, it is known (e.g., Wang, Ryoo, Swearer, Turner, & Goldberg, 2017) that adolescents are more careful about their social image than other age groups, and may be unlikely to report behavior that displays them in a negative light.

For all these reasons, in the present study adolescent gender and social desirability bias were included as control variables, given their potential confounding effects on all study variables.

Method

Participants

The participants were students recruited from a longitudinal research project (Arzano Longitudinal Project, ALP; see the 1st chapter of the present dissertation for more details about the longitudinal design of the present study) that began in 2013 aimed at investigating the determinants and pathways of typical and atypical development from early to late adolescence. The study design originally involved 6th and 9th graders of the middle and high schools of Arzano, a relatively small town located in the metropolitan area of Naples. This area is characterized by serious social problems such as high unemployment, school-dropout, and the presence of organized crime with rates that are among the highest in Italy [Istituto Nazionale di Statistica (ISTAT) 2016].

The sample for the current study consisted of 778 adolescents (M_{age} at Time 1 (T1) = 14.20, $SD = .58$), 346 males (M_{age} at T1 = 14.22, $SD = .56$) and 432 females (M_{age} at T1 = 14.18, $SD = .59$), from two cohorts of adolescents who were enrolled in 9th grade (T1 of the study) in 2013 and 2016, longitudinally assessed from 2013 to 2016 and from 2016 to 2019 (4 data points, one-year intervals), respectively.

Cohort effects were tested by comparing the mean levels of the main variables at the same age. Specifically, a set of Univariate Analyses of Variance (ANOVAs) was performed, revealing no significant differences between the two cohorts in terms of gender, age, social desirability and all main variables of the study at the first and second time (T1 and T2, respectively) of assessment; conversely, significant differences between the two cohorts were found for domestic violence victimization and self-serving CDs at time 3 ($Fs_{(1,\,662)} = 8.21$ and 16.56, $ps < .01$ and .001, respectively), as well as at time 4 ($Fs_{(1,\,623)} = 5.33$ and 6.88, $ps < .05$ and .01, respectively), and for community violence witnessing at time 4 ($F_{(1,\,623)} = 4.30$, $p < .05$). However, although statistically significant, Cohen’s *d* measure of effect size indicated that such cohort differences were very small in size (i.e., all *ds* < |.33|). Accordingly, the data from the two cohorts were combined.

Procedure

Data collection took place every year during the spring of 2013 and 2016 (T1), 2014 and 2017 (T2), 2015 and 2018 (Time 3; T3), 2016 and 2019 (Time 4; T4). Parents’ written consent and adolescents’ assent were obtained prior to the administration of questionnaires, in accordance with the ethical principles of the Italian Association of Psychology (AIP). The administration of questionnaires was conducted during classroom sessions by trained assistants. To reassure participants about reporting sensitive information and to encourage honest reporting, a complete guarantee of confidentiality was emphasized. Additionally, participants were informed about the voluntary nature of participation and their right to discontinue at any point without penalty.

Attrition Rates and Missing Data Analysis

The participation rate was approximately 80% across all time points, with 71 (9.1%), 114 (14.7%), and 153 (19.7%) of T1 participants not assessed at T2, T3, and T4, respectively (Total N = 338). The total attrition rate was mainly due to the absence of adolescents from school at assessments. At T2, participants were 305 males and 402 females (N = 707; M_{age} = 15.14, *SD* = .55). At T3, participants were 287 males and 377 females (N = 664; M_{age} = 16.16, *SD* = .53). Finally, at T4 participants were 260 males and 365 females (N = 625; M_{age} = 17.12, *SD* = .49).

The Little’s test (Little & Rubin, 2002) for data missing completely at random (MCAR) in SPSS 21 (IBM Corp.; Armonk, NY) was significant ($\chi^2(90) = 134.19$, $p < .01$), indicating that data were not missing completely at random. Subsequent t-test analyses showed that participants who were missing at T2 and/or T3 and/or T4 significantly reported higher levels of community violence witnessing and CDs at T1, who were missing at T2 and/or at T3 significantly reported also higher levels of bullying perpetration at T1 and only who were missing at T3 significantly reported also higher levels of domestic violence witnessing and community victimization at T1, than participants who had data at all assessments (*ps* ≤ .05). Accordingly, full information maximum-likelihood (FIML) was used to handle missing data, enabling us to include all available data in the analyses. FIML does not estimate the missing data, rather it fits the covariance structure model directly to the observed and available raw data for each participant, offering unbiased estimates under the assumption that the missing data are missing at random (Enders, 2013).

Measures

Exposure to Domestic Violence. Exposure to domestic violence was self-reported at each time point of the current study using a reduced version of the adaption for the Italian context by Baldry (2003) of the Conflict Tactics Scale (Straus, 1979). Adolescents were asked how often they had witnessed violence (i.e., verbal or physical) by each one of their parents against the other parent and how often they had been victims of violence (i.e., verbal or physical) by each of their parents during the last year. Each scale included six items to which participants were asked to indicate, using a 5-point Likert scale (from 1 = *Never* to 5 = *More than five times*), the frequency of their being the witness or the target victim of violence within the family during that time period. Sample items were: “He or she insulted or said bad words to her or him” and “He or she insulted you or said bad words to you”, for domestic violence witnessing and victimization, respectively.

Cronbach’s αs and Omega hierarchical estimates (ωhs) ranged from .83 to .89 and from .86 to .91, from .83 to .89 and from .85 to .91, for violence witnessing and for violence victimization, respectively.

Exposure to Community Violence. Exposure to community violence was self-reported at each time point of the current study using two adapted scales for the local context (Exposure to community violence Questionnaire; Esposito et al., 2017) of the Community Experience Questionnaire by Schwartz and Proctor (2000). Adolescents were asked to report violent incidents that had occurred during the last year through witnessing and victimization and only serious real-life events from their neighborhoods and their communities, not incidents from movies or television or from day-to-day conflicts with other children at school.

Each scale included six items to which participants were asked to indicate, using a 5-point Likert scale (from 1 = *Never* to 5 = *More than five times*), the frequency of their being the witness or victim of violence in the neighborhood during that time period. Sample items were: “How many times have you seen somebody get robbed?” and “How many times have you been chased by gangs, other kids, or adults?”, for violence witnessing and victimization, respectively.

Cronbach’s αs and Omega hierarchical estimates (ωhs) ranged from .81 to .92 and from .79 to .92, for violence witnessing and victimization, respectively.

Self-Serving Cognitive Distortions (CDs). Participants were asked to respond at each time point of the study to the 39 items of the How I think Questionnaire (HIT; Barriga et al., 2001; Italian validation by Bacchini, De Angelis, Affuso, & Brugman, 2016), measuring self-serving CDs. For each item, participants were asked to indicate their agreement on a 6-point Likert scale (from 1 = *Disagree strongly* to 6 = *Agree strongly*). Sample items were: “People need to be roughed up once in a while” and “Everybody breaks the law, it’s no big deal”.

An overall HIT score was computed by averaging the 39 item scores with a higher score reflecting higher levels of CDs. Cronbach’s αs and Omega hierarchical estimates (ωhs) ranged from .95 to .97 across all time points, respectively.

Bullying Perpetration. At each time point of the study, bullying perpetration was self-reported by adapting the classical Florence Bullying and Victimization Scales (FBVSs; Palladino, Nocentini, & Menesini, 2016). For the purposes of the present study, we only used data about bullying scale.

Adolescents were provided with a definition of bullying as intentional, repetitive aggressive behaviors including some sort of power imbalance between those involved, and were asked to indicate, using a 5-point Likert scale (from 1= *Never* to 5 = *Several times a week*), the frequency with which, since the beginning of the school year, they had exhibited eight different bullying behaviors, direct (i.e., physical, e.g., hitting/kicking, “I hit, kicked, or punched someone” and verbal, e.g., threatening, “I threatened someone”) and indirect (e.g., excluding/ignoring, “I made nicknames for others that they didn’t like”). An overall bullying perpetration score was computed by averaging the 9 item scores with a higher score reflecting higher involvement in bullying behaviors as perpetrator.

Cronbach’s αs and Omega hierarchical estimates (ωhs) ranged from 84 to .89 across all time points, respectively.

Control variables

Socio-Demographic Variables. Information about sociodemographic characteristics of the sample were obtained asking participants to indicate their own age and gender (1 = *male*, 2 = *female*).

Social Desirability. Social desirability bias was self-reported at T1 of the current study asking participants to complete 12 items from the Lie scale of the Big Five Questionnaire (Caprara et al., 1993). Each item was rated on a 5-point Likert scale (from 1 = *Very false for me* to 5 = *Very true for me*). Sample items were: “I’ve always gotten along with everyone” and “I’ve never told a lie”. An overall score was computed by averaging items score, with higher score reflecting higher levels of socially desirable responding. Cronbach’s α and Omega hierarchical estimate (ωh) were .97 and .95, respectively.

Overview of the Analyses

Before testing our hypotheses, concurrently and longitudinally associations among study variables were performed through Pearson correlations. Subsequently, four-wave cross-lagged panel analyses were used to test the hypothesized longitudinal relations among the study variables (see Figure 1 and Figure 2). Extensive overviews of the use of this model for mediation analyses are given by Cole and Maxwell (2003) and MacKinnon (2008), as it allows to better investigate the likely direction of causal influence among variables, test for alternative models and lessen biases in testing mediation. The analyses were modeled in Mplus 8 (Muthén & Muthén, 1998–2017) using the maximum likelihood estimation with robust estimators (MLR), due to the non-normality of domestic violence witnessing, community violence victimization, and bullying perpetration measures (skewness and kurtosis values ranged from 3.25 to 12.03, 3.32 to 12.21, and 3.13 to 11.77, respectively). Missing data were handled by using full-information-maximum-likelihood (FIML) estimation of the parameters. As indicated in previous work (Wang & Bodner, 2007), FIML is an especially useful missing-data treatment in longitudinal designs because the outcome scores for dropouts tend to be correlated with their own previously recorded responses from earlier waves (i.e., a MAR pattern).

Two models were run separately for each specific daily life context: one for exposure to violence within the family, as a witness and as a victim, the other for exposure to violence within the neighborhood/community, likewise as a witness and as a victim. The models included correlations among concurrent constructs at all time points, autoregressive paths for each construct across time, and all cross-lagged paths. Adolescent gender and social desirability were included in the models as observed covariates to ensure that the associations between the variables were adjusted for their potential confounding effects.

Several indexes were used to evaluate the goodness of fit: the Yuan-Bentler (2000) scaled chi-square statistic (YBχ^2), the Comparative Fit Index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), and the Root Mean Square Error of Approximation with associated 90% confidence intervals (RMSEA; Browne & Cudeck, 1993). A CFI $\geq$ .90 and RMSEA $\leq$ .08 indicate a model's acceptable fit to the data (Hu & Bentler, 1999). To test equivalence of the structural parameters across time, two nested models were considered: a baseline model, in which parameters were freely estimated across time, and a fully constrained model, in which the structural paths and correlations among concurrent constructs were constrained to be equal over time. The Satorra–Bentler chi-square difference test (ΔSBχ^2) was used to test relative fit of nested models (Satorra, 2000). When the more constrained model was rejected, a less restrictive model of partial invariance was tested in which, in accordance with modification indices, equality constraints on one or more parameters were relaxed until the change in fit was no longer significant.

Results

Preliminary Analyses: Descriptive Statistics and Correlations among Study Variables

Means, standard deviations and Pearson correlations among all study variables are shown in Table 1. Overall, as can be showed in Table 1, all study variables were significantly and concurrently intercorrelated with each other at all time points with most of them associated with each other also longitudinally, across time.

Table 1. Zero-order Correlations among Study Variables, Means (*M*) and Standard Deviations (*SD*s)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. T1 DVW	1																							
2. T1 DVV	.61***	1																						
3. T1 CVW	.25***	.32***	1																					
4. T1 CVV	.24***	.22***	.48***	1																				
5. T1 CDs	.18***	.26***	.34***	.21***	1																			
6. T1 BP	.18***	.28***	.33***	.23***	.34***	1																		
7. T2 DVW	.54***	.36***	.15***	.19***	.17***	.24***	1																	
8. T2 DVV	.34***	.51***	.17***	.16***	.21***	.24***	.67***	1																
9. T2 CVW	.13***	.20***	.45***	.26***	.22***	.29***	.29***	.32***	1															
10. T2 CVV	.08*	.10**	.18***	.28***	.10**	.16***	.30***	.30***	.51***	1														
11. T2 CDs	.08*	.19***	.23***	.15***	.62***	.32***	.24***	.32***	.33***	.17***	1													
12. T2 BP	.04	.13***	.19***	.09*	.23***	.37***	.20***	.23***	.28***	.10***	.33***	1												
13. T3 DVW	.47***	.33***	.11**	.13***	.14***	.16***	.48***	.39***	.14***	.13***	.17***	.11**	1											
14. T3 DVV	.32***	.45***	.13***	.16***	.19***	.20***	.40***	.58***	.27***	.19***	.30***	.21***	.66***	1										
15. T3 CVW	.07	.27***	.30***	.24***	.11**	.20***	.13***	.26***	.41***	.25***	.18***	.13***	.25***	.27***	1									
16. T3 CVV	.05	.19***	.12**	.22***	.09*	.12**	.10*	.16***	.16***	.24***	.12***	.09*	.30***	.22***	.64***	1								
17. T3 CDs	.06	17***	.22***	.12***	.43***	.23***	.14***	.24***	.29***	.18***	.53***	.30***	.19***	.31***	.22***	.16***	1							
18. T3 BP	.11**	23***	.20***	.15***	.24***	.29***	.16***	.29***	.25***	.22***	.34***	.42***	.29***	.35***	.27***	.25***	.44***	1						
19. T4 DVW	.37***	.28***	.16***	.09*	.16***	.22***	.46***	.32***	.12**	.16***	.13***	.16***	.36***	.28***	.03	.04	.14***	.19***	1					
20. T4 DVV	.30***	.43***	.16***	.10*	.20***	.26***	.38***	.48***	.19***	.17***	.20***	.19***	.27***	.41***	.13***	.10*	.26***	.24***	.71***	1				
21. T4 CVW	.05	.16***	.28***	.16***	.20***	.19***	.13**	.19***	.36***	.24***	.18***	.17***	.10*	.14***	.36***	.19***	.24***	.22***	.33***	.35***	1			
22. T4 CVV	.03	.13***	.09*	.10*	.14***	.13***	.08*	.11**	.12**	.17***	.09*	.09*	.04	.07	.16***	.23***	.09*	.11**	.37***	.36***	.64***	1		
23. T4 CDs	.07	.14***	.29***	.14***	.43***	.26***	.10*	.17***	.19***	.08*	.47***	.32***	.14***	.22***	.14***	.07	.54***	.36***	.19***	.22***	.26***	.14***	1	
24. T4 BP	.06	.12**	.17***	.10*	.23***	.39***	.12**	.14***	.21***	.15***	.29***	.32***	.15***	.23***	.20***	.11**	.36***	.39***	.19***	.23***	.25***	.13**	.41***	1
M	1.33	1.62	1.72	1.46	2.31	1.30	1.35	1.58	1.75	1.40	2.19	1.32	1.33	1.47	1.65	1.38	2.16	1.32	1.25	1.46	1.64	1.40	2.03	1.25
SDs	.62	.81	.74	.62	.86	.53	.65	.79	.80	.54	.84	.54	.66	.76	.89	.71	.91	.56	.70	.79	.86	.77	.91	.51
Scores range	1-5				1-6	1-5					1-6	1-5					1-6	1-5					1-6	1-5

Note. DVW = Domestic Violence Witnessing; DVV = Domestic Violence Victimization; CVW = Community Violence Witnessing; CVV = Community Violence Victimization; CDs = Cognitive Distortions; BP = Bullying Perpetration. *$p < .05$, **$p < .01$, ***$p < .001$.

Cross-Lagged Panel Modeling

Exposure to Violence as a Witness and as a Victim within the Family

The model with all autoregressive and cross-lagged paths as well as correlations among concurrent constructs freely estimated across time showed an adequate fit to the data, YB$\chi^2(48) = 238.74$, $p < .001$; CFI = .94; RMSEA = .07, 90% C.I. [.06, .08].

Imposing equality constraints to autoregressive and cross-lagged paths as well as correlations among concurrent constructs, in order to test their invariance over time, lead to a significantly worse of the model fit, ΔSB$\chi^2(74) = 141.46$, $p < .001$. In accordance with modification indices, the equality constraints on the autoregressive paths between domestic violence witnessing at T1 and T2 as well as at T3 and T4, on the cross-lagged paths linking T1 social desirability with T1 and T4 CDs, and on the correlations between domestic violence witnessing and victimization at T3 and T4, between domestic violence witnessing and victimization with bullying perpetration at T3 and T1, respectively, between domestic violence victimization and CDs at T4, and, finally, between CDs and bullying perpetration at T1 and T2 were relaxed in order to improve the model fit, YB$\chi^2(111) = 327.10$, $p < .001$; CFI = .93; RMSEA = .05, 90% C.I. [.04, .06]. Thus, the partially constrained model did not differ significantly from the freely estimated model, ΔSB$\chi^2(63) = 76.64$, $p = .12$. Significant paths and standardized coefficients for the final model are presented in Figure 1.

As can be noted in Figure 1, all variables were correlated with each other within all time points. As regards the stability of study variables across time, all the considered constructs showed moderate to high stability over time with the highest levels of stability emerged for CDs and violence exposure within the family although significantly differences across time were found for domestic violence witnessing, with a higher stability between the first and the second compared to the third and the fourth time of the current study. Regarding cross-lagged paths, significant associations between domestic violence victimization and both CDs and bullying perpetration at each time point were found; conversely, bullying perpetration significantly predicted domestic violence witnessing, but not *vice-versa*. Moreover, CDs significantly predicted bullying perpetration at each time point. Bidirectional relations between domestic violence victimization and both CDs and bullying perpetration, as well as between CDs and bullying perpetration over time were also found at each time point, such that the more a youth is a victim of violence by her/his parents and makes use of CDs, the more she or he is inclined, 1 year later, to perpetrate bullying, and, *vice-versa*, the more a youth is involved in bullying perpetration, the more likely she or he becomes, 1 year later, a victim of violence by her/his parents, and uses CDs as post-rationalizations or "excuse" to justify her or his immoral actions. Furthermore, the more a youth uses CDs to justify her or his immoral actions, the more likely she or he becomes, 1 year later, a victim of violence by her/his parents and, *vice-versa*, the more she or he is a victim of violence by her/his parents, the more she or he consolidates, 1 year later, the tendency to make CDs when interpreting social situations, thus, perpetuating the cycle of violence.

Finally, we examined whether the positive relation between domestic violence victimization and bullying perpetration was mediated through CDs. As can see in Table 2, the mediation analyses highlighted marginally significant indirect effects from T1 and T2 domestic violence victimization to T3 and T4 bullying perpetration through T2 and T3 CDs, respectively ($\beta = .01$, $p < .05$, 95% C.I. [.002, .017] and [.002, .018], respectively). Moreover, the mediation analyses confirmed a series of reciprocal associations between CDs and bullying perpetration over time, such that earlier high CDs at T1 and T2 increased CDs at T3 and T4 through the mediation of bullying perpetration at T2 and T3, respectively ($\beta = .02$, $p < .001$, 95% C.I. [.01, .03], respectively) as well as an earlier involvement in bullying at T1 and T2 increased the tendency to bully others at T3 and T4 through the mediation of CDs at T2 and T3, respectively ($\beta = .02$, $p < .001$, 95% C.I. [.01, .03], respectively).

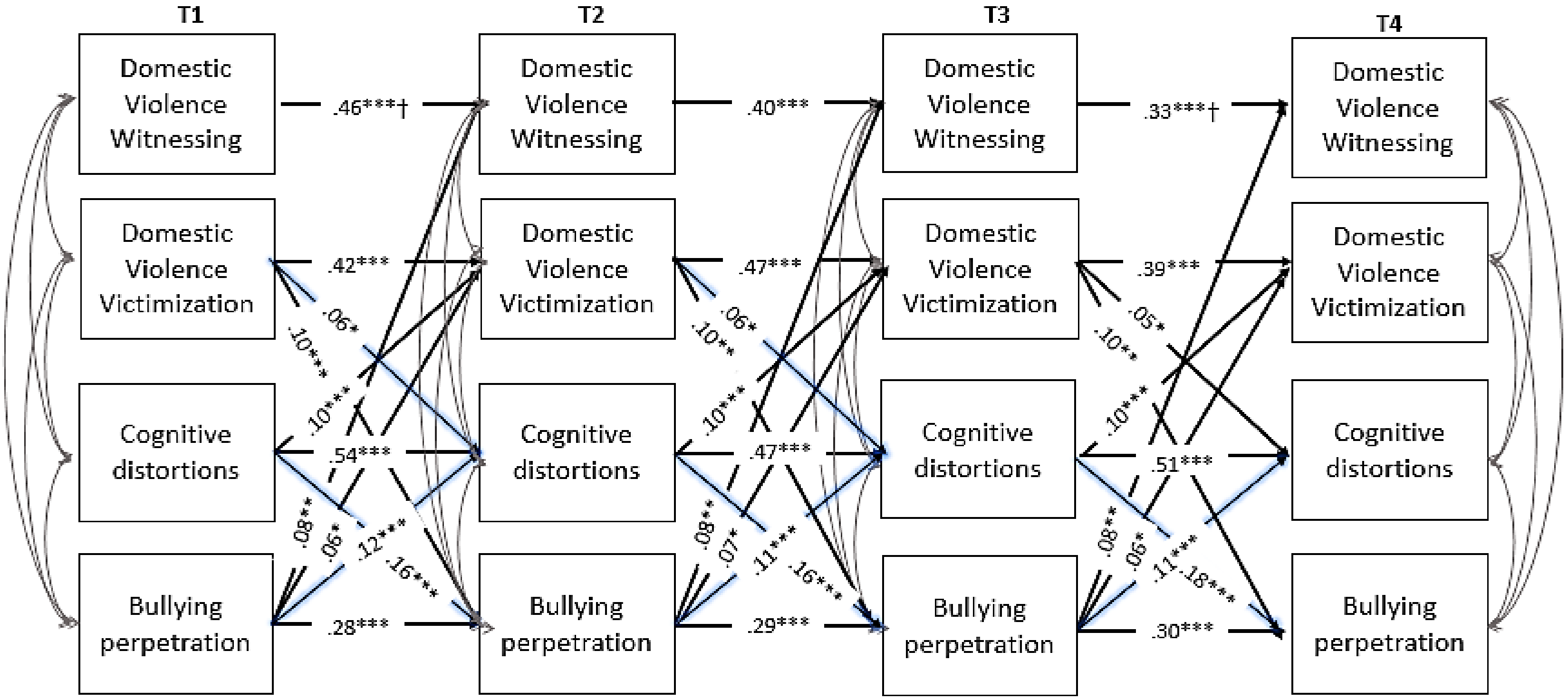
T1
T2
T3
T4
Domestic Violence Witnessing
Domestic Violence Victimization
Cognitive distortions
Bullying perpetration
Domestic Violence Witnessing
Domestic Violence Victimization
Cognitive distortions
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Figure 1. Cross-lagged mediational model with domestic violence exposure as a witness and as a victim. Reported coefficients refer to standardized estimates. The highlighted lines represent significant indirect paths. For the sake of simplicity, nonsignificant paths, and relations with control variables are omitted. **p* < .05, ***p* < .01, ****p* < .001.

Exposure to Violence as a Witness and as a Victim within the Neighborhood/Community

The model with all autoregressive and cross-lagged paths as well as correlations among concurrent constructs freely estimated across time showed an adequate fit to the data, YB$\chi^2(48)$ = 143.33, $p < .001$; CFI = .96; RMSEA = .05, 90% C.I. [.04, .06].

Imposing equality constraints to autoregressive and cross-lagged paths as well as correlations among concurrent constructs, in order to test their invariance over time, lead to a significantly worse of the model fit, ΔSB$\chi^2(74)$ = 182.02, $p < .001$. In accordance with modification indices, the equality constraints on the autoregressive paths between community violence witnessing at T1 and T2 as well as at T3 and T4, on the cross-lagged paths linking T1 social desirability with T1 and T4 CDs as well as gender with T4 community violence witnessing, and on the correlations between community violence witnessing and victimization at each time point, between community violence witnessing and CDs at T1 and T3 as well as with bullying perpetration at T1, and between CDs and bullying perpetration at T2 were relaxed in order to improve the model fit, YB$\chi^2(110)$ = 225.91, $p < .001$; CFI = .95; RMSEA = .04, 90% C.I. [.03, .04]. Thus, the partially constrained model did not differ significantly from the freely estimated model, ΔSB$\chi^2(62)$ = 79.10, $p = .07$. Significant paths and standardized coefficients for the final model are presented in Figure 2.

As can be noted in Figure 2, all variables were correlated with each other within all time points. As regards the stability of study variables across time, all the considered constructs showed moderate to high stability over time with the highest levels of stability emerged for CDs and violence exposure within the neighborhood/community although significantly differences across time were found for community violence witnessing, with a higher stability between the first and the second compared to the third and the fourth time of the current study. Regarding cross-lagged paths, significant associations between community violence witnessing and both CDs and bullying perpetration at each time point were found and CDs significantly predicted bullying perpetration at each time point. Moreover, a series of bidirectional relations between community violence witnessing and both CDs and bullying perpetration, as well as between CDs and bullying perpetration over time were also found at each time point such that the more a youth is a witness of violence within the community and makes use of CDs, the more she or he is inclined, 1 year later, to perpetrate bullying and, *vice-versa*, the more a youth is involved in bullying perpetration, the more likely she or he becomes, 1 year later, a witness of violence within the community, and uses CDs as post-rationalizations or "excuse" to justify her or his immoral actions. Furthermore, the more a youth uses CDs to justify her or his immoral actions, the more likely she or he becomes, 1 year later, a witness of violence within the community and, *vice-versa*, the more she or he is a witness of violence within the community, the more she or he consolidates, 1 year later, the tendency to make CDs when interpreting social situations, thus, perpetuating the cycle of violence.

Finally, we examined whether the positive relation between community violence witnessing and bullying perpetration was mediated through CDs. As can see in Table 2, the mediation analyses highlighted marginally significant indirect effects from T1 and T2 community violence witnessing to T3 and T4 bullying perpetration through T2 and T3 CDs, respectively (β = .01, $p < .05$, 95% C.I. [.001, .018] and [.001, .020], respectively). Moreover, the mediation analyses confirmed a series of reciprocal associations between CDs and bullying perpetration over time, such that earlier high CDs at T1 and T2 increased CDs at T3 and T4 through the mediation of bullying perpetration at T2 and T3, respectively (β = .02, $p < .001$, 95% C.I. [.01, .03] and [.01, .02], respectively) as well as an earlier involvement in bullying at T1 and T2 increased the tendency to bully others at T3 and T4 through the mediation of CDs at T2 and T3, respectively (β = .02, $p < .001$, 95% C.I. [.01, .03], respectively).

Control Variables

With respect to covariates, negative associations were found between adolescent gender and exposure to violence as a witness and as a victim within community but not within the family. More specifically, adolescent gender was negatively related to both community violence witnessing and victimization at T1 (βs = -.07 and -.05, *ps* < .001 and < .05, respectively), T2 (βs = -.07 and -.05, *ps*

< .001 and < .05, respectively), and T3 (βs = -.06 and -.04, *ps* < .001 and < .05, respectively), and with community violence victimization also at T4 (β = -.04, *p* < .05), as well as CDs and bullying perpetration at each time point, at T1 (βs = -.10 and -.17, *p* < .001, respectively), T2 (βs = -.10 and -.16, *p* < .001, respectively), T3 (βs = -.09 and -.16, *p* < .001, respectively), and T4 (βs = -.09 and -.16, *p* < .001, respectively), with males scoring higher than females.

As regards the social desirability bias, negative associations were found with violence victimization both in the family and in the neighborhood/community at each time point, at T1 (βs = -.08 and -.06, *ps* < .001 and < .05, respectively), T2 (βs = -.07 and -.06, *ps* < .001 and < .05, respectively), T3 (βs = -.08 and -.05, *ps* < .001 and < .05, respectively), and T4 (βs = -.07 and -.04, *ps* < .001 and < .05, respectively), as well as CDs at T1 (β = -.20, *p* < .001), and bullying perpetration at each time point, at T1, T2, T3, and T4 (β = -.07, *p* < .001, respectively), with youth more careful about their social image scoring lower on such constructs.

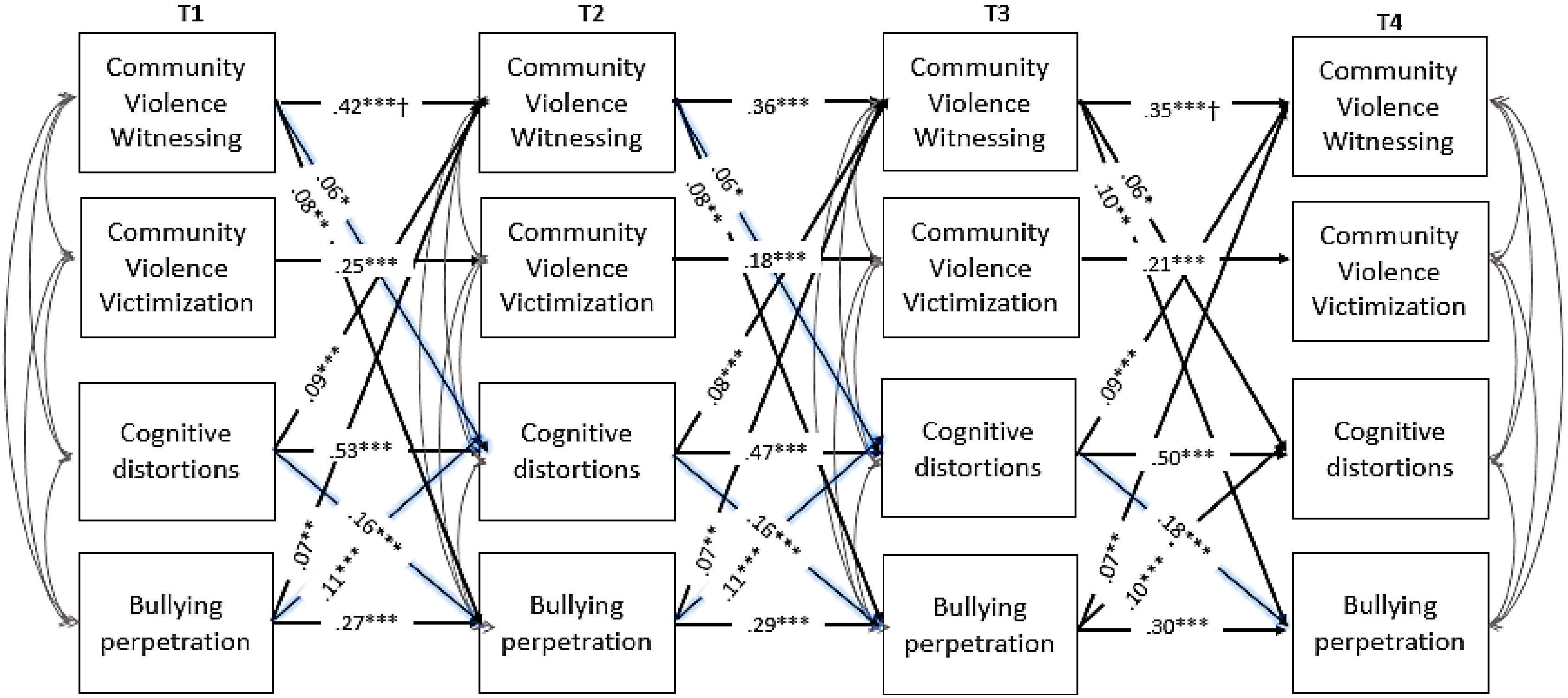
T1
T2
T3
T4
Community Violence Witnessing
Community Violence Victimization
Cognitive distortions
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Figure 2. Cross-lagged mediational model with community violence exposure as a witness and as a victim. Reported coefficients refer to standardized estimates. The highlighted lines represent significant indirect paths. For the sake of simplicity, nonsignificant paths, and relations with control variables are omitted. *p < .05, **p < .01, ***p < .001.

Table 2. Indirect Effects of Violence Exposure on Bullying Perpetration via Self-Serving Cognitive Distortion (CDs) and Reciprocal Indirect Associations between Self-Serving CDs and Bullying Perpetration

Domestic Violence Exposure			
Indirect Paths	β (SE)	95% C.I.s	
		LL	UL
T1 Victimization → T2 CDs → T3 Bullying Perpetration	.01* (.00)	.002	.017
T2 Victimization → T3 CDs → T4 Bullying Perpetration	.01* (.00)	.002	.018
T1 CDs → T2 Bullying Perpetration → T3 CDs	.02*** (.00)	.009	.026
T2 CDs → T3 Bullying Perpetration → T4 CDs	.02*** (.00)	.008	.025
T1 Bullying Perpetration → T2 CDs → T3 Bullying Perpetration	.02*** (.01)	.009	.028
T2 Bullying Perpetration → T3 CDs → T4 Bullying Perpetration	.02*** (.01)	.010	.029
Community Violence Exposure			
T1 Witnessing → T2 CDs → T3 Bullying Perpetration	.01* (.00)	.001	.018
T2 Witnessing → T3 CDs → T4 Bullying Perpetration	.01* (.01)	.001	.020
T1 CDs → T2 Bullying Perpetration → T3 CDs	.02*** (.00)	.009	.025
T2 CDs → T3 Bullying Perpetration → T4 CDs	.02*** (.00)	.008	.024
T1 Bullying Perpetration → T2 CDs → T3 Bullying Perpetration	.02*** (.01)	.008	.026
T2 Bullying Perpetration → T3 CDs → T4 Bullying Perpetration	.02*** (.01)	.010	.028

Note. β = Standardized estimates; SE = Standard error; C.I.s = Confidence intervals; LL = Lower limit, UL = Upper limit; *p < .05, ***p < .001.

Discussion

Guided by the social-ecological model of the development of conduct problems in adolescence (Bronfenbrenner, 1979; Dodge & Pettit, 2003), the purpose of the current study was to investigate the longitudinal and simultaneous pathways linking violence exposure across different contexts (within the more proximal-, i.e., the family, and distal-, i.e., the neighborhood/community, -*microsystems*) and multiple forms (through witnessing and direct victimization), individual pro-violence moral cognitions represented by self-serving CDs, with school bullying behavior during adolescence. Using a four-wave cross-lagged panel design, we tested the cognitive desensitization hypothesis that the literature has supposed to develop in response to chronically violent contexts (Dodge et al., 1990; Huesmann & Kirwil, 2007; Mrug et al., 2008; Ng-Mak et al., 2002), by considering the moral CDs as indicative of cognitive desensitization that would occur after repeated experiences of violence within the family and the community. Thus, we suggested that being exposed to violent contexts increases the likelihood that adolescents would develop self-serving CDs which, in turn, would promote the engagement in future episodes of bullying perpetration. More specifically, consistent with the concept of equifinality of detrimental effects of violence exposure across different daily life contexts, we expected significant associations between both violence exposure within the family and the neighborhood/community with CDs and bullying perpetration, whereas no *a priori* hypotheses were formulated for the differential effects of direct victimization (i.e., child maltreatment or abuse) and witnessing domestic violence, due to the limited and mixed prior literature. Instead, as regards community violence exposure, we expected differential effects concerning the status of “witness” or “victim” of violence, with significant associations between violence witnessing and both CDs and bullying perpetration, whereas no *a priori* hypotheses were formulated for violence victimization, due to the limited prior literature.

Furthermore, considering that a transactional developmental model is best equipped to describe the emergence of chronic antisocial behavior across time (Dodge & Pettit, 2003) such as bullying perpetration, we examined the reciprocal influences among individual dispositions, behaviors and daily life contexts, hypothesizing reciprocal associations between both domestic and community violence exposure with CDs and bullying perpetration, as well as between CDs and bullying perpetration over time. All the effects were examined controlling for adolescent gender and social desirability bias.

Before discussing the main results related to the study hypotheses, we will briefly discuss some preliminary findings. Consistent with the concept of “poly-victimization” (Finkelhor et al., 2011), according to which youth experience violence across a co-occurrence of multiple *microsystems* of the social ecology, the findings of the correlation analysis showed that exposure to violence, both as a victim and as a witness and both within the family and community were concurrently intercorrelated with each other at all time points of the current study. Indeed, episodes of violence within the family context have been found to be associated with high levels of violence in the neighborhood (Affuso, Bacchini, Aquilar, De Angelis, & Miranda, 2014; Margolin, Vickerman, Oliver, & Gordis, 2010).

Taking into account such co-occurrence of multiple contexts and experiences through which youth are exposed to violence, a specific contribution of our study concerns the detection of differential effects of multiple contexts (i.e., the family and the neighborhood/community) and multiple forms (i.e., through witnessing and direct victimization) of violence exposure to developmental maladaptive outcomes in adolescence. More specifically, our findings showed that both exposure to violence within the family and the community were associated to self-serving CDs and bullying perpetration over time although through different forms; more specifically, for domestic violence exposure through direct victimization (i.e., child maltreatment or abuse), whereas for community violence exposure through witnessing. Moreover, we found a significant association between self-serving CDs and bullying perpetration over time. Each of these longitudinal patterns was found to have a bidirectional direction.

Finally, as regards the tested cognitive desensitization hypothesis, a marginally significant mediating role of self-serving CDs in the relationship between violence exposure that occurs through direct victimization, within the family, and through witnessing, within the community, with school bullying perpetration was found.

Social-Environmental Risk Factors for School Bullying Perpetration: The Role of Domestic and Community Violence Exposure

The results that both violence exposure within the family and the community were associated to bullying perpetration are consistent with the concept of equifinality according to which violence exposure across different contexts seems to eventuate in the same outcomes, in this case, bullying behaviors, and highlight the high sensitivity of adolescents to environmental influences, confirming a basic postulate that “violence breeds violence”.

Our findings related to bullying considered as a subtype of aggressive behavior are consistent with previous studies having found that youth exposed to domestic (e.g., Bacchini et al., 2015; Cao et al., 2016; Ehrensaft et al., 2003; Evans et al., 2008) as well as to neighborhood/community violence (e.g., Chen et al., 2016; Esposito et al., 2017; Mrug & Windle, 2009) are more likely involved in aggressive and antisocial behaviors than youth who did not.

However, the influence of family and community on bullying perpetration seems to differ depending on the peculiar forms through which violence exposure can takes place; more specifically, in predicting bullying over time, a unique role of direct victimization and witnessing with regard to domestic and community violence exposure, respectively, emerged.

As regards domestic violence exposure, the finding that direct victimization rather than witnessing was associated to bullying perpetration is consistent with a previous cross-sectional study by Bacchini et al. (2015) evidencing that being a victim of domestic violence had a stronger concurrent association with antisocial behavior than witnessing violence at home and, partially, in accordance with another study by Holt et al. (2009) who found higher rates of child maltreatment for both bullies and victims and significantly higher rates of exposure to domestic violence for bullies. Contrary to the findings of prior literature described above and in contrast to our results, other studies emphasized a stronger impact of domestic violence witnessing in promoting bullying behaviors. For example, Baldry et al. (2003) documented that youth who witnessed violence between their parents were significantly more likely to bully their peers compared to those who were not exposed to interparental violence, over and above age, gender, and child maltreatment (i.e., abuse). Other cross-sectional studies report similar findings revealing that domestic violence witnessing represents a risk factor for bullying peers (Cluver et al., 2010; Ferguson et al., 2009; Moretti et al., 2006; Mustanoja et al., 2011).

Moreover, among longitudinal studies distinguishing the differential effects of domestic violence witnessing and victimization, Bowes et al. (2009) showed that over and above other socio-environmental risk factors and children's behavior problems, youth who were victim of parents' maltreatment were at increased risk for bullying victimization, whereas those who witnessed domestic violence were at increased risk for bullying perpetration. Conversely, another longitudinal study (Bauer et al., 2006) found that, although witnessing domestic violence was related to increased problematic behaviors (i.e., externalizing behavior or physical aggression and internalizing behaviors), it was not associated with child-reported bullying behaviors or victimization by peers.

Although violence witnessing and victimization are often co-occurrent, as our study has shown, they could reflect two specific domains of experience, thus, affect child development differently. The lack of witnessing effects on bullying perpetration we found could be explained referring to the changes that occur in family influence during adolescence when there is a significantly increase of other socialization agents such as the peers (Garcia et al., 2020) and when youth spend most of their time in environments outside the home, such as the neighborhood/community. For this reason, as some authors (Mrug & Windle, 2010) argued, one possible explanation might be that the more probability of being witnesses of community violence, especially when young people grow, may desensitize them to the effects of violence occurring at home, putting them at lower risk of development externalizing behaviors (e.g., delinquency; Cooley-Quille et al., 2001) such as bullying when witnesses of domestic violence, as in our study.

Conversely, perpetrating bullying significantly predicted violence exposure over time, both as a witness and as a victim, confirming the key assumption of the transactional approach to the development of conduct problems in adolescence (Dodge & Pettit, 2003) according to which it is plausible to hypothesize that a vicious circle takes place between parental behaviors and adolescent's one, so that youth exposed to parental violence may learn through observational mechanisms aggressive behaviors from parents which, in turn, may often recourse to aggressive behavior to discipline youth who bully their peers, thus perpetuating the cycle of violence.

Moving on the effects of violence exposure within the community, consistent with our expectations, experiencing violence witnessing predicted bullying perpetration over time. This result corroborates previous studies finding that youth who experienced heightened level of community violence as witnesses were more likely to be perpetrators of school bullying (Davis et al., 2018; Dragone et al., 2020; Schwartz & Proctor, 2000). As argued by Bowes et al. (2009), one possible explanation may be that hostile interactions observed in local communities provide children with models of aggressive behaviors that they can reproduce among their peers. Furthermore, the findings above mentioned are in line with those studies (e.g., Bradshaw et al., 2013; Espelage et al., 2000; Swearer & Hymel, 2015; Youngblade et al., 2007) showing that youth who live in neighborhoods judged to be less safe (i.e., characterized by more violent behaviors, where access to guns and gang membership may be most likely) were more likely than those who live in safer neighborhoods to engage in bullying behaviors. Similar findings have been found in the literature on deviant and antisocial behavior, indicating that witnessed violence in the neighborhoods provides behavioral models for such behavior, increases the tendency to believe that it is acceptable or even expected and desensitizes young people to the emotional effects of violence (Mrug & Windle, 2009). Moreover, our findings are consistent also with those studies that found a significant association between a composite measure of violence exposure within the community and bullying perpetration (Bacchini et al., 2009; Valdés Cuervo et al., 2018) over and above other socio-environmental factors (Chaux et al., 2009).

Conversely, although we found a co-occurrence of violence witnessing and victimization within the community, and positive concurrently correlations between violence exposure as a victim and bullying, our results highlighted that experiencing direct victimization had no association with bullying over time. The lack of victimization effects on bullying perpetration we found may be explained by the fact that being victim of violence within the community could be linked with other variables that we did not include in the current study, such as impairments in emotional self-regulation (as in the study by Schwartz & Proctor, 2000) and internalizing (e.g., Cooley-Quille et al., 2001) rather than externalizing symptoms, as evidenced in the review by Fowler and colleagues (2009). Our study revealed also bidirectional relations between community violence witnessing and bullying so that bullying perpetration significantly predicted violence exposure as a witness over time corroborating previous research coming from the literature on aggressive or delinquent behavior which found that young people who engage in aggressive behavior, such as bullying, are more likely to put themselves in high-risk situations in which they are more likely to be witnesses of violence (Esposito et al., 2017; Mrug & Windle, 2009).

Exposure to Domestic and Community Violence as a Fertile Ground for Self-Serving Cognitive Distortions Development

As regards the association between chronic violent experiences that directly or indirectly expose youth to antisocial models and the development of weaker internal moral standards, the findings of the present study are consistent with theoretical principles of social learning theory (Bandura, 1978) and its crime-related extension (Dodge & Pettit, 2003). More specifically, our study revealed that the influence of domestic and community violence exposure on development of the tendency to make self-serving CDs differs depending on the peculiar forms through which exposure to violence can takes place with domestic violence victimization and community violence witnessing predict self-serving CDs over time, respectively.

Referring to domestic violence exposure, although we found positive concurrently correlations between violence exposure, both as a victim and as a witness, and the individual tendency to make self-serving CDs, our results highlighted that only experiencing violence victimization was associated to self-serving CDs over time. Such finding is consistent with previous studies which have proposed that the intergenerational transmission of violence in adolescents who directly suffer maltreatment by their parents could be cognitively mediated (Nickoletti & Taussig, 2006). Indeed, in our study, in accordance with the findings reported by Lee and Hoaken (2007), direct victimization experiences within the family have been shown relevant effects on social-cognitive processes; more specifically, youth exposed to maltreatment and physical abuse were more likely to display biased social-information processing, especially towards attending to or conferring meaning upon experiences when faced with the ambiguous intentions of others in social situations. Therefore, it would seem that youth exposed to parental victimization develop cognitive structures or schemas which could reflect a tendency towards a hypervigilance to perceived threatening cues and a hostile attributional bias that emerged as an adaptive response to actual threats in the past (Dodge & Pettit, 2003; Lee & Hoaken, 2007).

When chronically exposed to antisocial behavioral models put in place by their parents against them, youth may develop cognitive schemas which adopt the form of normative beliefs about the social appropriateness of aggression (Huesmann & Guerra 1997) including the idea that the use of the aggression is justified (e.g., because the other deserves it) and leads to positive outcomes for the individual (e.g., because it serves to obtain respect from others). However, contrary to our results, empirical evidence (e.g., Calvete, 2007; Calvete & Orue, 2013; Herrenkhol et al., 2003) have found a more relevant role of domestic violence witnessing to promote the development of justification schemas about violence, whereas direct victimization was linked to the schema of mistrust (Calvete & Orue, 2013) as well as schemas of rejection as a result of family abuse and victimization (Calvete et al., 2018).

With regard to community context, when examining the link between violence exposure within the neighborhood/community and social-cognitive processes, our results revealed an association between violence exposure as a witness, but not as a victim, and the individual tendency to make self-serving CDs over time, thus corroborating theoretical assumptions of social learning theory (Bandura, 1978) and biopsychosocial perspective (Dodge & Pettit, 2003) according to which adolescents who are exposed to violence within their living environments learn and internalize via observational learning, a series of criminal/deviant models which take the form of social-cognitive schemas, beliefs and positive attitudes towards violence (Dodge et al., 1990; Mrug et al., 2008). Such deviant or immoral thinking patterns increase the probability that they will engage in future deviant behaviors (Gannon et al., 2007) as bullying.

This finding seems to confirm that a “cognitive desensitization to violence” process may occur when youth are chronically exposed to violence (Huesmann & Kirwil, 2007), as well as is consistent with some other previous research highlighting a strict association between community violence and the development of more approving violence beliefs, more positive moral evaluations of aggressive acts and more justification for inappropriate behavior inconsistent with social and individual’s moral norms.

Furthermore, our findings corroborate the results of previous studies that have examined single indicators of the alteration of youths’ cognitive processes through their experience of violence, especially within the theoretical framework of moral disengagement (Bandura, 1977, 1986), finding that individuals respond to violence exposure or neighborhood impoverishment, in many ways, some of which would be consistent with traditional concepts of moral disengagement (Hyde et al., 2010; Wilkinson & Carr, 2008). Supporting the findings of such previous studies and consistent with our results, Bacchini et al. (2012) showed that higher levels of exposure to community violence as a witness, along with the perception of higher levels of deviancy among peers, reduced the strength of moral criteria for judging moral violations.

Nonetheless, although several studies have examined the development of biased cognitive processes through the youths' experience of violence in their neighborhood, such as acceptance of violence cognitions, or bias of social information processing (e.g., Allwood & Bell, 2008; Bradshaw et al., 2009), only a few studies (Dragone et al., 2020; Esposito et al., 2020) examined the impact of community violence exposure on the likelihood to show a cognitive developmental tendency rather than another. As previous studies just mentioned (Dragone et al., 2020; Esposito et al., 2020), also the current study considers Gibbs and colleagues' (1995) theoretical formulation of CDs but extends prior findings by exploring the environmental precursors of moral cognitions considering both the more proximal-, i.e., the family, and distal-, i.e., the community, *microsystems* of social ecology.

In contrast to domestic violence exposure, violence witnessing within the community appears to be more strongly linked to the development of distorted moral cognitions; conversely, although positive concurrently correlations between community violence exposure, both as a witness and as a victim, and the individual tendency to make self-serving CDs, our results highlighted a lack of associations between experiencing community violence victimization and self-serving CDs over time. These findings are consistent with those of Schwartz and Proctor (2010), showing that only violence witnessing was associated with social-cognitive biases supporting positive evaluation of violent behavior, whereas experiencing violence victimization was more likely be associated with impairments in emotion regulation, in line with review by Fowler and colleagues (2009).

Taken together, the findings discussed above provide further support for a "pathologic adaptation" model (Ng-Mak et al., 2002), according to which chronic violence exposure leads to a normalization of violence through the neutralization of moral standards. Therefore, it allows us for speculating that growing up in violent contexts, both in the family and neighborhood/community, might undermine the normative process of moral development, thus, causing the moral delay hypothesized by Gibbs, that consolidates into self-serving CDs (Gibbs, 2004).

Moreover, our findings highlighted also bidirectional relations between exposure to violence, as a victim and as a witness, within the family and community contexts, respectively, and the development of self-serving CDs, such that the more a youth is exposed to violence within the family and community, the more she or he develops biased cognitive processes to justify her or his immoral actions which, in turn, put themselves in high-risk situations in which they are more likely to be victims of parental violence or witnesses of community violence.

These results, along with those above-mentioned about the reciprocal effects of domestic and community violence exposure with bullying perpetration over time, seem to provide support for the lifestyle exposure theory (Hindelang, Gottfredson, & Garofalo, 1978) indicating that exposure to violence is not random but is closely related to the behavior (or lifestyle and attitudes) of individuals and with the transactional approach to the development of conduct problems in adolescence (Dodge & Pettit, 2003) according to which it is plausible to hypothesize that a vicious circle takes place between adolescents' attitudes and behaviors and the risk to being victims and/or witnesses of violence in their daily life environments. In the light of these considerations, it could make sense to endorse the assumption that a "reciprocal determinism" (Bussey & Bandura, 1999; Orpinas & Horne, 2006) occurs so that a triadic interaction (Bandura, 1977, 1986) between social environment (e.g., home and community), individual cognitions (e.g., self-serving CDs), and behaviors (e.g., bullying) could perpetuate the cycle of violence.

Individual Social-Cognitive Risk Factor for School Bullying Perpetration: The Role of Self-Serving Cognitive Distortions

Consistent with our expectations and with the cognitive desensitization process according to which chronically exposure to violence would result in more approving deviant or immoral thinking patterns (Gannon et al., 2007) which could lead to the perpetration of future episodes of violence, we found that the tendency to make self-serving CDs when interpreting social situations, promoted the engagement in bullying perpetration over time, and *vice-versa*.

These findings provide support for social-cognitive approach (e.g., Bandura, 1977, 1986) that links behavior to the way one thinks about situations and confirms the results of previous studies (e.g., Gini et al., 2014; Teng et al., 2020) developed within the theoretical framework of moral disengagement (Bandura, 1977, 1986) showing that youth need to construct attitudes and beliefs that justify their immoral actions in order to maintain a positive self-concept. As well, our findings strengthen the research on moral cognitions and externalizing problem behavior associations (Helmond et al., 2015; Owens et al., 2014), extending the predictive role of CDs as conceptualized by Gibbs and colleagues (1995), in also explaining peer-related aggression or bullying behavior, and not only serious delinquent acts such as antisocial or delinquent behavior (Barriga et al., 2008; Gini et al., 2011). Therefore, as reported by Paciello, Fida, Tramontano, Lupinetti, and Caprara (2008), a crystallization of disengaging mechanisms as well as self-serving distortions legitimatizes and reinforces the recourse to aggressive and violent behaviors over time (Arsenio & Lemerise, 2004; Bandura et al., 1996) such as bullying.

Overall, consistent with theoretical frameworks discussed above (i.e., Sykes & Matza's neutralization theory and Bandura's social cognitive theory), these findings highlighted that the cognitive processes should be conceived as preceding detrimental behavior and as being causally involved in its generation (e.g., Bandura et al., 1996, pp. 366–367) because youth are more likely to be involved in reprehensible conduct, such as bullying, only after they have justified to themselves the rightness of their actions (see Bandura et al., 1996, p. 365); in light of this, youth seem to make use of self-serving CDs as main motivators or "pretexts" of behaving aggressively (Ribeaud & Eisner, 2015).

However, as expected, we also found a predictive role of bullying perpetration on CDs and the recursive association between cognition and behavior over time, such that cognitions affect behavior, and behavior feeds back into cognitions. This result is framed within the transactional developmental model (Dodge & Pettit, 2003) and suggests the possibility of a multidirectional causality between individual cognitions and behaviors providing support to the Gibbs' conceptualization of secondary CDs as a form of post-rationalization or "excuses" serving to emotionally and cognitively overcome dissonance between individual moral standards and behavioral transgressions. Indeed, if on the one hand the tendency to make self-serving CDs is associated with bullying perpetration over time, on the other the more a person is involved in bullying perpetration, the more she or he uses CDs to reduce cognitive dissonance and to neutralize potential feelings of guilt or empathy with the victim, in order to justify her or his immoral actions (Gibbs, 2013). Similarly, Aquilar et al. (2018) found a reciprocal influence over time among values, moral judgment, considered similarly to CDs as a moral motivator (Schwartz, 1996) of externalizing behaviors, and antisocial behaviors. Furthermore, our findings are consistent with those of Ribeaud and Eisner (2015) who in their attempt to systematically test the causality linkages between moral neutralization– a generic term for the related concepts of neutralization techniques, moral disengagement, and self-serving CDs–and aggressive behavior in early adolescence, suggested that moral neutralization and aggression could be conceived as the cognitive and as the behavioral, respectively, expression of the same phenomenon. Specifically, in the process of (aggressive) decision making, moral neutralization might be envisaged as facilitating aggressive behavior by providing *ex ante* justifications, whereas aggressive behavior would in turn induce *ex post* legitimizations that allow a smooth integration of norm-breaking behavior into an apparently intact moral self-concept.

Pathways Linking Exposure to Domestic and Community Violence, Self-Serving Cognitive Distortions, and Bullying Perpetration: The Cognitive Desensitization Process

Finally, with respect to our focal interest, the tested cognitive desensitization hypothesis highlighted a mediational pathway linking exposure to violence, through victimization and witnessing, within the family and community, respectively, to involvement in bullying perpetration through biased cognitive processes, represented in our study by the tendency to make self-serving CDs, although the magnitude of the indirect effects was relatively modest. More specifically, we found that self-serving CDs mediated the relationship between earlier domestic violence victimization as well as community violence witnessing and later bullying perpetration with stable indirect effects over time; these findings seem to suggest that one of the mechanisms through which violence exposure within youth's daily life contexts could increase bullying behavior is by increasing the tendency to make self-serving CDs when interpreting social situations.

Regarding domestic violence victimization, our results suggested that, at least in part, the involvement observed in bullying behavior was dependent on the increase of distorted cognitive schemas over time as a result of experiences of parental victimization. The more adolescents were maltreated or physically abused, the more they develop biases in social-information processing which take the form of normative beliefs about the social appropriateness of aggression (Huesmann & Guerra 1997) which, in turn, predicted an increase in their tendency to engage in acts of bullying. These findings are consistent with that research literature (e.g., Nickoletti & Taussig, 2006) which proposed that the transmission of violence among parents-adolescents who suffer parental violence could be cognitively mediated making youth more likely to perceive threats and attribute hostile intent to others rather than benign interpretations especially when faced with the ambiguous intentions of others in social situations (Lee & Hoaken, 2007).

Also, as regards community violence exposure, the findings of the present study revealed that the more adolescents experience violence witnessing within the community, the more they develop more approving violence beliefs, more positive moral evaluations of aggressive acts, and more justification for inappropriate behavior inconsistent with social and own's moral norms, thus increasing their tendency to engage in acts of bullying, more likely due to a cognitive desensitization to violence process (Huesmann & Kirwil, 2007). This result is consistent with previous similar research (Dragone et al., 2020; Schwartz & Proctor, 2000) and in line with Anderson's (1999) "Code of the Street" perspective, suggesting that living in neighborhoods where macrostructural patterns of disadvantage are radicalized facilitate the access to street's subculture, that shapes pro-violence values and beliefs such as the CDs to legitimatize the use of violence conceived as an acceptable problem-solving tool in neighborhoods where the street culture is widespread.

In addition, the mediation analyses confirmed a series of reciprocal associations between CDs and bullying perpetration over time, such that the later increases in bullying perpetration was mediated by earlier higher CDs, and *vice-versa*, the later increases in make use of CDs was mediated by earlier higher involvement in bullying perpetration, such that the more a youth makes use of CDs, the more she or he is inclined to perpetrate bullying and, *vice-versa*, the more a youth is involved in bullying perpetration, the more she or he is more likely to increase beliefs in the normative nature of violence (Crick & Dodge, 1994).

Taken together, such findings, in line with a transactional developmental model (Dodge & Pettit, 2003), corroborate the view of a multidirectional causality between individual cognitions and behaviors such that the two constructs reinforce each other over time in the process of (aggressive) decision making (Ribeaud & Eisner, 2015), thus providing further support to the Gibbs' conceptualization of CDs both as a form of pre (i.e., "pretexts")- or post (i.e., "excuses")-transgression rationalizations which justify immoral actions, overcoming emotionally and cognitively dissonance between individual moral standards and behavioral transgressions.

Limitations and Future Directions

In interpreting these findings, several limitations need to be acknowledged. First, evaluation of all constructs in the study relied exclusively on adolescent self-reporting that may be subject to social desirability. Indeed, referring to the tendency to make self-serving CDs and to involvement in bullying behaviors, despite in the current study all the effects were controlled for social desirability bias, it is known (e.g., Wang et al., 2017) that adolescents are more careful about their social image than other age groups, and may be unlikely to report behavior that displays them in a negative light.

Furthermore, regarding violence exposure both within the family and community, more objective and comprehensive measures of violence in the everyday lives of adolescents, including official data from national census agencies and police departments, may provide a more complete assessment of violence exposure (Curry, Latkin, & Davey-Rothwell, 2008). Future studies may benefit from utilizing a multi-informant approach (e.g., peers' and teachers' reports for behavioral constructs) jointly with self-report measures.

Another limitation concerns the generalizability of the results, as the study included a sample from a limited geographical area in Southern Italy. Although most studies rely on geographically-circumscribed samples, in our study data were collected from a culturally-specific context characterized by serious social problems and high rates of organized crime, that expose adolescents to high risk situations for domestic or community violence. This might shape culture-specific beliefs and values, that in turn might influence an individual's cognitions and behaviors (Bacchini et al., 2015). For this reason, more research is needed to confirm that the explanatory model proposed in this study applies to populations from other, possibly differing, cultural contexts.

Furthermore, given the co-occurrence of different kinds of violence exposure from multiple contexts (Finkelhor et al., 2011), future research could also investigate the cumulative and interactively effects of domestic and community violence exposure in exacerbating adjustment problems (e.g., Mrug et al., 2008). In addition, the lack of witnessing and victimization effects of domestic and community violence, respectively, on cognitive (i.e., self-serving CDs) and behavioral (i.e., bullying) outcomes we found could suggest the need to consider other relevant variables, such as impairments in emotional self-regulation (e.g., Schwartz & Proctor, 2000) and internalizing problems (e.g., Cooley-Quille et al., 2001), as evidenced in the review by Fowler and colleagues (2009). Also, some other school or classroom-level variables (e.g., peers/teachers support, peer pressure, school climate, etc.) could be relevant to improve our understanding of the dynamics involved in bullying episodes considering that bullying is a complex social peer-group process (Salmivalli, 2010).

Finally, as discussed above, because self-serving CDs might be perceived as relatively stable cognitive mechanisms (Gibbs et al., 1995) which could differ among individuals over time, further analytical strategies could be implemented in future studies, such as random intercept cross-lagged panel model which, unlike the traditional cross-lagged panel design we used in the present study, allows to partial out the between-person stability over time, such that the lagged coefficients represent within-person patterns of change (Hamaker, Kuiper, & Grasman, 2015).

Conclusions and Practical Implications

Notwithstanding these limitations, this study provides further corroboration, consistent with the Bronfenbrenner's (1979) social-ecological framework, of the joint and reciprocal role of individual and contextual factors implicated in the enactment of school bullying behavior also suggesting that future research development should focus primarily on dynamic, reciprocal processes, rather than unidirectional causal models. More specifically, using a transactional approach to the development of conduct problems in adolescence (Dodge & Pettit, 2003), the findings of the present study highlighted that youth who experience violence in their daily life contexts develop pro-aggressive moral cognitions taking the form of self-serving CDs. Moreover, in our study we found that the internalization of these cognitive schemas about the world, along with the development of normative beliefs about violence, in turn, amplify the risk for involvement in bullying perpetration.

Overall, these results point out the need to consider the development of conduct problems (e.g., bullying) in adolescence as a process involving multiple levels of individual ecology and provide useful suggestions for designing and implementing appropriate interventions aimed at preventing and reducing adolescents' involvement in bullying perpetration by reducing their biased moral cognitions, especially when exposed to violent environments.

An example of school-based program developed within Gibbs' theoretical framework and aimed at reducing adolescents' "thinking errors" or CDs is the "Equipping Youth to Help One

Another (EQUIP) for Educators" (EfE; DiBiase, Gibbs, Potter, & Spring, 2005) whose effectiveness has been demonstrated in various contexts (e.g., Van der Velden, Brugman, Boom, & Koops, 2010). In accordance with our study findings, highlighting the key role of CDs to promote bullying perpetration in adolescents exposed to violence, this psychoeducational program is focused on targeting the strengthening of youth's moral cognitions by equipping youth with skills for managing anger and correcting CDs with the main goal to equip them to think and act more responsibly.

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CHAPTER III:

STUDY 2

CHAPTER III

Exploring the Multi-Dimensional Nature of Antisocial Behaviors: Development and Validation of a New Measure of Attitudes towards Law-Breaking Behaviors (AtLBBs) in a Community Sample of Adolescents

Theoretical and Treatment-Related Issues Regarding Evaluation of Attitudes towards Antisocial Behaviors in Adolescence

There is broad consensus to consider antisocial behavior as an umbrella term which refers to a broad range of outward behaviors aimed at directly or indirectly damaging others, breaking moral or social norms, and/or infringing on the personal or property rights of others (Barriga, Morrison, Liau, & Gibbs, 2001; Burt & Donnellan, 2009; Liu, 2004). Beyond such general conceptualization, the specific manifestations of antisocial behavior vary markedly from individual to individual encompassing a heterogeneous set of behaviors from physical aggression (e.g., physically attacking others and bullying) to non-aggressive rule-breaking behaviors with typical examples including illegal actions such as vandalism, stealing, theft, and many other problematic behaviors.

An increase in antisocial behavior during adolescence can be considered a transient, quasi-normative phenomenon that reaches its peak during that developmental period (Moffitt, Caspi, Harrington, & Milne, 2002; Monahan, Steinberg, Cauffman, & Mulvey, 2009), also bringing a substantial risk for more severe problem behavior, psychopathological disorders, and crime later in life (Moffitt, 2003; Overbeek, Vollebergh, Meeus, Engels, & Luijpers, 2001). Since these behaviors are followed by several psychosocial and legal detrimental consequences (Schaeffer, Petras, Ialongo, Poduska, & Kellam, 2003; Tremblay, 2006), it is understandable that numerous attempts have been made over decades by theorists and mental health professionals involved with children and adolescents to identify attitudes and beliefs that can contribute to the prediction, assessment, and treatment of behaviorally at-risk youth.

Although the multi-factorial nature of antisocial behaviors needs to be acknowledged and several explanatory models of antisocial conducts have been developed over the decades, from a social-cognitive perspective (e.g., Bandura, 1977, 1986), it is assumed that the way people behave is determined by the way they think about or interpret social events (Crick & Dodge 1994), and antisocial behaviors is based on deficiencies in interpreting these events (Van der Velden, Brugman, Boom, & Koops, 2010). Consistent with this approach, several researchers on how the individual's cognitive processes can give root to and strengthen antisocial tendencies highlighted that the presence of deviant (i.e., criminal) or immoral thinking patterns increases the likelihood of antisocial behavior (Gannon, Ward, Beech, & Fisher, 2007) playing a critical role in the development of stable antisocial tendencies (Fontaine, 2008).

In this regard, Walters (2006) defined "criminal thinking" intended as an offshoot of antisocial cognition, as "thought content and process conducive to the initiation and maintenance of habitual law-breaking behavior" (p. 88), corroborating previous studies having found that antisocial youth display a wide range of antisocial cognitions that are consonant with their law-breaking or criminal activities (Butler, Leschied, & Fearon, 2007). Overall, it has been suggested that the way youth think about the wrongness of moral and social rule-breaking may be considered a proximal antecedent of their own behavior (Aquilar, Bacchini, & Affuso, 2018); specifically, the authors (Aquilar et al., 2018) in investigating the longitudinal and reciprocal associations between moral cognition and behavior have found that judgment and antisocial behaviors reciprocally influence each other with the tendency to give importance to respect for the rules and norms of society discourages the involvement in antisocial acts and, *vice-versa*, the more involvement in antisocial behaviors amplifies the risk for judging more excusable rule-breaking behaviors. These findings are consistent with a reciprocal or transactional causation model (Sameroff, 2009), according to which cognitions affect behavior, and behavior feeds back into cognitions, because when adolescents became aware of inconsistencies between their behavior and their beliefs, they are more prone to change their beliefs to resolve cognitive dissonance (Festinger, 1957) as resulting from their rule-breaking behaviors. Consequently, as a result of the recursive power of weakening of moral beliefs and strengthening of antisocial behaviors could be consolidated over time a negative developmental pathway towards more serious forms of antisocial acts (Nas, Brugman, & Koops, 2005). These findings underscore the need for early preventing and breaking through the negative spiral by developing less positive attitudes and beliefs against antisocial behaviors (Nas et al., 2005).

For this purpose, many interventions developed to reduce antisocial behavior have targeted beliefs and attitudes towards violence showing to have the greatest effect in reducing youth reoffending (Lipsey & Wilson, 1998). More specifically, cognitive-behavioral programs according to which by altering biased thinking patterns, such as pro-violence attitudes, it would be possible to modify antisocial aspects of personality and consequent behaviors, focuses on changing internal beliefs, perceptions, and attitudes as a mean of changing specific adverse behaviors (Milkman & Wanberg, 2007). In this regard, the review by Banse, Koppehele-Gossel, Kistemaker, Werner, and Schmidt (2013) specifically focused on pro-violence attitudes intended as the interpretations or beliefs that support illegal offences, suggested that there is considerable evidence that most cognitive-behavioral treatment programs for offenders targeting general or offence-specific attitudes reduce recidivism. However, a clearer empirical evidence that the reduction of recidivism risk just depending on the individual changes in pro-violence beliefs and attitudes is needed.

Therefore, such literature has given rise to an emphasis on cognitive-behavioral interventions highlighting that a deeper understanding and evaluation of the pro-violence thinking patterns could serve to inform prevention and intervention programs that target antisocial acts in adolescence.

Focusing the Construct of Antisocial Attitudes: The "Code of the Street" Theoretical Framework and Deviant Subcultures as "Camorra"

Social learning theory (Bandura, 1978) and its crime-related extension (Dodge & Pettit, 2003) provide a theoretical framework for understanding how youth acquire pro-violence beliefs, attitudes, and behavior suggesting that a key role is demanded to the experiences within their daily life environmental contexts (Bradshaw, Rodgers, Ghandour, & Garbarino, 2009; Huesmann & Kirwil, 2007). In this regard, due to their repeated exposure to the observation of violent models, young people growing up in violent neighborhoods may develop a view of the world as a hostile and dangerous place (Guerra, Huesmann, & Spindler, 2003; Schwartz, Dodge, Pettit, & Bates, 2000), thus acquiring beliefs about violence itself as a useful mean for conflict resolution (Dodge, Coie, & Lynam, 2006). The internalization of these schemas of the world, along with the development of normative beliefs about violence, amplify the risk for behaving in an antisocial manner. Therefore, youth's involvement in antisocial acts could be explained by analyzing neighborhood processes where youth day-to-day live and that shape their violence-related norms and attitudes. As argued by Anderson in his "Code of the Street" theorization (1994, 1999), living in neighborhoods where macrostructural patterns of disadvantage are radicalized leads to a sense of hopelessness and cynicism about societal rules and their application and could provide a fertile ground for young people to adopt the "code of the street" as a lifestyle guide which amounts to "a set of informal rules governing the interpersonal relationship and prescribing both proper comportment and the proper way to respond if challenged" (1999, p. 33).

The adoption of street code facilitates the access to violence-related norms which, once internalized, legitimize the use of violence—or the credible threat of violence—as an acceptable problem-solving tool among adolescents and as a functional mechanism for gaining and maintaining respect. Such violence-related norms reinforce individual's beliefs and attitudes towards sanctioning of antisocial behavior and so supply a rationale allowing those inclined to aggression to precipitate violent encounters in an approved way (Anderson, 1999, p. 33).

Although Anderson's "code of the street" originated to explain the disproportionate amounts of violence among African American adolescents in disadvantaged inner-city neighborhoods, to date, there is a modest amount of empirical research (e.g., Brezina, Agnew, Cullen, & Wright, 2004; Matsueda, Drakulich, & Kubrin, 2006; Stewart & Simons, 2010; Stewart, Schreck, &

Simons, 2006; Stewart, Simons, & Conger, 2002) has embraced the street code as a promising approach for understanding youth violence also in other contexts, as well. Taken together, previous studies have found that living in neighborhoods with high rates of violence (Matsueda et al., 2006) as well as being involved with aggressive peers (Brezina et al., 2004) disproportionately contribute to the adoption of the street code-related beliefs and attitudes which, ultimately, increase violent behavior (Brezina et al., 2004; Stewart & Simons, 2010; Stewart et al., 2002) and the risk of victimization (Stewart et al., 2006).

Such findings seem well suited to the specific cultural context where youth of the present study were recruited, that is a high-risk urban area in Southern Italy. Specifically, it has been widely documented that adolescents living in the metropolitan area of Naples are massively exposed to neighborhood violence in their everyday life (Bacchini & Esposito, 2020). Indeed, according to the most recent data from Public Security Department of Italian Ministry of Interior (2018) this geographic area which is the second in Italy for reported crimes and violence has raised a growing social alarm in recent years both for increasing youth’s involvement in individual crime-related behaviors such as robberies, menaces, extortions, tracking, and drugs possession as well as for crimes and violence committed by youth gangs (Bacchini, Dragone, Esposito, & Affuso, 2020). Consequently, such area is likely to constitute a fertile ground for the spread of deviant subcultures, i.e., groups that develop and share values and norms considered outside the culture of the dominant population and supportive of law-breaking conducts. In this regard, it could be speculated that, at least in part, antisocial behaviors are closely linked to the highly rooted presence of organized crime (e.g., “Mafia”, “Camorra”, in slang) which represents a deviant subculture particularly widespread in Southern Italy (e.g., Bacchini & Esposito, 2020; see official data from Public Security Department of Italian Ministry of Interior, 2018) able to promote the crystallization of the street code-related norms and values, thus undermining the normative process of moral judgment, reinforcing beliefs and attitudes favorable towards violence as a mean to achieve and maintain respect.

An Overview of the Existing Instruments Assessing Attitudes towards Antisocial Behaviors: Why the Need for a New Instrument?

Consistent with the considerations discussed above, the construct of antisocial thinking patterns or attitudes towards antisocial behaviors has become a relevant topic in developmental and criminological research concerning the field of deviancy both for its empirical and practical implications in adolescence. Despite this growing interest, only a few instruments aimed to assess the adolescent thinking about the wrongness of antisocial behaviors have been developed (Aquilar et al., 2018) and, even less, those who have taken into account the multiple facets through which social or legal rule non-compliance could be expressed.

Among the existing attempts to capture the different sub-dimensions of antisocial behavior, there is that of Burt and Donnellan (2009), who in their developed “Subtypes of Antisocial Behavior” (STAB) Questionnaire differentiated among three meaningfully distinct, if somewhat overlapping, components of the broader construct of antisocial behavior, meaning physical aggression (e.g., physically attacking others and bullying), non-aggressive rule-breaking (e.g., lying, stealing without confrontation, and vandalism), and a third independent dimension, social or indirect/relational aggression (e.g., spreading rumors). Although based on some of the following earlier measures (e.g., the “Aggression Questionnaire” by Buss & Perry, 1992; the “Child Behaviors Checklist” - CBCL, by Achenbach & Rescorla, 2001) the instrument developed by Burt and Donnellan (2009) has overcome some of their limits especially due to the fact of providing good coverage of physical aggression and what they term “verbal” aggression but lacking coverage of rule-breaking (i.e., the “Aggression Questionnaire” by Buss & Perry, 1992) or providing coverage of physical aggression and rule-breaking but lacking a scale explicitly tapping social aggression (i.e., Achenbach & Rescorla’s CBCL, 2001).

As regards the specific assessment of antisocial thinking in adolescence, Butler and colleagues (2007) developed a sensitive measure of young people’s beliefs and attitudes towards a broad range of law-breaking (e.g., stealing) and rules violations (e.g., staying out late without parental permission) as they emerge in the primary social contexts of the child's life (i.e., at home, at school, and in the community), distinguishing between three main dimensions: rule non-compliance, peer conflict, and severe aggression. However, in a revised version of the "Antisocial Beliefs and Attitudes Scale" (ABAS; Butler, Parry, & Fearon, 2015) the aggression dimension was removed, as it failed in predicting antisocial behaviors.

Referring to the most recent attempt to capture the multiple dimensions of antisocial thinking in adolescence, Esposito, Affuso, Miranda, and Bacchini (2020) developed a dimensional measure of "Antisocial Behaviors Evaluation" (ASBE). Guided by both the social domain theory (Nucci, 2001; Tisak & Turiel, 1984; Turiel, 1983) and the actual antisocial thinking of adolescents, the authors (Esposito et al., 2020) identified a four-factor structure reflecting the dimensions according to which adolescents evaluate the wrongness of antisocial behaviors: (i) *Impersonal* (i.e., violations carried out against social and legal norms without any direct contact with other people, e.g., buying counterfeit articles); (ii) *Interpersonal* (i.e., violations of norms that primarily imply harm against other people, e.g., physically attacking someone weaker); (iii) *Personal-risky* (i.e., violations of norms whose consequences are perceived as primarily affecting one's own safety and health, e.g., use cocaine or ecstasy); and (iv) *Loyalty* dimension (i.e., violations that concern reciprocity and loyalty among peers and friends, e.g., breaking a promise to a friend).

Moving towards the assessment of street code-related attitudes, although, as discussed above, the Anderson's theoretical framework has been recognized as a promising approach for understanding youth violence, to our knowledge, still little research has attempted to test the psychometric quality of street code-related measure as applied across different cultural contexts and for different demographic groups.

One of the first systematic studies (Taylor, Esbensen, Brick, & Freng, 2010) aimed to explore the psychometric properties of Stewart and Simons (2006) attitudinal measure of street code-related violence and the degree to which such measure varies across demographic subgroups (i.e., race/ethnicity, sex, and age groups) and social contexts (i.e., public school districts in seven

U.S. cities). The Stewart and Simons' (2006) measure of acceptance of attitudes towards street code-related violence consisting of seven items to which adolescents were asked to indicate the extent to which it was justifiable or advantageous to use violence (e.g., "If someone uses violence against you, it is important that you use violence against him or her to get even") has received a strong support in the aforementioned study (Taylor et al., 2010) for its measurement quality as well as for its generalizability across both contexts and subgroups of the population. Furthermore, has been also noted that the unidimensional structure of the scale captures the core attitudinal components of the street code, as commented by Anderson (Stewart et al., 2006, p. 438; see also Stewart & Simons, 2009).

Although has previously been pointed out that the spread and crystallization of the street code-related norms and values occurs more easily and more persistently where organized crime subculture is highly rooted, to date, the phenomenon of organized crime appears insufficient to guarantee a common level of understanding in public and scientific debates (Lavorgna & Sergi, 2014). This is mainly due to a lack of consensus on what constitutes organized crime, thus making it problematic to reach a univocal definition (Van Duyne & Van Dijck, 2007; Wright, 2006) probably because it is a notion deeply soaked with cultural elements of the country (Lavorgna & Sergi, 2014). Specifically, in Italy, the use of the organized crime paradigm appears especially problematic and risk to be misleading since the same label may identify a whole range of different crimes and groups, ranging from "traditional" mafias or Camorra to new illegal market players that often take the form of looser gangs (Lavorgna, Lombardo, & Sergi, 2013). Given these conceptual difficulties, it is reasonable why appropriate tools for assessing individual attitudes towards antisocial acts committed under the control of the organized crime are still missing.

The Present Study

Based on the literature review discussed above, the need for well-standardized tools for a more comprehensive evaluation of adolescent antisocial thinking closely related to the deviant subculture-related values and norms has arisen.

In trying to bridge the measurement gap, the main aim of the current study was to develop a culturally-appropriate measurement scale of “Attitudes towards Law-Breaking Behaviors” (AtLBBs) in adolescence that could be able to capture the way youth think about the antisocial behaviors strictly related to the adherence to deviant subcultures in urban contexts where illegal activities are highly rooted. More specifically, a first dimension of adolescent antisocial thinking we considered was related to the “*Civic sense*” which refers to behaviors implying the respect of the societal and legal norms which, if infringed, do not imply direct damage to other people. A second dimension (i.e., the “*Street code*”) was related to the set of informal rules governing interpersonal relationship and prescribing the use of violence as a mean to achieve and maintain respect from other people (Anderson, 1999). A third dimension we conceptualized (i.e., the “*Loyalty code*”) concerned antisocial behaviors carried out in the name of a kind of code of “omertà” which is widely spread where deviant subcultures are radicalized and requires individuals to protect intimate boundaries (e.g., with friends, partners, and family) even if contrasting or conflicting with the societal or legal norms (e.g., the concept of “amoral familism” by Banfield, 1958). Finally, a fourth dimension (i.e., the “*Organized crime*”) was related to the youth’s attitudes towards antisocial behaviors committed under the control of organized crime which, given its deeply rooted presence in the high-risk urban area where our sample coming from, represents a sort of “State-surrogate” or “anti-State” (Armao, 2016) since its control of territory in competition with the State is an essential characteristic (Sciarrone, 2009).

After having developed an innovative set of potential items able to capture the dimensions described above, the purpose of the present study was to analyze the psychometric properties of the AtLBBs measurement scale by: (i) examining the factorial structure and reliability, considering both internal consistency and test/retest reliability; (ii) evaluating the measurement invariance of the scale across gender-groups and across time; (iii) corroborating the criterion-related validity, testing both convergent, divergent, and predictive validity, in a community sample of Italian adolescents coming from the Southern Italy.

Characterization of the Hypothesized Factorial Structure of AtLBBs Scale

Given our starting theoretical conceptualization about each dimensions, we built a dimensional measure of adolescent antisocial thinking. Specifically, based on the conceptual intent of items, the four correlated scales we hypothesized have been labelled as follows: (i) *Civic sense* (i.e., violations carried out against social or legal norms without any direct contact with other people, e.g., “Not paying public transport tickets”); (ii) *Street code* (i.e., violations that imply harming other persons by legitimize the use of violence as an acceptable problem-solving tool to achieve and maintain respect, e.g., “Use physical force (violence) to show others that you cannot be intimidated by them”); (iii) *Loyalty code* (i.e., violations of social or legal norms specifically legitimized in the name of loyalty and protection to friends, partners, and family, e.g., “Physically assaulting someone who offend your family members”); and (iv) *Organized crime* (i.e., culturally-based pro-violence beliefs and values widespread within the geographically-circumscribed high-risk area where our sample coming from and where organized crime is deeply rooted assuming the control of territorial illegal activities, e.g., “Making use of organized crime to obtain security and protection”).

Method

Participants

The sample for the current study consisted of 354 adolescents (51.7% males), ranging in age from 11 to 21 (M_{age} = 14.86, *SD* = 2.54) and enrolled in 7th (n = 156) and 12th (n = 198) grades of three middle and three high schools, respectively. The schools involved come from a quasi-experimental trial carried out during the 2018/2019 school year and aimed at investigating the effects of the “Equipping Youth to Help One Another (EQUIP) for Educators” program (EfE; DiBiase, Gibbs, Potter, & Spring, 2005; see the 4th chapter of the present dissertation for further details about the sample selection).

The neighborhood served by these schools located in several areas of Campania (provinces of Caserta and Naples) is characterized by serious social problems, such as high unemployment, school-dropout, and the presence of organized crime. Indeed, according to the most recent data from Public Security Department of Italian Ministry of Interior (2018), the metropolitan area of Naples is the second in Italy for reported crimes and violence such as robberies, threats, extortions, presence of criminal organizations, tracking, and drug. National statistics are also supported by findings of prior empirical research, documenting that adolescents growing up in Naples are massively exposed to neighborhood violence in their everyday life (Bacchini & Esposito, 2020).

Procedure

Approval of the School Principal and the class council, as well as of the University Institutional Review Board (IRB) was obtained for collecting data. The students responded to the questionnaire just before starting the EfE program (December 2018, wave 1, pre-test assessment) and immediately after (April 2019, wave 2, post-test assessment) its implementation. Parents’ as well as adolescents’ written consents were obtained prior to the administration of questionnaires, in accordance with the ethical principles of the Italian Association of Psychology (AIP). The administration of questionnaires was conducted during classroom sessions by trained researchers (Masters or Ph.D. graduating students). To reassure participants about reporting sensitive information and to encourage honest reporting, a complete guarantee of confidentiality was emphasized. Additionally, participants were informed about the voluntary nature of participation and their right to discontinue at any point without penalty.

Measures

Attitudes towards Law-Breaking Behaviors (AtLBBs): Scale Construction. Following the multi-dimensional nature of antisocial behaviors highlighted in the literature discussed in the Introduction of the present study, a new dimensional measure of adolescence antisocial thinking was developed. The first step to construct the measurement scale was built a set of potential items based on existing instruments in literature (i.e., Esposito et al., 2020; Stewart & Simons, 2006). Moreover, for the purposes of the present study, we also developed ad hoc additional items.

Specifically, as regards the "*Civic sense*" and the "*Street code*" dimensions, an initial pool of items from the "Antisocial Behaviour Evaluation" (ASBE) scale recently developed by Esposito and colleagues (2020) and from the "Acceptance of street code-related violence" by Stewart and Simons (2006), respectively, were selected and partially revised, based on their relevance to the adolescents' behaviors realm. From this preliminary list of items, the most serious behaviors (i.e., "Making use of hashish, marijuana, etc.", "Use cocaine or ecstasy") included in the personal-risky dimension of the ASBE (Esposito et al., 2020) were deleted in order to maintain the focus on antisocial behaviors that an adolescent can engage daily, whereas other items were removed to eliminate redundancy. Instead, as regards the "*Loyalty code*" and "*Organized crime*" dimensions, additional items were developed to specifically assess adolescent attitudes towards antisocial behaviors committed due to the adherence to the cultural code of "omertà" or under the control by organized crime within the urban context, respectively.

A final list of 28 items was extracted and preliminarily administered in a pilot sample of middle and high school students in order to review each item for congruence with the dimension definition, item clarity and language accessibility, and share their feedback with members of the research team. Only minor language changes were made to enhance the clarity of the proposed items. Based on this set of 28 items, 10 items referred to the *Civic sense* (e.g., "Not paying public transport tickets"), 10 items to the *Street code* (e.g., "Using physical force (violence) to show others that you cannot be intimidated by them"), 4 items to the *Loyalty code* (e.g., "Physically assaulting someone who offend your family members”), and 4 items to the *Organized crime* (e.g., “Making use of organized crime to obtain security and protection”).

For each item, adolescents were asked to evaluate the extent to which it was justifiable each behavior on a 5-point Likert scale (from 1 = *Entirely justifiable* to 5 = *Not at all justifiable*) with a lower score reflecting a greater endorsement of law-breaking behaviors.

Convergent and Divergent Measures

Social-Cognitive Processes

Self-Serving Cognitive Distortions (CDs). Participants were asked to respond to the 39 items of the How I think Questionnaire (HIT; Barriga, Gibbs, Potter, & Liau, 2001; Italian validation by Bacchini, De Angelis, Affuso, & Brugman, 2016), measuring self-serving CDs. The HIT is based on Gibbs et al. (1995) four category typology of self-serving CDs: “Self-centered” (9 items), “Blaming others” (10 items), “Minimizing/ Mislabelling” (9 items), and “Assuming the worst” (11 items). For each item, participants were asked to indicate their agreement on a 6-point Likert scale (from 1 = *Disagree strongly* to 6 = *Agree strongly*). Sample items were: “People need to be roughed up once in a while” and “Everybody breaks the law, it’s no big deal”.

An overall HIT score was computed by averaging the 39 item scores with a higher score reflecting higher levels of CDs. Cronbach’s alpha was .93.

Behavioral Measures

Internalizing, Externalizing problems and Prosocial behaviors. Participants completed the Internalizing, Externalizing problems and Prosocial behaviors subscales from the Strengths and Difficulties Questionnaire – Children’s version (SDQ-Ita; Goodman, 1997). While the internalizing score derive from the sum of the Emotional (5 items, e.g., “I worry a lot”) and Peer problems (5 items, e.g., “I am usually on my own”) subscales, the externalizing score was computed by averaging the items from the Conduct problems (5 items, e.g., “I get very angry”) and Hyperactivity (5 items, e.g., “I am restless”) subscales. Each subscale comprises five questions rated by participants on a 3-point ordinal Likert scale (from 0 = *Not true* to 2 = *Certainly true*) with higher scores generally reflecting a higher presence of symptoms, except for the Prosocial behavior subscale, where higher scores are associated with the presence of positive behaviors (e.g., “I usually share with others”).

All subscales showed good reliability with Cronbach’s αs ranging from .70 to .73.

Bullying and Victimization. Self-reported bullying victimization and perpetration were evaluated by adapting the classical Florence Bullying and Victimization Scales (FBVSs; Palladino, Nocentini, & Menesini, 2016).

Participants were provided with a definition of bullying as intentional, repetitive aggressive behaviors including some sort of power imbalance between those involved, and were asked to indicate, for each of the two scales, how often they have experienced particular behaviors as perpetrator (9 items, e.g., “I threatened someone”) or victim (8 items, e.g., “I was threatened”) during the past couple of months. Each item was rated on a 5-point Likert-type scale (from 1 = *Never* to 5 = *Several times a week*).

Cronbach’s αs were .77 and .79, for bullying and victimization scales, respectively.

Environmental Measures

Exposure to Community Violence. Exposure to community violence was self-reported using two adapted scales for the local context (Exposure to community violence Questionnaire; Esposito, Bacchini, Eisenberg, & Affuso, 2017) of the Community Experience Questionnaire by Schwartz and Proctor (2000). Adolescents were asked to report violent incidents that had occurred during the last year through witnessing and victimization with reference only to serious real-life events from their neighborhoods and their communities, not incidents from movies or television or from day-to-day conflicts with other children at school. Each scale included six items to which participants were asked to indicate, using a 5-point Likert-type scale (from 1 = *Never* to 5 = *More than five times*), the frequency of their being the witness (e.g., “How many times have you seen somebody get robbed?") or victim (e.g., "How many times have you been chased by gangs, other kids, or adults?") of violence in the neighborhood during that time period.

Cronbach's αs were .80 and .65, for violence witnessing and victimization, respectively.

Socio-demographic variables. Information about sociodemographic characteristics of the sample were obtained asking participants to indicate their own age and gender (1 = *Male*, 2 = *Female*).

Analytic Strategy

The statistical analyses were carried out in IBM SPSS statistics version 21 (IBM Corp.; Armonk, NY) and Mplus 8 (Muthén & Muthén, 1998–2017) and have been structured around the steps described below.

Inspection of Item Performance, Factorial Structure and Reliability of the AtLBBs Scale

Before testing the factorial validity of the scale, we conducted inter-item correlations to examine the extent to which scores on one item were related to scores on all other items in a scale. High inter-item correlations indicated potentially redundant items ($r \geq .80$), whereas low values indicated a lack of strong relationships within each dimension ($r \leq .30$). Then, to investigate the fit of alternative models, a series of Confirmatory Factor Analyses (CFAs) were performed in Mplus 8 (Muthèn & Muthèn, 1998–2017). Given the non-normality of the items' distribution (skewness and kurtosis values ranged from -1.12 to -1.06), we employed the Yuan and Bentler (2000) scaled chi-square statistic (YBχ^2), which takes into account the non-normal distribution of the data (Mplus estimator MLR: maximum likelihood parameter estimates with robust standard errors) and a chi-square test statistic that is robust to non-normality. Missing data were handled by using full-information-maximum-likelihood (FIML) estimation of the parameters. Because chi-square is highly sensitive to the size of the sample, to evaluate the adequacy of models to the data, the Chi-square likelihood ratio statistic was supplemented with other indices of model fit, such as the Comparative Fit Index (CFI; Bentler, 1990), the Root Mean Square Error of Approximation

(RMSEA; Browne & Cudeck, 1993) with associated 90% confidence intervals (C.I.), and the Standardized Root Mean Square Residual (SRMR). Guided by suggestions provided in Hu and Bentler (1999), acceptable model fit was defined by the following criteria: CFI (≥ .90), RMSEA (≤ .08), and SRMR (≤ .08). In addition, the fit indices were used in combination with modification indices, items communalities, standardized residuals, and standardized factor loadings to analyze for model misspecification.

The four-correlated factors model hypothesized that responses could be explained by four first-order factors and was defined as follows: each item had nonzero loading on the factor that was designed to measure, and zero loadings on the other factor; the four factors were correlated each other; error terms associated with each item were uncorrelated. Finally, items that did not load significantly ($p < .05$) on the designed specific factor were deleted on that specific factor. The goodness-of-fit of the hypothesized four first-order factors model (i.e., Model 2; see Figure 2) was evaluated and compared with those of two alternative models: a single-factor model (i.e., Model 1; see Figure 1) in which all items load onto a general factor representing the general AtLBBs measure and a second-order factor model (i.e., Model 3; see Figure 3) specifying a general AtLBBs factor underlying the four distinct factors. In the second-order factor model, each item loads onto its specific factor, and all sub-factors load onto a higher-order construct that accounts for the commonality between sub-factors. To compare the alternative non-nested models the Akaike Information Criterion (AIC; Burnham & Anderson, 2004) was used with lower AIC values indicating the better the fit of the model.

Subsequently, the internal consistency of the scale was examined, hence Cronbach's alpha values and McDonald's omega coefficients (i.e., omega total and omega hierarchical coefficients; Zinbarg, Revelle, Yovel, & Li, 2005) were calculated, while Pearson's correlations between each factor of the scale as measured in the first and the second administration (3 months later) were performed to evaluate the stability of the measure over time. More in detail, internal omega total estimates the reliability of a latent factor combining the general and specific factor variance whilst omega hierarchical estimates the reliability of a latent factor with all other latent construct variance removed (Brunner, Nagy, & Wilhelm, 2012), thus providing useful information on whether scores for a specific factor can be interpreted with confidence or only the total score (general factor score) should be used. Values > .70 indicate acceptable reliability (Kline, 2013). Instead, as regards the test/retest reliability, data from the second wave (post-assessment) – collected three months after the pre-test measure – and assessed them in relation to the control group (of the EfE program quasi-experimental trial; see the 4th chapter of the present dissertation for further details) were used.

Cross-Gender and Longitudinal Measurement Invariance

A series of nested CFAs were used to evaluate three levels of measurement invariance from the least restrictive (i.e., the configural and the "weak" or metric invariance) to the most restrictive (i.e., the "strong" or scalar invariance) across gender-groups (i.e., males and females) as well as across time points (i.e., pre- and post-assessment). The first step in testing for measurement invariance is to establish configural invariance, that provides a baseline against which subsequent models can be compared (Vandenberg & Lance, 2000). Configural invariance indicates that the factor structure is the same for all groups and across time and is attained if a CFA fits well when the intercepts, factor loadings, and residual variances vary freely across groups as well as across time, and the factor means are fixed to zero in all groups as well as at all time points.

Metric and scalar invariance were tested through models in which pattern factor loadings (i.e., metric and scalar invariance) and intercepts (i.e., only scalar invariance) are constrained to be equal across groups as well as across time while residual variances are free (i.e., both for metric and scalar invariance), and factor means are fixed to zero in all groups as well as at all time points (i.e., metric invariance) or are fixed to zero in one group as well as at one time point and free in the others (i.e., scalar invariance).

In addition to the mentioned overall fit indices, the evidence for factorial invariance was tested through the significance of the difference in the chi-square values between the nested models. A non-significant chi-square difference test of model fit indicates that the more constrained is better that the preceding measurement invariance model. Conversely, when the more constrained model was rejected, a less restrictive model of partial measurement invariance was tested in which, in accordance with modification indices, equality constraints on one or more parameters were relaxed until the change in fit was no longer significant. Finally, in computing the chi-square difference test, the scaling correction factor was used since the MLR estimator was applied.

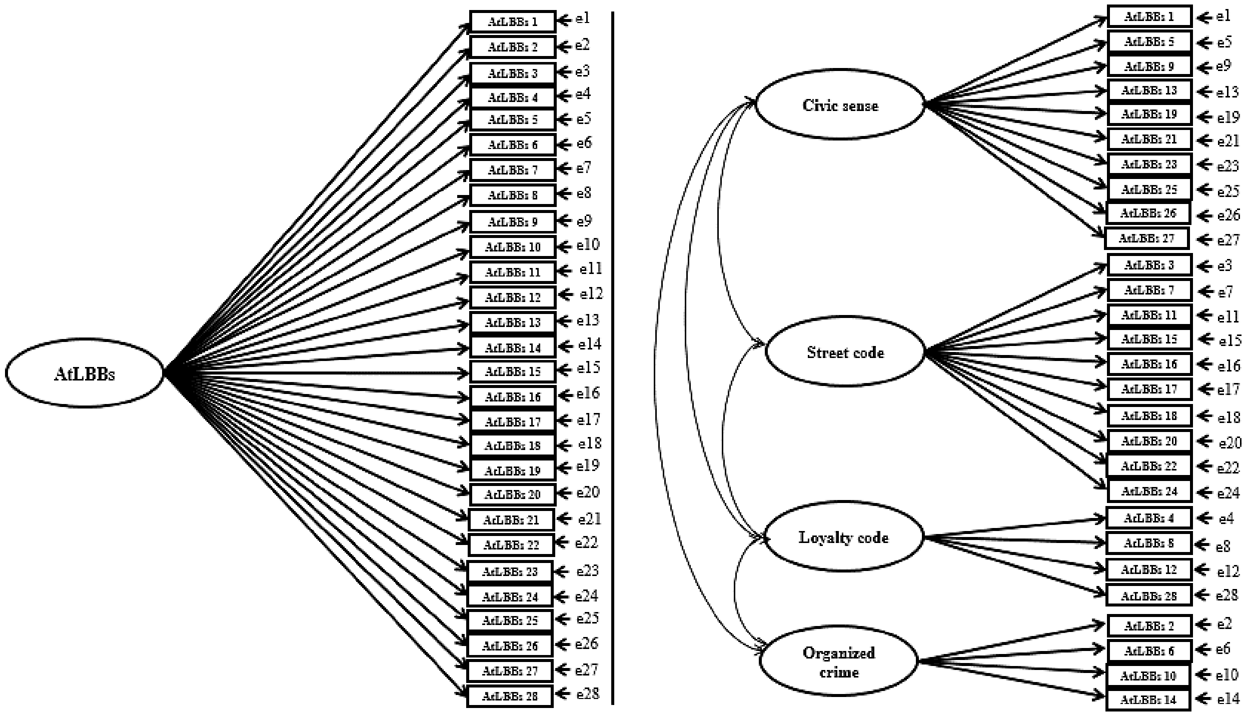
Criterion-Related Validity

Convergent and Divergent Validity

Pearson's correlations analysis was performed between the AtLBBs scale and several convergent and divergent measures. Overall, while *convergent validity* evaluates to which degree the measure is correlated with (i.e., converged on) other constructs that were assessed at the same time point and which are, based on theoretical assumptions, expected to be related to the construct, *divergent validity* is indicated by results showing that indicators of theoretically distinct constructs are not highly intercorrelated (Brown, 2015). More specifically, in order to assess the *convergent validity* of the AtLBBs scale, we investigated the associations with social-cognitive processes (i.e., self-serving CDs), behavioral (i.e., internalizing and externalizing problems, bullying perpetration, and prosocial behaviors) and environmental (i.e., community violence experiences) measures. The link between each of these convergent constructs and the AtLBBs is well documented in the literature (e.g., Aquilar et al., 2018; Nas et al., 2005). Instead, as regards *divergent validity*, we examined the correlation between AtLBBs scale with age.

Predictive Validity: Empirical Outcomes of AtLBBs

In order to assess *predictive validity*, that is the measure's ability to predict something it should theoretically be able to predict, bullying victimization and bullying perpetration were added as observed variables predicted by the general second-order AtLBBs factor. Specifically, predictive validity of the scale was examined by assessing the effects of baseline (T1) general AtLBBs score on subsequent (T2) involvement in bullying victimization and perpetration controlling for their baseline values (T1), with all variables at T1 allowed to covary.


AtLBBs
AtLBBs: 1
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AtLBBs: 8
AtLBBs: 9
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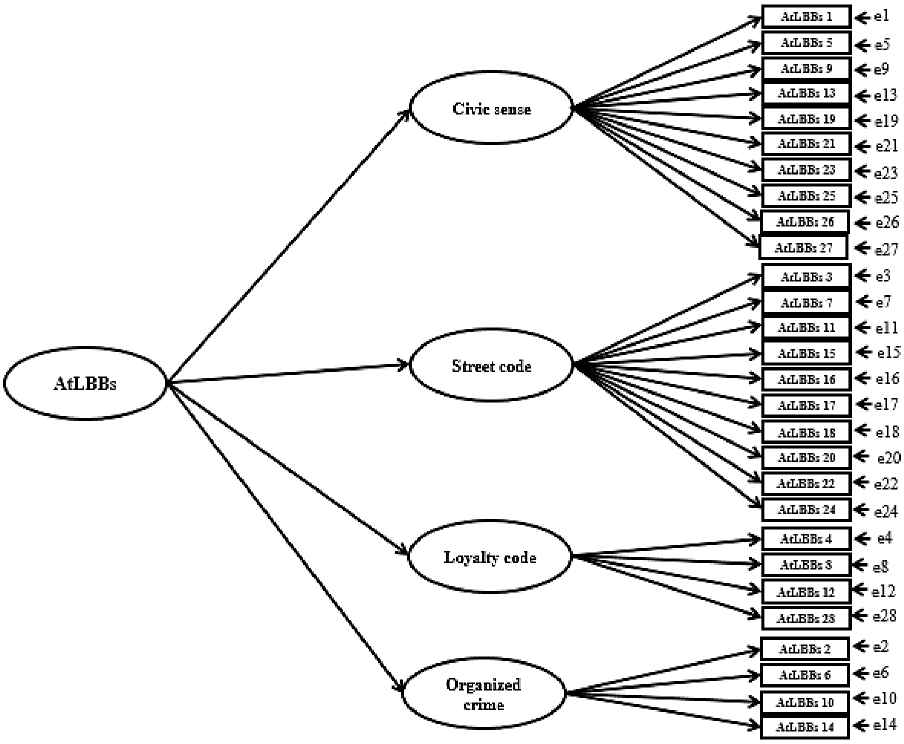
Civic sense
Street code
Loyalty code
Organized crime

Figures 1-2. Model 1 and model 2 – One-Factor Confirmatory Analysis *vs*. Four first-order factors Confirmatory Factor Analysis. AtLBBs = General factor of Attitudes towards Law-Breaking Behaviors.


AtLBBs
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Street code
Loyalty code
Organized crime
AtLBBs: 1
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AtLBBs: 13
AtLBBs: 19
AtLBBs: 21
AtLBBs: 23
AtLBBs: 25
AtLBBs: 26
AtLBBs: 27
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AtLBBs: 7
AtLBBs: 11
AtLBBs: 15
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Figure 3. Model 3 – Second-order Confirmatory Factor Analysis. AtLBBs = General factor of Attitudes towards Law-Breaking Behaviors.

Results

Preliminary Analyses: Inspection of Item Performance

The results showed that no inter-item correlations exceeded $r \geq .80$, supporting the absence of content redundancy. However, two items (i.e., "*Smoking in public places*" and "*Downloading pirated material from Internet, e.g., movies, music, video games, etc.*") within the *Civic sense* and one item (i.e., "*Not stopping to rescue a wounded person after unintentionally investing him/her*") within the *Street code* showed low inter-item correlations ($r \leq .30$) with items from the same dimension. The examination of the conceptual intent of items related to the *Civic sense* dimension indicated that, although they imply violations carried out against social and legal norms, however, they refer to behaviors whose antisocial character in nature could have been misinterpreted and/or unrecognized given their widespread frequency among youths of our sample; on the other hand, as regards the item related to the *Street code* dimension, although it refers to the violation implying harm against other people, it conceptually differs from the others within the same scale because the law-breaking behavior it primarily implied stemmed from one's lack of moral concerns towards the other and it was not a functional mechanism for gaining and maintaining respect as the code of the street subculture promotes (Anderson, 1999).

For these reasons, those three items were removed from further analyses and the final scale now resulting of a total of 25 items. The final version of the questionnaire is provided in Appendix 1 of the present dissertation.

Confirmatory Factor Analyses (CFAs) and Reliability of the AtLBBs Scale

A series of CFAs were performed to test the factorial structure of the scale. The goodness-of-fit of the hypothesized four first-order factors model described above was evaluated and compared with those of two alternative models: (i) a single-factor model in which all 25 items load onto a general factor representing the general AtLBBs measure, and (ii) a second-order factor model specifying a general AtLBBs factor underlying the four factors (representing the specific domains by which adolescents evaluate the justifiability of each law-breaking behaviors). In Table 1 are shown the goodness-of-fit indices for all alternative models.

As starting point, the most parsimonious model, a single-factor model (i.e., Model 1) with all items loading on one latent construct was tested. Based on the criteria above stated, the model fit to the data was not adequate, YBχ^2(275, N = 354) = 743.66, $p \leq .001$, CFI = .87, RMSEA = .07, 90% C.I. [.06, .08], SRMR = .06.

Next, we tested the hypothesized four first-order factors model (i.e., Model 2_a). Also in this case, the model fit to the data was poor, YBχ^2(269, N = 354) = 637.87, $p \leq .001$, CFI = .90, RMSEA = .06, 90% C.I. [.06, .07], SRMR = .06. However, in order to improve the fit indices, based on the inspection of modification indices some items errors correlations were allowed. Specifically, three correlations between items residuals loading on the same factor (i.e., between item 3 and item 7; item 11 and item 16 for the *Street code* and between item 23 and item 24 for the *Civic sense*) were added; these items shared the same words, thus were highly congruent in their meaning (i.e., “When someone disrespects you, it is important that you use physical force (violence) or aggression” and “If someone uses violence against you, it is important that you use violence against him or her to get even” for item 3 and item 7, respectively; “Letting people know how tough you are to keep them from taking advantage of you” and “Using physical force (violence) to show others that you cannot be intimidated by them” for item 11 and item 16, respectively) or were differentially prone to social desirability (i.e., “Not paying public transport tickets” and “Selling alcohol to youth under 18” for item 23 and item 24, respectively). The re-specified model (i.e., Model 2_b) resulted in a significantly improvement of fit, ΔSBχ^2(3) = 44.65, $p \leq .001$, YBχ^2(266, N = 354) = 581.12, $p \leq .001$, CFI = .91, RMSEA = .06, 90% C.I. [.05, .06], SRMR = .05.

Finally, we tested the plausibility of a second-order factor model (i.e., Model 3). As can see in Table 1, also this model was supported, ΔSBχ^2(2) = 22.16, $p \leq .001$, YBχ^2(268, N = 354) = 605.41, $p \leq .001$, CFI = .91, RMSEA = .06, 90% C.I. [.05, .07], SRMR = .05, although the four-correlated factors model revealed the lowest value of AIC index which suggests a better model fit.

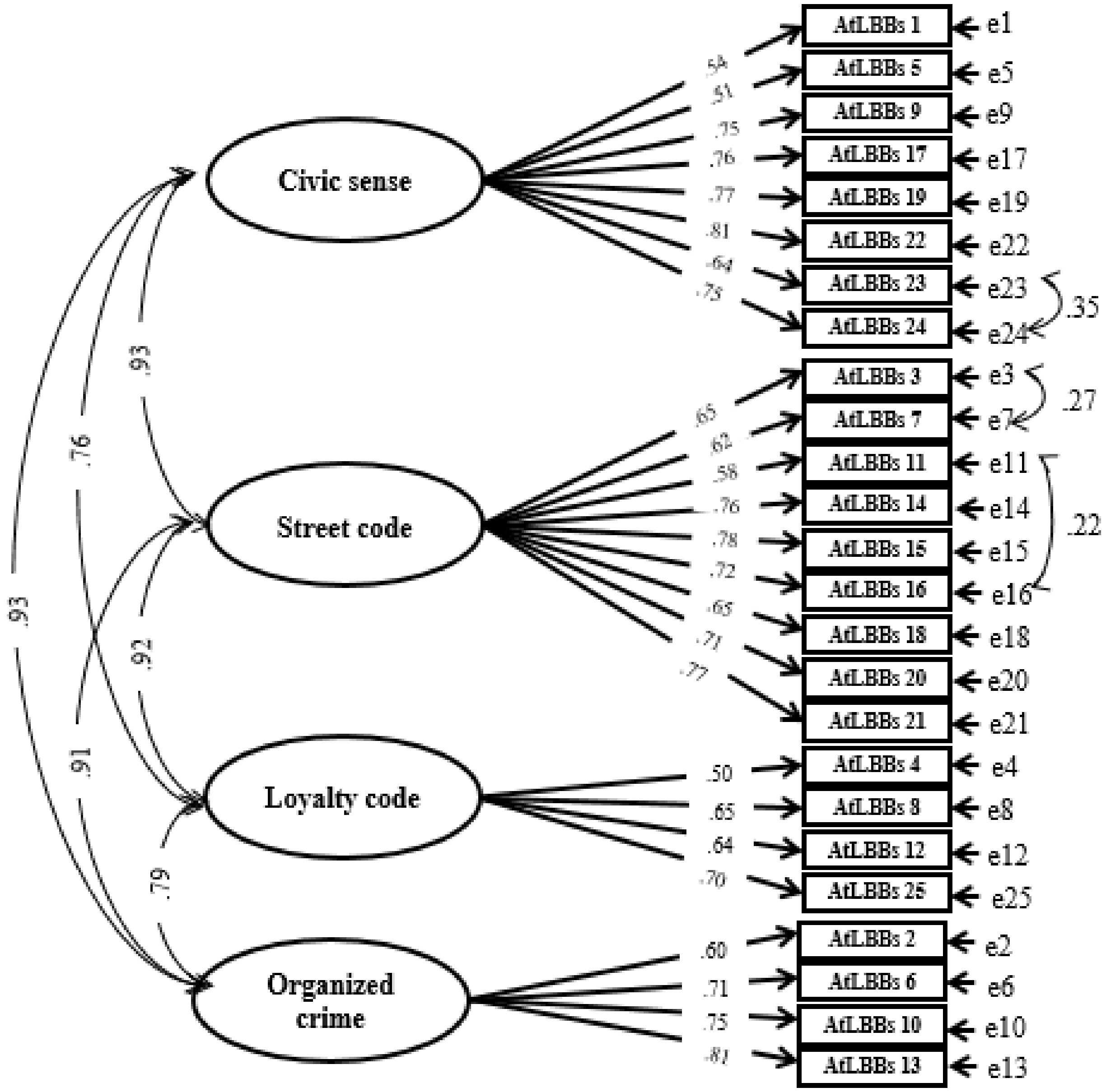
In this last model all factor loadings were significant (standardized factor loadings were high and ranged from .50 to .81) and the correlations among the four latent factors were all significant for $p < .001$ (r ranging from .76 to .93), as displayed in Figure 4.

Table 1. Fit indices and tests of alternative confirmatory factor models of the AtLBBs scale (N = 354)

Alternative models	**YBχ^2(*df*)**	**CFI**	**RMSEA [90% C.I.]**	**AIC**	**SB$\Delta\chi^2$(*df*)**	***p-values***
Model 1 Single-factor model (Unidimensional)	743.66 (*df* = 275)	.87	.07 90% C.I. [.06, .08]	25749.56	-	-
Model 2$_a$ Four first-order factors model	637.87 (*df* = 269)	.90	.06 90% C.I. [.06, .07]	25612.19	82.27 (*df* = 6)	< .001
Model 2$_b$ Four first-order factors model with item errors correlated*	581.12 (*df* = 266)	.91	.06 90% C.I. [.05, .06]	25539.43	44.65 (*df* = 3)	< .001
Model 3 Second-order factor model, with item errors correlated*	605.41 (*df* = 268)	.91	.06 90% C.I. [.05, .07]	25568.56	22.16 (*df* = 2)	< .001

Note. Model comparisons were evaluated using the Satorra-Bentler scaled chi-square difference test (SB$\Delta\chi^2$), with $p < .05$ indicating that the model with fewer parameters performed significantly better than the other; * = Error correlations among similarly worded items (between item 3 “When someone disrespects you, it is important that you use physical force (violence) or aggression” and item 7 “If someone uses violence against you, it is important that you use violence against him or her to get even”; item 11 “Letting people know how tough you are to keep them from taking advantage of you” and item 16 “Using physical force (violence) to show others that you cannot be intimidated by them”) or differentially prone to social desirability (between item 23 “Not paying public transport tickets” and item 24 “Selling alcohol to youth under 18”) were freed; *df* = degrees of freedom; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation;

90% C.I. = 90% Confidence Interval; AIC = Akaike Information Criterion (lower values suggesting better model fit).


Civic sense
Street code
Loyalty code
Organized crime
.93
.76
.93
.92
.91
.79
.54
.51
.75
.76
.77
.81
.64
.73
.65
.62
.58
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.77
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.65
.64
.70
.60
.71
.75
.81
AtLBBs 1
AtLBBs 5
AtLBBs 9
AtLBBs 17
AtLBBs 19
AtLBBs 22
AtLBBs 23
AtLBBs 24
AtLBBs 3
AtLBBs 7
AtLBBs 11
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Figure 4. Model 2b – Four first-order factors model. Factor loadings of Attitudes towards Law-Breaking Behaviors (AtLBBs) items and factors inter-correlations. Three items were removed based on inter-item correlations. Estimation of residual correlations is indicated by a double-headed arrow. Reported parameters refer to standardized estimates. All factor loadings are significant at $p \leq .001$.

Internal Consistency

With respect to internal reliability for both the identified sub-dimensions as well as for the overall AtLBBs score, the traditional Cronbach's alpha values were very good with Cronbach's alphas were .88, .90, .71, and .81 for *Civic sense* (8 items), *Street code* (9 items), *Loyalty code* (4 items), and *Organized crime* (4 items) dimensions, respectively, and .95 for the overall scale (25 items). Moreover, no improvements in Cronbach's alphas occurred with removal of individual items.

Almost the same values were obtained using the less traditional omega total indicator as well as the omega hierarchical coefficient. Indeed, both McDonald's omegas coefficients (ω and ωh) were .88, .90, .72, and .81 for *Civic sense*, *Street code*, *Loyalty code*, and *Organized crime* dimensions, respectively, and .95 for the overall scale.

Test-Retest Reliability

Subsequently, Pearson's correlations were performed to evaluate test-retest reliability between the pre-test scores and the same measures assessed 3 months later (within the control sample of the EfE program quasi-experimental trial; see the 3rd chapter of the present dissertation for further details about the sample selection). Overall, the scales – both the four factors and the general factor – showed acceptable levels of test-retest reliability revealing stability over time with moderate, positive, and statistically significant correlations among the different measurements of *Civic sense* ($r = .37$, $p < .001$), *Street code* ($r = .42$, $p < .001$), *Loyalty code* ($r = .40$, $p < .001$), *Organized crime* ($r = .38$, $p < .001$), and overall AtLBBs score ($r = .40$, $p < .001$).

Cross-Gender and Longitudinal Measurement Invariance

In Table 2 are displayed the results for measurement invariance across gender groups (males and females) and across time points (pre- and post-assessment). All models were based on the best-fitting model (i.e., Model 2_b, see Table 1).

Starting from the cross-gender measurement invariance, a preliminary multi-group model (i.e., Model A_1) in which all factor loadings were freely estimated across groups (males and females) was run; this baseline model testing configural invariance resulted in an acceptable fit, $YB\chi^2(532, N = 354) = 926.60$, $p < .001$; CFI = .90; RMSEA = .07, 90% C.I. [.06, .07]; SRMR = .06. Subsequently, we ran a model in which all factor loadings were constrained equally across groups (males and females). Also the metric invariance model (i.e., Model B_1) fits the data well, $YB\chi^2(553, N = 354) = 946.97$, $p < .001$; CFI = .90; RMSEA = .06, 90% C.I. [.06, .07]; SRMR = .07. Furthermore, the chi-square difference test between the configural invariance and metric invariance model was non-significant, $\Delta SB\chi^2(21) = 14.53$, $p > .05$, suggesting that full metric invariance across gender groups was attained.

Next, the model for scalar invariance was run. This model (i.e., Model C_1) in which both the factor loadings and items intercepts were constrained to be equal across groups (males and females) had acceptable fit, $YB\chi^2(574, N = 354) = 977.29$, $p < .001$; CFI = .90; RMSEA = .06, 90% C.I. [.06, .07]; SRMR = .07, and the chi-square difference test comparing the metric invariance model with the full scalar invariance model was not statistically significant, $\Delta SB\chi^2(21) = 29.01$, $p > .05$, indicating that also the full scalar invariance was met.

Therefore, *strong measurement invariance* across gender groups has been established.

Further, also the longitudinal measurement invariance was tested. The preliminary baseline model (i.e., Model A_2) in which all factor loadings were freely estimated across time (pre- and post-assessment) testing configural invariance resulted in an acceptable fit, $YB\chi^2(1141, N = 354) = 2165.30$, $p < .001$; CFI = .90; RMSEA = .05, 90% C.I. [.05, .05]; SRMR = .06, as did the following metric invariance model (i.e., Model B_2) in which all factor loadings were constrained equally across the time points, $YB\chi^2(1162, N = 354) = 2192.14$, $p < .001$; CFI = .90; RMSEA = .05, 90% C.I. [.05, .05]; SRMR = .06. Furthermore, the chi-square difference test between the configural invariance and metric invariance model was non-significant, $\Delta SB\chi^2(21) = 21.64$, $p > .05$, suggesting that metric invariance across time was attained.

Next, the model for scalar invariance (i.e., Model C_{2a}) was run. This model in which both the factor loadings and items intercepts were constrained to be equal across time points failed to yield an acceptable fit, YBχ^2(1183, N = 354) = 2231.09, $p < .001$; CFI = .87; RMSEA = .05, 90% C.I. [.05, .05]; SRMR = .06, with the chi-square difference test comparing the full metric invariance model with the full scalar invariance model was statistically significant, ΔSBχ^2(21) = 38.69, $p < .05$. In accordance with modification indices, after relaxing the equality constraints for item 2 intercept (i.e., Model C_{2b}), there was an improvement of the model fit, YBχ^2(1182, N = 354) = 2219.66, $p < .001$; CFI = .90; RMSEA = .05, 90% C.I. [.05, .05]; SRMR = .06, so that the chi-square difference increment was no longer significant, ΔSBχ^2(20) = 23.51, $p > .05$.

Therefore, partial *strong measurement invariance* across time points has been established.

Table 2. Fit indices and tests results for measurement invariance across gender-groups (n_{males} = 183; $n_{females}$ = 171) and across time points (pre- and post-assessment)

Multi-group measurement invariance

Measurement invariance models	**Compared model**	**YBχ^2(*df*)**	**CFI**	**RMSEA [90% C.I.]**	**AIC**	**SB$\Delta\chi^2$ (*df*)**	***p*-*values***
Model A_1 Configural invariance		926.60 (*df* = 532)	.90	.07 90% C.I. [.06, .07]	25566.36	-	-
Model B_1 Full metric invariance	**A_1**	946.97 (*df* = 553)	.90	.06 90% C.I. [.06, .07]	25537.67	14.53 (*df* = 21)	> .05
Model C_1 Full scalar invariance	**B_1**	977.29 (*df* = 574)	.90	.06 90% C.I. [.06, .07]	25524.78	29.01 (*df* = 21)	> .05

Longitudinal measurement invariance

Model A_2	**Compared model**	**YBχ^2(*df*)**	**CFI**	**RMSEA [90% C.I.]**	**AIC**	**SB$\Delta\chi^2$ (*df*)**	***p*-*values***
Configural invariance		2165.30 (*df* = 1141)	.90	.05 90% C.I. [.05, .05]	48540.16	-	-
Model B_2 Full metric invariance	**A_2**	2192.14 (*df* = 1162)	.90	.05 90% C.I. [.05, .05]	48516.72	21.64 (*df* = 21)	> .05
Model C_{2a} Full scalar invariance	**B_2**	2231.09 (*df* = 1183)	.87	.05 90% C.I. [.05, .05]	48507.77	38.69 (*df* = 21)	< .05
Model C_{2b}* Partial scalar invariance	**B_2**	2219.66 (*df* = 1182)	.90	.05 90% C.I. [.05, .05]	48496.69	23.51 (*df* = 20)	> .05

Note. Model comparisons were evaluated using the Satorra-Bentler scaled chi-square difference test (SB$\Delta\chi^2$), with $p < .05$ indicating that the model with fewer parameters performed significantly better than the other; * Model C_{2b}: following the modification indices, the equality constraints for item 2 intercepts were released; *df* = degrees of freedom; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; 90% C.I. = 90% Confidence Interval; AIC = Akaike Information Criterion (lower values suggesting better model fit).

Convergent and Divergent Validity

Pearson's correlations were performed to investigate convergent and divergent validity of the AtLBBs scale. As can see in Table 3, the associations between each dimension as well as the overall factor of AtLBBs and the hypothesized convergent and divergent measures were significant and in the expected direction.

The convergent validity of the scale was confirmed by negative correlations with cognitive distortions (four-subscales: r values ranging from -.32 to -.46, $p < .001$; overall score: r value = -.42, $p < .001$), externalizing problems (four-subscales: r values ranging from -.26 to -.30, $p < .001$; overall score: r value = -.31, $p < .001$) as well as bullying perpetration (four-subscales: r values ranging from -.14, $p < .01$ to -.23, $p < .001$; overall score: r value = -.20, $p < .001$). Also being exposed to community violence as a witness positively converged with all dimensions as well as with the global measure of AtLBBs (four-subscales: r values ranging from -.14 to -.17, $p < .01$; overall score: r value = -.17, $p < .01$), whereas positive correlations were found with prosocial behaviors (four-subscales: r values ranging from .17, $p < .01$ to .26, $p < .001$; overall score: r value = .26, $p < .001$).

As regards the divergent validity, Pearson's correlations highlighted any significant associations between each dimensions as well as the global measure of AtLBBs with age (all r values with $p > .05$) whereas only high scores of *Civic sense* (r value: -.13, $p < .05$), *Organized crime* (r value: -.16, $p < .01$) and overall score (r value: -.13, $p < .05$) were significantly associated with low internalizing problems and only *Loyalty code* dimension had negative association (r value: -.12, $p < .05$) with community violence victimization, suggesting the discriminant value of AtLBBs dimensions.

Table 3. Zero-order correlations between the four first-order factors and the overall factor of Attitudes towards Law-Breaking Behaviors scale, individual social-cognitive processes, behavioral measures and environmental experiences of violence exposure

Measures		***AtLBBs scale***				
		Civic sense	***Street code***	***Loyalty code***	***Organized crime***	***Overall AtLBBs score***
Social-cognitive processes	**Self-serving CDs**	-.32***	-.46***	-.37***	-.36***	-.42***
Behavioral measures	**Internalizing problems**	-.12*	-.10	-.08	-.16**	-.13*
	Externalizing problems	-.26***	-.30***	-.28***	-.27***	-.31***
	Bullying behaviors	-.14**	-.23***	-.17**	-.15**	-.20***
	Prosocial behaviors	.24***	.25***	.17**	.26***	.26***
Environmental experiences	**Community violence witnessing**	-.14**	-.17**	-.14**	-.16**	-.17**
	Community violence victimization	-.07	-.06	-.12*	-.06	-.08
Age		.06	.06	-.05	.04	.04

Note. CDs = Cognitive Distortions. AtLBBs = Attitudes towards Law-Breaking Behaviors, with lower score reflecting a greater endorsement of law-breaking behaviors. * $p < .05$, ** $p < .01$, *** $p < .001$.

Empirical Correlates

Results from structural equation modeling investigating the longitudinal behavioral outcomes of AtLBBs showed an adequate fit to the data, YBχ^2(364) = 713.01, *p* < .001; CFI = .91; RMSEA = .05, 90% C.I. [.05, .06]. As can be observed in Figure 5, bullying perpetration was significantly predicted by a greater endorsement of AtLBBs (β = -.19, *p* < .01), while no significant association was found with bullying victimization (β = -.06, *p* > .05), controlling all the effects for both bullying victimization and perpetration at T1. Bullying victimization and bullying perpetration were positively correlated each other at all time points (βs = .34 and .26, *p* < .001, for T1 and T2, respectively) whereas only bullying perpetration was negatively associated with the overall AtLBBs (β = -.21, *p* < .001) at T1.

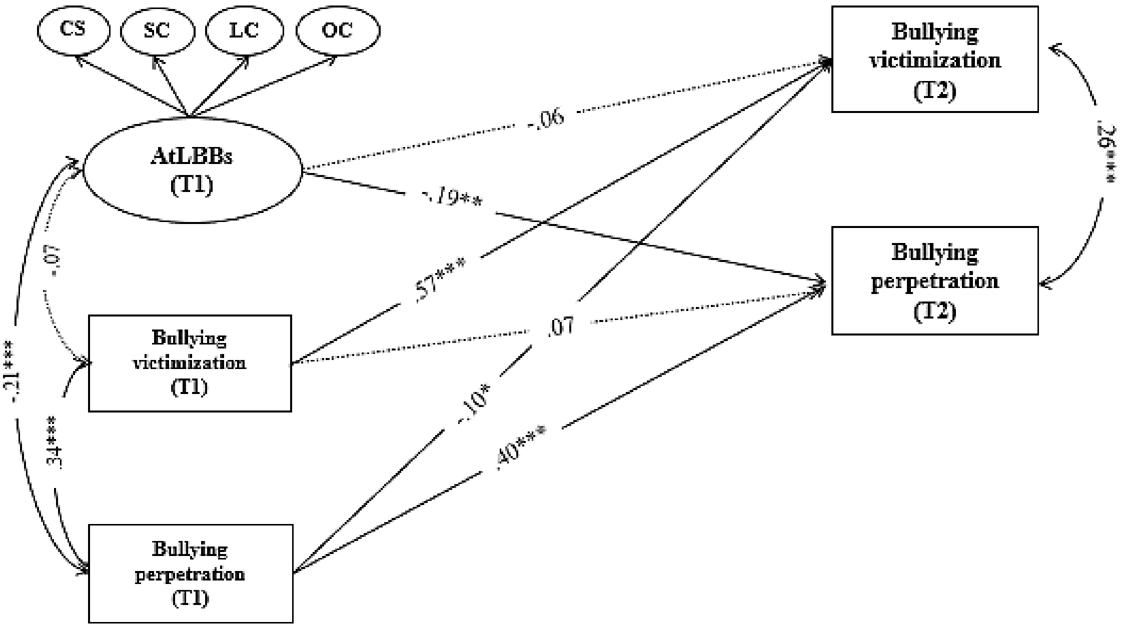
CS
SC
LC
OC
AtLBBs (T1)
Bullying victimization (T2)
Bullying perpetration (T2)
Bullying victimization (T1)
Bullying perpetration (T1)
-.06
-.19**
.57***
.07
-.10*
.40***
-.07
-.21***
.34***
.26***

Figure 5. Structural equation model: longitudinal effects of the Attitudes towards Law-Breaking Behaviors on bullying victimization and perpetration. AtLBBs = Attitudes towards Law-Breaking Behaviors, with lower score reflecting a greater endorsement of law-breaking behaviors; CS = Civic Sense; SC = Street Code; LC = Loyalty Code; OC = Organized Crime; Solid lines represent significant paths. Dashed lines represent nonsignificant paths. Reported path coefficients refer to standardized estimates. **p* < .05, ***p* < .01, ****p* < .001.

Discussion

Consistent with the social-cognitive approach (e.g., Bandura, 1977, 1986) according to which people act upon their interpretation of social events and in line with previous studies (e.g., Aquilar et al., 2018) who highlighted a reciprocal influence over time among adolescents' moral judgment and their own engagement in antisocial behaviors, understanding the way youth think about the wrongness of rules violations in their everyday life could inform prevention and intervention programs by breaking the negative spiral of violence through the development of less positive attitudes and beliefs towards antisocial acts (Nas et al., 2005).

Despite some attempts have been made over decades by researches in the field to identify attitudes and beliefs that can contribute to the prediction, assessment and treatment of behaviorally at-risk youth, to date, appropriate tools for a comprehensive evaluation of adolescent antisocial thinking taking into account the multiple facets through which social or legal norms non-compliance could be expressed need to be further developed.

In an attempt to fill this measurement gap, the aim of the present study was to develop a culturally-appropriate measurement scale of "Attitudes towards Law-Breaking Behaviors" (AtLBBs) in adolescence able to capture the multiple dimensions from which antisocial acts may drawing on.

The underlying approach considers antisocial behavior as an umbrella term whose multi-dimensional nature gives rise to a heterogeneous set of behaviors. At the same time, being aware that youth experiences within their daily life environmental contexts significantly contribute to shape their own violence-related beliefs and attitudes as well as other maladaptive behaviors (Bradshaw et al., 2009; Huesmann & Kirwil, 2007), it follows our focus on trying to evaluate youth's pro-violence attitudes closely related to the adherence to the values and norms proper of deviant subcultures deeply rooted in the high-risk local context under consideration. Hence our interest on the adoption of street code which is more likely embedded into neighborhoods with high rates of violence (Matsueda et al., 2006) where the access to a set of informal rules governing interpersonal relationship and prescribing the use of violence as a mean to achieve and maintain respect from others is promoted.

Moreover, moving into the specific cultural context where the sample of the present study was recruited, that is a high-risk urban area in Southern Italy, despite the highly rooted presence of organized crime (e.g., Bacchini & Esposito, 2020; see official data from Public Security Department of Italian Ministry of Interior, 2018) may represent a fertile ground for the spread and crystallization of the street code violence-related norms, to date the way youth think about the wrongness of rules violations strictly related to the adherence to the code of street or committed under the control of organized crime is underestimated and appropriate tools for assessing such topic are still missing.

For these reasons, in order to raise a more targeted evaluation of such cultural-based antisocial attitudes, in the AtLBBs measurement scale a revised version of the items from the “Acceptance of street code-related violence” by Stewart and Simons (2006) was made and further additional items aimed to capture the attitudinal components towards violence specifically related to the organized crime subculture were developed. Once we built the measurement scale, our aim was to analyze its psychometric properties by examining the factorial structure, reliability, and criterion-related validity as well as testing for the measurement invariance across gender-groups and across time, in a sample of adolescents coming from a high-risk urban area of Southern Italy.

The factorial structure of the AtLBBs measure was tested using CFAs which revealed that four first-order factors model composed of distinct although inter-correlated dimensions was the best-fitting model with all factor loadings were satisfactory, even though the second-order factor solution was also acceptable. These results corroborate our hypotheses that adolescent antisocial thinking could be recognized as a multi-dimensional rather than unidimensional attitudinal construct and are in line with those of Esposito et al. (2020) who found a multi-dimensional structure underlying the way adolescents evaluate the wrongness of antisocial behaviors. More specifically, similar to the impersonal domain theorized by the authors (Esposito et al., 2020) and close to the conventional domain theorized within the social domain framework (Nucci, 2001; Tisak & Turiel, 1984; Turiel, 1983), the *Civic sense* dimension refers to how adolescents evaluate the violation of shared social or legal norms that serve to maintain social systems and are functional in coordinating social interactions, and whose violation does not imply direct harm to other people. On the other hand, the *Street code* dimension is consistent with the interpersonal dimension identified by Esposito et al. (2020) and conceptually close to the social domain that theorists define as the moral domain, since it refers to how adolescents evaluate law-breaking behaviors that cause direct harm to others. However, this latter dimension specifically stems from the Stewart and Simons' (2006) composite attitudinal measure towards the street code-related violence with the covered items referring to aggressive and overt behaviors conceived as an acceptable problem-solving tool to achieve and maintain respect from other people, as conceptualized in the Anderson's (1999) theoretical framework. Another dimension that seems in line with those discovered by Esposito et al. (2020) is that labelled *Loyalty code*. Although not originally hypothesized by the authors (Esposito et al., 2020) and even though, in our study, the items we developed consistently differed from those included in the ASBE since they refer more specifically to behaviors implying legal norms violations carried out in the name of a kind of code of omertà, such dimension has proved to capture how adolescents evaluate violations legitimized in the name of loyalty and protection to friends, partners, and family. Indeed, since the items we developed are consistent with a cultural code that requires individuals to display indifference or to justify others' illegal activity and to not report crime to law enforcement agencies (Paoli, 2003), thus manifesting a form of collective passivity towards these law violations, the loyalty dimension appears to be closely related to the loyalty/betrayal moral foundation hypothesized by Haidt (2012) in his innovative moral foundation theory as well as to the concept of "amoral familism" theorized by Banfield (1958) which indicates that most of the people act as if they were following the rule "maximize the material, short-run advantage of the nuclear family assuming that all others will do likewise" (p. 83).

The last dimension that emerged from the CFA was labelled *Organized crime* since it refers to how adolescents evaluate law-breaking behaviors that are intrinsically related to the adherence to the deviant subculture represented by the organized crime or that are committed under its control. Such dimension can be considered as a culturally-based construct since it is strictly close to the geographically-circumscribed high-risk area where our sample comes from and where organized crime is deeply rooted assuming the control of territorial illegal activities (e.g., Bacchini & Esposito, 2020; see official data from Public Security Department of Italian Ministry of Interior, 2018). In spite of their peculiarity, all dimensions described above were highly correlated each other, supporting the hypothesis that domains can overlap or mix (Nucci, 2001) and confirming our result that though four kinds of antisocial thinking patterns can be empirically distinguished, at the same time, it is also allowed to refer to general attitudes to evaluate the wrongness of law-breaking behaviors in adolescence.

Among the psychometric properties of the dimensional AtLBBs scale, a detailed analysis of the reliability revealed that both all sub-dimensions as well as the overall AtLBBs scale had satisfactory levels of both internal consistency and test-retest reliability, thus providing evidence of its stability over time lacking in the validation study by Esposito et al. (2020). Also the criterion-related validity was supported showing the instrument to converge with the specific convergent and divergent measures in the expected directions. More specifically, consistent with previous research (Esposito et al., 2020), we found that both social-cognitive processes represented by self-serving CDs and behavioral measures, i.e., the engagement in externalizing behaviors as well as bullying perpetration, negatively converged with both all sub-dimensions and overall AtLBBs score. Such findings support the hypothesis that the more youth use cognitive rationalization processes (i.e., self-serving CDs) when making moral evaluation to deny or minimize the seriousness of antisocial acts, the more their thinking patterns result in more approving violence beliefs, in more positive moral evaluations of aggressive acts, and in more justification for inappropriate aggressive behavior inconsistent with social and an individual's moral norms (Huesmann & Kirwil, 2007). With regard to the association between bullying and all AtLBBs sub-dimensions, the highest correlations were found with the street code dimension of AtLBBs measure. Such result can be explained taking into account that the adherence to a code of informal rules governing the interpersonal relationship and prescribing the use of violence as a mean to achieve and maintain respect from others (Anderson, 1999) could facilitate the engagement in bullying behaviors characterized by the systematic power's abuse (Smith & Monks, 2008) and put in place as a deliberate strategy used to establish dominance as youths enter a new peer group (Pellegrini & Long, 2002). Instead, regarding the convergence with prosocial behaviors, we found that the more youth evaluate in a negative manner the law-breaking behaviors, the more they are prone to exhibit prosocial behaviors as demonstrated by the positive correlations with both all sub-dimensions as well as the overall AtLBBs score.

The aforementioned associations between behavioral measures with the AtLBBs subscales suggest a promising use of this attitudinal measure in order to predict adolescent engagement in specific antisocial behaviors, thus corroborating the idea that evaluation of the pro-violence thinking patterns could serve to inform prevention and intervention programs that target the more serious antisocial acts in adolescence, as illegal conducts.

With respect to the associations with environmental measures, unlike the previous study (Esposito et al., 2020) which used a composite measure of community violence exposure, in our study we distinguished between community violence witnessing and victimization finding that while all AtLBBs subscales, as well as the overall score, significantly converged with the community violence witnessing, experiencing direct victimization had no significant association with the AtLBBs subscales with the only exception for the loyalty code dimension. The result that youth who were repeatedly witnesses of violence within the community were more likely to report positive attitudes towards law-breaking behaviors is consistent with social learning theories (e.g., Bandura, 1978) according to which experiencing violence promote, through a "cognitive desensitization" process (Huesmann & Kirwil, 2007), more approving violence beliefs, more positive moral evaluations of aggressive acts and more justification towards violence (Dodge, Bates, & Pettit, 1990; Mrug, Loosier, & Windle, 2008; see the 2nd chapter of the present dissertation for further deepening). With respect to the association between community violence victimization and adolescents' thinking oriented to justify or to be silent about law violations committed by people belonging to their own group and driven by a collective code of loyalty and protection, it seems to be in line with the loyalty/betrayal moral foundation theorized by Haidt (2012) as an independent "binding foundation" which refers to concerns about violations of the obligations stemming from group membership, such as loyalty to the own group, self-sacrifice and vigilance against betrayal. On this basis, it could be assumed that young people share this collective code as a functional strategy when they are most exposed to victimization in their own community. Further studies should investigate the intrinsic meaning of this dimension and its relationships with different experiences of community violence exposure in adolescence.

The presence of significant unique associations between loyalty code and community violence victimization, together with significant associations between internalizing problems and only some AtLBBs scales (i.e., civic sense and organized crime sub-dimensions and the overall AtLBBs score) and the lack of association between all AtLBBs subscales and age, require further clarification and at the same time provide some evidence for the discriminant validity of AtLBBs measure.

As suggested by previous studies (Esposito et al., 2020) which highlighted the need for evidence about the predictive validity of adolescent antisocial thinking measure on specific measures of social cognition, moral reasoning, and engagement in antisocial behaviors, we investigated as longitudinal behavioral outcomes of AtLBBs the involvement in bullying behaviors, as perpetrators and as victims. Consistent with the bullying literature about the precursors of bullying perpetration and victimization (see, for example, Menesini & Salmivalli, 2017), we found that the more adolescents' thinking patterns support pro-violence beliefs and attitudes, the more likely they become perpetrators of bullying over time, while no significant association was found with victimization.

Finally, another specific statistical property of the AtLBBs scale refers to the measurement invariance, that is the extent to which the measurement model is equivalent across different groups or within the same group across time (Brown, 2015). The measurement invariance evaluation we tested supported both the full and partial scalar invariance across gender groups (i.e., males and females) and over time (i.e., pre- and post-assessment), respectively, thus pointing to the comparability of the four first-order factors model between males and females and between the first and the second wave of data collection. It means that the AtLBBs scale measures the same factors in the same way for both genders and over time showing itself properly useful to analyze specific gender-related issues such as the prevalence rates, the relations with other constructs and with the consequences of such pro-violence attitudes as well as to evaluate the true temporal change observed in the construct and not those due to the changes in the structure or measurement of the construct over time (Brown, 2015).

Summarizing, the focus of the present study on the structure of antisocial thinking in adolescence can be considered one of the major strengths of our work providing additional evidence for the legitimacy of the multi-dimensional nature of the antisocial behaviors, specifically those related to more serious illegal conducts. The investigation of the different psychometric properties of the developed AtLBBs scale represents another strength, since the recent research conducted with a community sample of Italian adolescents (Esposito et al., 2020) focused on the dimensionality and only some aspects of reliability, validity, and measurement invariance of the instrument. More specifically, among the psychometric properties overlooked by the authors (Esposito et al., 2020), we investigated stability over time and the predictive validity of the scale on specific behavioral outcomes (i.e., both bullying perpetration and victimization), bringing good evidence for reliability (i.e., both internal consistency and test-retest) as well as for the criterion-related validity (i.e., both the convergent, divergent, and predictive validity). Furthermore, unlike Esposito and colleagues (2020), in addition to investigating the cross-gender invariance of the measure, we also tested the longitudinal measurement invariance. Since the invariant nature of the measurement model across both genders and time has been demonstrated, then the generalizability of the instrument and of the underlying theoretical construct can further bolster our confidence in the scale allowing for its widespread use.

Limitations and Future Directions

Prior to reaching conclusions, some limitations of our study must be acknowledged. The first limitation concerns the generalizability of our results as the study included a sample of middle and high school students coming from a circumscribed geographical area in Southern Italy. Although one of our aims was to capture the way adolescents evaluate law violations closely related to the specific high-risk area where they come from with the awareness that culture-specific beliefs and values influence an individual’s cognitions and behaviors (Bacchini et al., 2015), in order to have a broad-spectrum instrument, further studies involving subjects coming from other, possibly differing, geographic areas of our country or belonging to different age groups and level of education are needed to verify the psychometric properties of the AtLBBs scale and to improve the generalizability of our results. Moreover, in order to make cross-cultural comparisons, future research could adapt the scale we developed in other countries also for testing whether its dimensionality, validity and reliability are stable in other cultural contexts and for other samples.

Additionally, as our study included a community sample since our intention was to capture the antisocial thinking of normative adolescents though living in a high-risk urban area, it would be interesting to examine the measurement invariance of the AtLBBs scale across a sample of juvenile offenders and to test its predictive power using more objective measures of law-breaking behavior, such as police official records of youth offending. Closely linked to this last aspect, in the present study all the constructs relied exclusively on adolescent self-reporting which may be subject to social desirability bias. In that regard, future studies may benefit from controlling for the social desirability bias as well as from including multiple-source data (e.g., parents’ reports) and more objective measures of antisocial activity (e.g., criminal charges, observed antisocial behavior) jointly with self-report measures.

Conclusions and Practical Implications

Notwithstanding these limitations, this study provides evidence of the AtLBBs scale as a promising instrument for assessing adolescent antisocial thinking with several suggestions for implementing appropriate interventions aimed at preventing and reducing adolescents' involvement in more serious antisocial acts, as illegal conducts. More specifically, in terms of practical implications, the invariance nature of the AtLBBs measure over time together with its concurrent association with the self-serving moral cognitions as well as with the externalizing behaviors support the usefulness of the AtLBBs scale for evaluating the interventions aimed at reducing both antisocial attitudes and behaviors and their patterns of changes over time.

Many cognitive-behavioral interventions have been developed for this purpose as the "Equipping Youth to Help One Another (EQUIP) for Educators" (EfE; DiBiase et al., 2005) program which has been effective in reducing the youth's involvement in antisocial behaviors by correcting their "thinking errors" or self-serving CDs and developing more negative attitudes towards antisocial behaviors (e.g., Nas et al., 2005). Moreover, consistent with the observed direct association between AtLBBs and the subsequent involvement in bullying perpetration, future research could better understand the extent to which such psychoeducational program could be effective both in developing less positive AtLBBs and counteracting antisocial behaviors among peers as bullying, thus equipping youth in thinking and acting more responsibly.

Finally, based on positive peer culture, in which individuals feel responsible for each other and help one another, EfE is expected to have a great public impact given that it promotes, in the long-term, the development of a nonviolent and law-abiding culture, which represents the crucial condition for ensuring success in preventing and reducing adolescents' engagement in antisocial behaviors.

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CHAPTER IV:

STUDY 3

CHAPTER IV

Equipping Youth to Think and Act Responsibly:

Evaluation of the Effects of "EQUIP for Educators" (EfE) Program on Students' Self-Serving Cognitive Distortions, Attitudes towards Law-Breaking Behaviors, and School Bullying Perpetration

Towards a Cognitive-Behavioral Program for Preventing and Counteracting School-Bullying: the "EQUIP for Educators"

The "Equipping Youth to Help One Another (EQUIP) for Educators" (EfE; DiBiase, Gibbs, Potter, & Spring, 2005) is one of the effective school-based cognitive-behavioral programs which results from an adaptation of the original treatment program EQUIP for juvenile offenders (Gibbs, Potter, & Goldstein, 1995), and is dedicated to both primary and secondary prevention in an educational context. This program was developed within Gibbs' (2013) theoretical framework and is based on a psychoeducational approach which refers to the teaching and training of skills, knowledge, and mature awareness required for competent daily living (DiBiase et al., 2005).

By combining a peer-helping (or mutual-help) and a skills-training (or cognitive behavioral) approach, the program aims to equip young people at-risk or with behavioral problems in thinking and acting more responsibly by targeting three core "limitations", specifically, by: (i) decreasing self-serving cognitive distortions (hereinafter "CDs", particularly relating to anger management); (ii) improving social skills; and (iii) stimulating moral judgment development, in the context of a positive peer culture (Potter, Gibbs, & Goldstein, 2001).

More specifically, the peer-helping approach is based on the Positive Peer Culture (PPC) model (Vorrath & Brendtro, 1985) whose intent is to transform a negative peer culture into a positive culture in which individuals feel responsible for each other and help one another (Gibbs et al., 1995). Moreover, despite EfE does not include mutual-help meetings – which are part of the EQUIP program for juvenile offenders (Gibbs et al., 1995) –, the PPC component is manifested in the EfE curriculum by the peer support which exploits the natural potential that peers have in influencing some classroom dynamics by modelling positive rules and behavior patterns. However, since peer-helping approach alone is not enough to counteract negative peer pressure, EfE program also integrates the PPC component with a helping skills curriculum which is based on Aggression Replacement Training (ART; Goldstein & Glick, 2001). Nevertheless, unlike the ART, EfE emphasizes social perspective taking and cognitive restructuring. Specifically, based on Gibbs and colleagues' (1996) "three *D*s" model, the helping skills curriculum targets three core "limitations" that are often challenges for the behaviorally at-risk youth: self-serving CDs, social skills deficiencies, and socio-moral developmental delays (Potter et al., 2001). These problems are interrelated, as are the components of EfE which is a multi-component program structured around three main components aimed at remedying these delays, distortions, and deficiencies, by equipping youth with: (i) skills for managing anger and correcting self-serving CDs (*Anger Management and Thinking Error Correction*); (ii) social skills for balanced and constructive social behavior (*Social Skills*); and (iii) mature moral judgment (*Social Decision Making*). Nevertheless, at the heart of the EfE psychoeducational curriculum is the correction of "thinking errors" or self-serving CDs (DiBiase, Gibbs, & Potter, 2011) because, at a high level of prevalence, they may contribute to emotionally and behaviorally problematic responses such as aggression and other types of antisocial behaviors (Barriga, Morrison, Liau, & Gibbs, 2001).

Depending on their function, CDs have been distinguished by Barriga and Gibbs (1996) into *primary* and *secondary*. Specifically, while *primary* distortions are "self-centered" attitudes, thoughts, and beliefs which reflect more immature moral judgment stages and serve as main motivators or "pretexts" of aggressive behaviors, the *secondary* support the "self-centered" attitudes (Gibbs, 2013) and take the form of pre- or post-rationalizations or "excuses" for facilitating aggressive behaviors. Indeed, the function of *secondary* distortions is to emotionally and cognitively overcome dissonance between individual moral standards and behavioral transgressions and neutralize potential empathy and guilt towards the victim, thus avoid damage to one's self-image when engaging in antisocial conducts (Bandura, 1991; Sykes & Matza, 1957). Such cognitive rationalizations may assume the form of: (i) *Blaming others* (i.e., "misattribution of blame for victimization or misfortune to innocent others"; Barriga & Gibbs, 1996, p. 334); (ii) *Minimizing/Mislabeling* (i.e., antisocial behavior is depicted as not really harmful or even as an admirable outcome); and (iii) *Assuming the worst* (i.e., gratuitous attribution of hostile intentions to others in a social situation; treating the worst scenario as inevitable; believing that improvement of one's own or others' behavior is impossible). These distorted thinking patterns are assumed to block moral judgment development because one does not consider oneself to be responsible for one's antisocial behavior, as those fulfill defensive or neutralizing role (Gibbs, 1991).

Consistent with these considerations, it is believed that when youth become able to correct their "thinking errors", they can refute the rationalizations that block or neutralize their empathy for actual or prospective victims (DiBiase et al., 2005); indeed, the "thinking errors" correction is a crucial precondition to social perspective-taking with most of studies on the effects of the EQUIP program seem to indicate that behavioral change is possible after cognitive change (Brugman, 2012).

The second limitations addressed by the EfE curriculum are the social skills deficiencies, defined as "imbalanced and unconstructive behavior in difficult interpersonal situations" (Gibbs et al., 1995, p. 165). Finally, the third limitation characterizing behaviorally at-risk youth, the socio-moral developmental delay can be seen in terms of Kohlbergian stages (1984) of moral development as "the persistence beyond early childhood of an immature moral judgment and a pronounced me-centeredness or egocentric bias" or, in other words, a lack of social perspective-taking capacities (Gibbs et al., 1995, p. 43).

The abovementioned limitations represent strongly challenges for the behaviorally at-risk youth. Supporting this, previous studies have found the tendency to make self-serving CDs when interpreting social events along with deficiencies in social skills as well as delays in moral judgment to be commonly related to aggression and other types of antisocial behaviors (e.g., Barriga, Hawkins, & Camelia, 2008; Nas, Brugman, & Koops, 2008; Stams et al., 2006).

Empirical Evidence Supporting the Efficacy of "EQUIP for Educators" Program

According to previous studies, EQUIP program was found to be an effective prevention and intervention program in both correctional facilities and school settings (Van Stam et al., 2014).

Results from studies using the original treatment version of the EQUIP program for juvenile offenders evidenced that the program promotes an increase of social skills (Leeman, Gibbs, & Fuller, 1993), significant improvements in institutional conduct and a substantial reduction of recidivism rates after intervention (Devlin & Gibbs, 2010; Leeman et al., 1993; Liau et al., 2004) as well as encourage and equip juvenile offenders to reduce self-serving CDs and to develop less positive attitudes towards antisocial behaviors in the experimental group compared to the control group (Brugman & Bink, 2011; Nas et al., 2005). Therefore, the EQUIP program has been found to promote therapeutic change among juvenile offenders population.

Based on these promising results, the original treatment program for juvenile offenders has been adapted in order to develop a broader based prevention curriculum, the "EQUIP for Educators" (EfE; DiBiase et al., 2005). So far, despite only few studies evaluated the effects of EfE in the school context, the results corroborated the efficacy of the program in equipping behaviorally at-risk students with: (i) skills for managing anger and correcting CDs (DiBiase et al., 2011; van der Meulen, Granizo, & del Barrio, 2010; Van der Velden, Brugman, Boom, & Koops, 2010) as well as for reducing pro-violence attitudes (van der Meulen et al., 2010; Van der Velden et al., 2010); (ii) social skills for constructive prosocial behavior (DiBiase et al., 2011; van der Meulen et al., 2010); and (iii) skills for remediating development delay in moral judgment (DiBiase et al., 2011). More specifically, as regards the effects of EfE on the changes in moral cognitions, in line with previous research by Nas and colleagues (2005), Van der Velden et al. (2010) found that more negative attitudes towards antisocial behaviors and lower levels of self-serving CDs after intervention were found for the experimental group compared to the control group, although the effect sizes were small (Cohen, 1988).

Instead with regard to the effects of EfE program on peer victimization and bullying, only one quasi-experimental study (van der Meulen et al., 2010) carried out with high school students suggested that the EfE program was partially successful in working on various aspects involved in peers victimization such as in promoting an increase in prosocial behavior by bystanders towards the victims and in reducing some types of bullying and social exclusion behaviors (but only among students whose CDs reduced). However, there was no overall reduction in victimization and the interpretation of these findings requires several cautions because of the relatively small sample size.

"Why" **and** ***"For Whom"*** **School-Based Anti-Bullying Interventions Could Work Better? An Overview of the Key Programs Components**

Over the last decades, most of the intervention programs developed to prevent and reduce antisocial behaviors among peers such as school bullying highlighted a lot of variation in their effects on the outcomes, as well as in the methodological quality of outcomes evaluation across programs (Eisner, 2009; Farrington & Ttofi, 2009, 2011; Ferguson, Miguel, Kilburn, & Sanchez, 2007; Fox, Farrington, & Ttofi, 2012; Merrell, Gueldner, Ross, & Isava, 2008; Smith & Schneider, 2004; Vreeman & Carroll, 2007).

The findings from the latest extensive systematic and meta-analytical reviews of the effectiveness of school-based bullying prevention programs (e.g., Gaffney & Espelage, 2018; Gaffney, Farrington, & Ttofi, 2019) showed that effectiveness of anti-bullying programs reaching an average decrease approximatively of 19–20% for bullying perpetration and of 15–16% for bullying victimization outcomes although with differences across countries and specific interventions. In this regard, given the variety in the effectiveness of these programs (e.g., Zych et al., 2019), as a global indication has been suggested (Smith, Salmivalli, & Cowie, 2012) to move from "whether a specific program works or not" (i.e., main effects studies) to uncovering factors that may mediate and/or moderate intervention effectiveness in the sense of exploring “what works, through which mechanisms, for whom, and under what circumstances”. To date, despite some success in identifying effective programs components, a clearer understanding of the causal mechanisms that may enhance the efficacy of program has not yet been reached more probably because research has focused primarily on the changes in the outcomes (Eisner & Malti, 2012).

Indeed, most of the systematic and meta-analytical reviews examining the effectiveness of school-bullying interventions focused on the specific successful interventions components whereas little attention has been paid to the mediating (i.e., mechanisms transporting the causal effect from the intervention to the outcome) and moderating (i.e., factors that are associated with variation in the achieved effect) processes that unfold in prevention and intervention programs; these factors are likely to strengthen our understanding of “why” and “for whom” some interventions work while others fail.

For example, in their meta-analysis, Gaffney et al. (2019) evidenced that the whole-school approach which consist of various components targeted at different levels of influence (i.e., individual students, parents, classrooms, whole schools) and the inclusion of a variety of methods were not always the most effective in reducing school bullying perpetration suggesting that, while school bullying may very well be a complex peer-group social phenomenon, the whole-school approach might not be effective for every individual student. Furthermore, about peer involvement, has been found that the inclusion of the element “work with peers” was not found to strengthen the effects of anti-bullying programs both in the analysis by Gaffney et al. (2019) and by Ttofi and Farrington (2011). More specifically, the “work with peers” was defined as “formal engagement of peers in tackling bullying” (including the utilization of formally assigned peer mediators, or peer supporters), rather than awareness-raising about the role of all peers and formulation of rules for bystander intervention in classrooms.

Some key effective ingredients of these programs are represented by parent training/meetings; more specifically, parent training aimed at raising awareness about the issue of school bullying through educational presentations and teacher-parent meetings as well as the use of disciplinary practices with bullies seems to strengthen the effects on both bullying perpetration and victimization (Ttofi & Farrington, 2011).

Most of the meta-analyses discussed above about the potential key elements related to the effectiveness of anti-bullying programs focused mainly on the treatment components rather than the individual characteristics that may mediate or moderate treatment response to anti-bullying intervention. It has been widely recognized that preventive interventions towards antisocial behaviors are more likely to be effective if they are based on empirically validated models of the causation of violence. Therefore, there is a crucial link between basic research on the precursors of youth violence and the development of more effective interventions (Eisner & Malti, 2012).

Based on these assumptions and being aware that bullying is a complex behavior stemming from the interplay between individual and social-contextual factors (Bronfenbrenner, 1979), several practical implications could result. Accordingly, in planning and developing anti-bullying programs and in trying to improve their efficacy, it is relevant designing activities aimed at promoting change of these underlying individual processes as well as taking into account individual and contextual factors that could facilitate and perpetuate the phenomena.

Referring to individual socio-demographic and psychological characteristics which may improve our knowledge about “for whom” interventions could work better, some studies evidenced that anti-bullying interventions’ efficacy varies depending on age, gender, and the degree of pre-existing symptoms or problematic behaviors, with males (Kärnä et al., 2013), younger (Yeager, Fong, Lee, & Espelage, 2015) and with more severe symptoms and problematic behaviors at baseline (Ferguson et al., 2007; Yanagida, Strohmeier, & Spiel, 2019) children benefitting more from anti-bullying interventions.

Moreover, over the last decade, a growing number of studies suggested that the effectiveness of interventions varies depending also as a function of the inherent genetic (e.g., Alberti et al., 2015), physiological, and psychological (de Villiers, Lionetti, & Pluess, 2018) characteristics of individuals. In this respect, the *Vantage Sensitivity* framework (Pluess, 2015; Pluess & Belsky, 2013) provides the theoretical basis for the hypothesis that some children may more likely than others to benefit from intervention (e.g., anti-bullying programs; Nocentini, Menesini, & Pluess, 2018) because of their heightened sensitivity to positive aspects of the environment. Due to their heightened inherent ability to perceive and process environmental stimuli (Pluess, 2015), the so-called "Environmental Sensitivity", they could register contextual changes that result from schoolwide anti-bullying programs more easily and more deeply than other children lower in environmental sensitivity (Pluess, 2015; Pluess & Boniwell, 2015). Applied to school-based anti-bullying programs and informed by the concepts of *Differential Susceptibility* (Belsky & Pluess, 2009) and *Vantage Sensitivity* (Pluess, 2015; Pluess & Belsky, 2013), previous studies (Nocentini et al., 2018) reported that, although the intervention significantly reduced bullying behaviors and mental health outcomes across the whole sample, individual differences in environmental sensitivity moderated the intervention effects on victimization and internalizing symptoms. More specifically, highly sensitive boys benefited significantly more from the effects of the intervention in reducing both victimization and internalizing symptoms compared with the majority of less sensitive boys. A possible explanation argued by the authors (Nocentini et al., 2018) about the moderating role of environmental sensitivity to increase the intervention effects is that highly sensitive children tend to be more perceptive and aware of their surroundings, more likely to register program-induced improvements in peer behavior and classroom atmosphere more easily and more strongly compared with less sensitive children.

Taken together, such findings highlighted that the *Vantage Sensitivity* is a useful framework with significant relevance for our understanding of widely observed heterogeneity in treatment response suggesting that such variability is partly influenced by people's differing capacity for environmental sensitivity.

Instead, with regard to the potential mediation mechanisms involved in explaining "why" intervention programs may activate expected behavioral changes, previous meta-analyses focused on the key social-cognitive processes in the explanation of externalizing problem behavior, that are the “self-exculpatory” CDs, a general umbrella term to refer to pseudo-justifications and rationalizations for deviant behavior (see Ciardha & Gannon, 2011; Maruna & Copes, 2005; Maruna & Mann, 2006). Such studies in investigating the role of CDs to promote behavioral changes, as the reduction of externalizing problem behaviors have not made clear whether treatment success comes about as a consequence of “cognitive restructuring”, i.e., the reframing or correction of CDs in the treatment which is expected the result in behavioral changes (Maruna & Copes, 2005; Maruna & Mann, 2006) raising conflicting findings. For example, some reviews (e.g., Banse, Koppehele-Gossel, Kistemaker, Werner, & Schmidt, 2013; Helmond, Overbeek, Brugman, & Gibbs, 2015) raised no conclusive empirical evidence that intervention programs designed to address the cognitive attitudes or beliefs impact on the subsequent behaviors. More specifically, Banse et al. (2013) found that even though most offender treatment programs tend to reduce pro-criminal attitudes, intended as the interpretations or beliefs that support illegal offenses, there is no empirical evidence that such intervention programs are effective in reducing the subsequent recidivism risk. In line with these findings, and referring specifically to the EQUIP program, the review by Helmond et al. (2015) revealed that, within the very small subsample of studies evaluating both cognitive and behavioral outcomes, neither significantly reduction in CDs nor reduction in externalizing problem behavior was found. Consequently, the question whether reducing CDs is an effective mediating mechanism for reducing externalizing behavior remains to be demonstrated.

However, given the widely established link between thinking distortions and antisocial behaviors, there is good reason to believe that school-based interventions which address biased thinking patterns may, in turn, reduce the antisocial behaviors among peers as bullying (Owens, Skrzypiec, & Wadham, 2014). In this regard, some studies have shown that cognitive-behavioral interventions, as EQUIP program, which is specifically focused on the cognitive restructuring, is effective in subsequent reduction of recidivism rates as well as in improving conduct (Devlin &

Gibbs, 2010; Leeman et al., 1993; Liau et al., 2004). The study by Liau et al. (2004) aimed at investigating if changes in the mediating variables, represented by CDs and social skills, would be associated with changes in the outcome variables related to the treatment, i.e., institutional violations and recidivism rates. The authors found a partial support for the relevance of such constructs as mediating variables in accounting for the effects of EQUIP program with gender-based differences arisen, specifically, with significantly decrease in CDs and increase in social skills associated with fewer serious institutional violations, for males and for females, respectively.

Therefore, in the light of the empirical evidence discussed above, the need for evidence-based anti-bullying prevention programs and for clarifying the potential mechanisms involved in explaining "why" and "for whom" the programs may reduce antisocial behaviors among peers such as bullying perpetration, is highlighted. Furthermore, referring more specifically to the EfE program, given the lack of studies having investigate its effects in the Italian school context, the present study was intended to fill the gap in the literature by investigating the effects of EfE– implemented as universal prevention program – in counteracting both law-breaking supporting attitudes and bullying perpetration, trying to remedy to the key social-cognitive limitations of the behaviorally at-risk students, represented by self-serving CDs, and also examining the potential mediation and moderation mechanisms involved.

The Present Study

Aims and Hypotheses

The main goal of the present study was to evaluate, for the first time in the Italian school context, the efficacy of EfE program (DiBiase et al., 2005), in terms of both social-cognitive processes (i.e., self-serving CDs and attitudes towards law-breaking behaviors, hereinafter "AtLBBs") and behavioral (i.e., bullying perpetration) outcomes, using a quasi-experimental pre-test/post-test with control group design. Guided by the *Vantage Sensitivity* framework (Pluess, 2015; Pluess & Belsky, 2013) we also examined whether these effects varied depending on the adolescents’ differences in environmental sensitivity.

Furthermore, consistent with the social-cognitive approach (e.g., Bandura, 1977, 1986) according to which the way people behave is determined by the way they think about or interpret social events and based on the assumption that by altering individual biased thinking patterns, it would be possible to modify antisocial aspects of personality and consequent behaviors (Owens et al., 2014; Van der Velden et al., 2010), we investigated whether the changes in mediating social-cognitive processes, here represented by self-serving moral cognitions, would be associated with changes in AtLBBs and bullying outcomes, after the intervention.

As regards the specific hypotheses we made, in line with the aims of EfE, we expected a significantly decrease in the tendency to make self-serving CDs as well as in the AtLBBs and in perpetrating bullying behavior among students participating at EfE intervention (i.e., the experimental group) in comparison with the students not participating at EfE (i.e., the control group). Moving towards the potential mediation mechanisms involved in explaining “why” the EfE program could work, we expected indirect intervention effects on the development of less positive AtLBBs as well as on the reduction of bullying perpetration through the decrease in the tendency to make self-serving CDs whose correction is at the heart of EfE psychoeducational curriculum (DiBiase et al., 2011). Furthermore, informed by findings of previous studies (e.g., Nocentini et al., 2018) highlighting a moderating role of both environmental sensitivity and gender to enhance the effects of anti-bullying intervention program, and given males’ higher propensity for making self-serving CDs (e.g., Lardén, Melin, Holst, & Långström, 2006; Owens et al., 2014) as well as for perpetrating bullying behaviors (e.g., Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996) compared to females, we specifically hypothesized that the indirect intervention effects on expected social-cognitive and behavioral outcomes were moderated by both adolescent gender and individual differences in environmental sensitivity with highly sensitive males benefitting more from the effects of EfE, due to their capability to be perceptive and aware of their surroundings, thus, to register treatment-induced changes more easily and more deeply, compared with females and less sensitive adolescents (Pluess, 2015; Pluess & Boniwell, 2015).

Method

Sample

Participants in the study were part of a quasi-experimental trial of the EfE program conducted during the 2018/2019 school year. The sample consisted of 354 adolescents, 183 males (51.7%; 42.1% middle school students; M_{age} = 14.99, *SD* = 2.57) and 171 females (48.3%; 46.2% middle school students; M_{age} = 14.72, *SD* = 2.51) enrolled in 7th and 12th grade of three middle and three high schools located in several areas of Campania (provinces of Caserta and Naples); among high school students, 30.8% attended a lyceum high school and 60.2% attended vocational high schools. The overall age of participants ranged from 11 to 21, with a mean age of 14.86 (*SD* = 2.54).

For each school four classes were selected by the school staff, depending on class teachers' availability to engage in the program and no eligibility criteria was used. Specifically, for each school, two classes followed the EfE program (i.e., the experimental group) while the others did not receive any kind of intervention (i.e., the control group) for a total of twenty-four classes globally involved in the research project.

A total of 324 students, 169 males (52.2%; 42.6% middle school students; M_{age} = 14.94, *SD* = 2.56) and 155 females (47.8%; 44.5% middle school students; M_{age} = 14.81, *SD* = 2.49) ranging in age from 11 to 21 years (M_{age} = 14.88; *SD* = 2.53) participated at both waves of data collection. The experimental group was composed of 157 students who participated to the EfE program (40.8% males; 47.8% middle school students; M_{age} = 14.67; *SD* = 2.63) while the control group was composed of 167 students who had not received any kind of intervention following the normal educational curriculum (62.9% males; 39.5% middle school students; M_{age} = 15.07; *SD* = 2.41).

We compared control *vs.* experimental group on sociodemographic measures, such as gender and school grade using a set of Chi-square statistics in IBM SPSS 21 which allows to test hypotheses about distribution of categorical data, as those just mentioned. Significant differences by gender emerged ($\chi^2(1) = 15.85$, $p < .001$), with 64 males out 169 (37.9%) compared to 93 females out of 155 (60%) belonging to the experimental group. Differently, no differences by school grade ($\chi^2(1) = 2.24$, $p > .05$) between the two groups were found.

Moreover, the majority of the participants were Italian (98.4%) with 1.6% came from East Europe (mainly from Albania, Bulgaria, and Ucraina), and from various other parts of the world (i.e., Tunisia and Nigeria). Sociodemographic characteristics of the sample are reported in Table 1.

Table 1. Sociodemographic characteristics of the sample, including participants present at both data waves

	Age		Gender		School grade	
	M	*SD*	Males	Females	Middle school	High school
Total sample *N* = 324	14.88	2.53	169 52.2%	155 47.8%	141 43.5%	183 56.5%
Control group *n* = 167	15.07	2.41	105 62.9%	62 37.1%	66 39.5%	101 60.5%
Experimental group *n* = 157	14.67	2.63	64 40.8%	93 59.2%	75 47.8%	82 52.2%

Note. Reported percentages are valid percentages.

Design and Procedure

A quasi-experimental pre-test/post-test with control group design was implemented to investigate the effects of EfE program. To recruit schools, letters describing EfE program were sent by the principal investigator of the research project; the latter, referred to as "*Violent contexts, moral cognitions and bullying: implementation and evaluation of the EfE program in the Italian school context*" was developed through the collaboration of the Department of Humanistic Studies of the University of Naples "Federico II" and was approved and financed by the Pol.i.s. Foundation[2].

Each of the six recruited schools joined the project with interest and were further informed about participation possibilities and preconditions. Although each school accepted to participate both with experimental and control classes, these last have been picked by the school staff rather than through a random selection. Therefore, we were not able to conduct a randomized control trial (RCT) rather a quasi-experimental research design. For this reason, we tried to pair experimental with control classes of each school involved and, in this regard, no differences were found between control and experimental group concerning the type of attended school (i.e., middle school, lyceum, and vocational high school) in our sample ($\chi^2(5) = 9.94$; $p > .05$), suggesting that the pairing was appropriate.

EfE intervention

The EfE curriculum was implemented in classroom settings by researchers who were extensively trained before its implementation and received several hours of both individual and group wise supervision during the intervention period. All experimental classes used the EfE program for the first time and for each equipment meeting, teachers were involved with the students under the supervision of trainers. Prior to implementation of intervention, the psycho-educational materials and activities from the EfE curriculum was translated and adapted where this was considered culturally necessary in order to meet the Italian school context. Nevertheless, the deep structure of EfE program remained unchanged in the Italian version with only minimal changes which have been made for necessity. The main adjustments concerned the surface structure and the implementation model. For example, due to practical circumstances and school governmental guidelines, the equipment meetings held only one time per week instead of three times, as advised by the authors of EfE (DiBiase et al., 2005). Thus, we had to reduce the number of meetings from ten to six and, at the same time, we sequentially embedded the three modules within the same meeting. However, according to the course arrangement suggested by the authors (DiBiase et al., 2005), we implemented an interrelated agenda teaching across all three components for each equipment meeting, to bring out the interrelationships among them, beginning with the *Anger Management*, followed by the *Social Skills,* and then the *Social Decision Making* component. As a result of these adjustments, the time schedule changed and program duration became six weeks instead of ten consecutive week period, with each equipment meeting designed to fit into three hours instead of 45-50 minutes. Since all EfE meetings were held in classroom settings, peer groups stayed intact during implementation. Furthermore, other specific modifications to the psycho-educational materials involved changes in the language, pictures included in the materials, and some problem situations (i.e., moral dilemmas) used during the EfE meetings. The interrelated agenda and some psycho-educational materials of equipment meetings are reported in Appendix 2.

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[2] Pol.i.s. Foundation (Integrated Security Policies for Innocent Victims of Crime and Confiscated Property), visit http://fondazionepolis.regione.campania.it/, for more details about the funding foundation.

The implementation of EfE program has been structured around the steps described below and graphically summarized in Figure 1.

Before starting classroom equipment meetings, a preliminary session was conducted during which trained researchers introduced EfE curriculum in a positive, motivating manner, communicated the ground rules to be applied during the EfE meetings and taught students to identify (and even begin to correct) the “thinking errors” (i.e., the CDs) also through a hands-on activity specifically tailored for that purpose (i.e., the “*EQUIPPED for Life*” game; Horn, Shively, & Gibbs, 2007).

After this introduction session, the EfE curriculum was been implemented through six classroom meetings structured around the three core components: (i) *Anger Management or Thinking Error Correction*, to equip students with skills and strategies, such as self-talking, self-monitoring of emotions and thoughts and thinking ahead about consequences of their acts, to manage anger and to correct self-serving CDs; (ii) *Social Skills*, teaching students to constructively solve problems in social situations by learning different social skills (e.g., *Expressing complaints constructively*, *Overcoming negative peer pressure*) particularly challenges to use for at-risk students (Goldstein, Glick, & Gibbs, 1998); and (iii) *Social Decision Making*, using group discussions around moral values-oriented problem situations to equip students with mature moral judgment. Specifically, both the social skills and social decision making components have been taught via a four-phase sequentially format that was, for the social skills learning, the following: (1) *modelling* the skill; (2) *enacting* the skill; (3) *providing feedback* on the skill; and (4) *practicing* the skill (DiBiase et al., 2005); instead, as regards the social decision making component that was based on an adaptation of Kohlberg's (1984) stage model of moral development, the step-by-step discussing format was the following: (1) *introducing* the problem situation (a moral dilemma); (2) *cultivating* mature morality; (3) *remediating* moral developmental delay; and (4) *consolidating* mature morality.

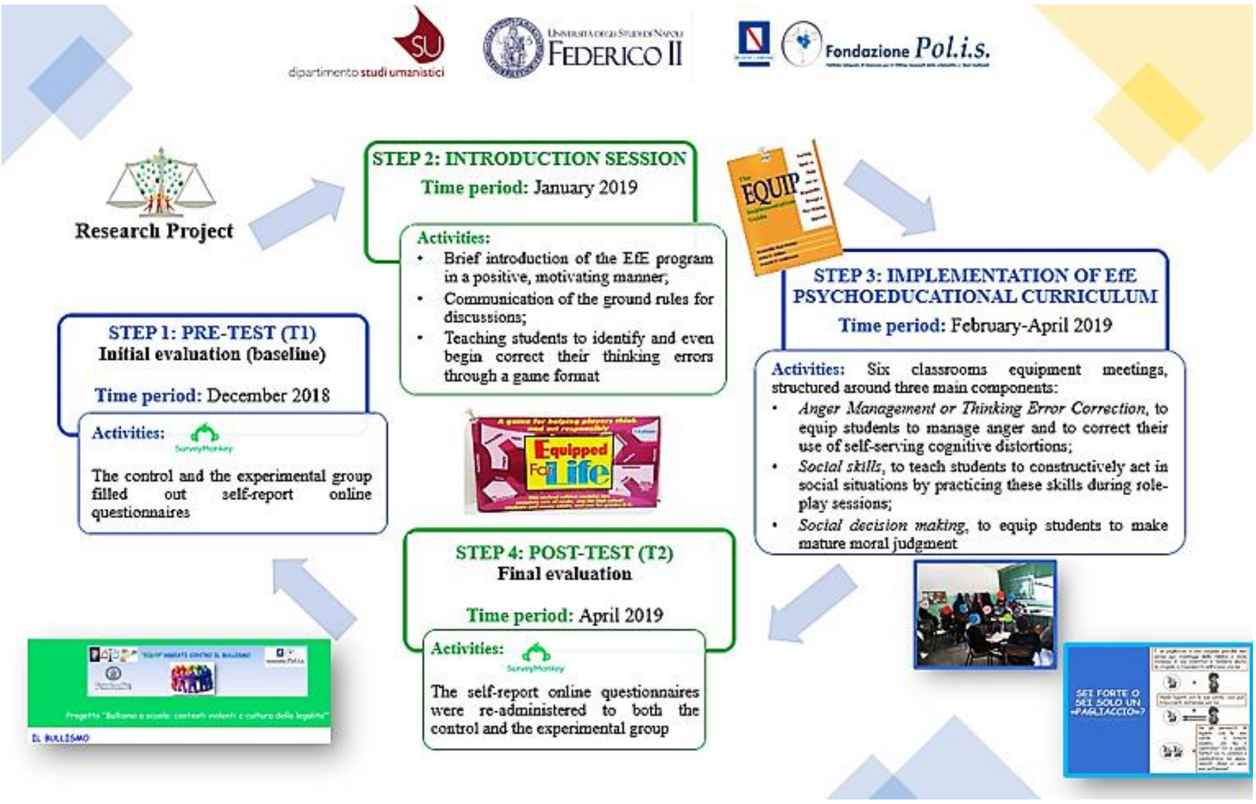
For each of the three program components, the authors of EfE (DiBiase et al., 2005) emphasized the use of several session procedures and techniques: working triads, role playing (not only in the teaching of social skills but also in social decision making and in some anger management sessions), sandwich styles or constructive criticism (in which a critical comment was preceded and followed by supportive ones) and the method called "ask, don't tell" since the questions stimulated the listener to consider positive, constructive, prosocial alternatives, thus staying focused on the psychoeducational tasks of thinking and acting responsibly.

To track the program integrity which is a crucial prerequisite of treatment outcomes (Landenberger & Lipsey, 2005), numerous steps were taken into account. To begin with, during the EfE implementation the trainers followed the EfE procedures accurately by their clear specificity in the EfE program manual (DiBiase et al., 2005) and the EfE implementation guide (Potter et al., 2001). In addition, as monitoring procedures the staff members were asked to fill out checklists as reviews or self-evaluation forms after each meetings; these checklists helped to ensure that staff members had followed the necessary procedures in facilitating each meetings (e.g., "Did you maintain a normal voice volume and speak in a respectful rather than threatening or demanding tone?", "Did you maintain a balance between criticism and approval by using the "sandwich" style of constructive criticism […]?"). Additionally, random observations took place during EfE meetings in the classrooms, and both oral and written evaluations about the program implementation were organized with teachers and students.

Data collection

Data collection took place through two waves and students of both the control and the experimental group filled out self-report questionnaires just before starting the program (December 2018, wave 1, pre-test, T1) and immediately after (April 2019, wave 2, post-test, T2) the implementation of EfE psychoeducational curriculum. A preliminary informed consent, consisting of initial approval by the School Principal and the class council, as well as by the University Institutional Review Board (IRB) was requested. Once permission was gained from schools and IRB, informative letters were sent to all students and to their parents, explaining the study, the intervention aims and implementation modalities, to obtain from parents their written consent and from adolescents their assent, in accordance with the ethical principles of the Italian Association of Psychology (AIP).

The administration of questionnaires was conducted by trained researchers (Masters or Ph.D. graduating students) during school time after providing students with brief oral and written instructions. For each student, to guarantee the data association between the two time points, thus ensuring the study longitudinality, a unique code has been linked to their names and the matching of the name with the identification code has been managed exclusively by the research staff. To reassure participants about reporting sensitive information and to encourage honest reporting, a complete guarantee of confidentiality was emphasized. Additionally, participants were informed about the voluntary nature of participation and their right to discontinue at any point without penalty.


dipartimento studi umanistici
Università degli Studi di Napoli Federico II
Fondazione Pol.i.s.
Research Project
SurveyMonkey
Equipped For Life
EQUIP
SEI FORTE O SEI SOLO UN «PAGLIACCIO»?
IL BULLISMO

STEP 1: PRE-TEST (T1)
Initial evaluation (baseline)

Time period: December 2018

Activities:
The control and the experimental group filled out self-report online questionnaires

STEP 2: INTRODUCTION SESSION
Time period: January 2019

Activities:
- Brief introduction of the EfE program in a positive, motivating manner;
- Communication of the ground rules for discussions;
- Teaching students to identify and even begin correct their thinking errors through a game format

STEP 3: IMPLEMENTATION OF EfE PSYCHOEDUCATIONAL CURRICULUM
Time period: February-April 2019

Activities: Six classrooms equipment meetings, structured around three main components:
- *Anger Management or Thinking Error Correction*, to equip students to manage anger and to correct their use of self-serving cognitive distortions;
- *Social skills*, to teach students to constructively act in social situations by practicing these skills during role-play sessions;
- *Social decision making*, to equip students to make mature moral judgment

STEP 4: POST-TEST (T2)
Final evaluation

Time period: April 2019

Activities:
The self-report online questionnaires were re-administered to both the control and the experimental group

Figure 1. “EQUIP for Educators”: The four-step model of the program.

Measures

Behavioral outcome

Bullying Perpetration. Self-reported bullying perpetration was evaluated at each wave of data collection of the current study by adapting the classical Florence Bullying and Victimization Scales (FBVSs; Palladino, Nocentini, & Menesini, 2016). For the purposes of the present study, we only used data about bullying scale.

Students were provided with a definition of bullying as intentional, repetitive aggressive behaviors including some sort of power imbalance between those involved, and were asked to indicate, using a 5-point Likert scale (from 1 = *Never* to 5 = *Several times a week*), the frequency with which, in the last couple of months, they had exhibited different bullying behaviors as perpetrator, both direct (i.e., physical, e.g., hitting/kicking, and verbal, e.g., threatening) and indirect (e.g., excluding/ignoring) forms. The scale was composed of the following three subscales, each consisting of three items: physical (e.g., “I hit, kicked, or punched someone”), verbal (e.g., “I threatened someone”), and indirect-relational (e.g., “I excluded someone from activities”) bullying. For each participant, we averaged the 9 items in order to create a composite score of bullying perpetration. Cronbach’s αs of overall bullying scale were stable over time, across the two waves of data collection, with αs pre-test = .79 and .78, and αs post-test = .88 and .82, for the control and experimental group, respectively.

Social-cognitive processes

Self-Serving Cognitive Distortions (CDs). The measure used to evaluate the tendency to make “thinking errors” or self-serving CDs was an Italian validation of the How I think Questionnaire (HIT; Barriga et al., 2001; Italian validation by Bacchini, De Angelis, Affuso, & Brugman, 2016). At each wave of data collection, students were asked to indicate their agreement with each of the 39 items using a 6-point Likert scale (from 1 = *Disagree strongly* to 6 = *Agree strongly*). Sample items were: “People need to be roughed up once in a while”, “Everybody breaks the law, it’s no big deal”.

The HIT scale was composed of the following four subscales based on Gibbs et al. (1995) four category typology of self-serving CDs: *Self-centered* (9 items), *Blaming others* (10 items), *Minimizing/Mislabelling* (9 items), and *Assuming the worst* (11 items). An overall HIT score was computed by averaging the 39 item scores with a higher score indicating higher levels of CDs.

Cronbach’s αs of overall CDs scale were stable over time, across the two waves of data collection, with α pre-test = .94, and αs post-test = .96 and .95, for the control and experimental group, respectively.

Attitudes towards Law-Breaking Behaviors (AtLBBs). To measure how adolescents evaluate social and legal rules violations a new dimensional measure of Attitudes towards Law-Breaking Behaviors (AtLBBs) was developed (see the 3rd chapter of the present dissertation for more details about the development and psychometric properties of the scale). The scale was composed of four sub-dimensions labelled: *Civic sense* (8 items, e.g., “Not paying public transport tickets”), *Street code* (9 items, e.g., “Using physical force (violence) to show others that you cannot be intimidated by them”), *Loyalty code* (4 items, e.g., “Physically assaulting someone who offend your family members”), and *Organized crime* (4 items, e.g., “Making use of organized crime to obtain security and protection”). At each wave of data collection, students were asked to evaluate the extent to which it was justifiable each of 25 law-breaking behaviors on a 5-point Likert scale (from 1 = *Entirely justifiable* to 5 = *Not at all justifiable*). As demonstrated in the 3rd chapter of the present dissertation, given the acceptability of both models (four first-order factors and second-order factor), four subscales scores of AtLBBs were computed by averaging the corresponding items of each subscale, with lower scores reflecting a greater endorsement of law-breaking behaviors.

Cronbach’s αs of all AtLBBs subscales were stable over time, across the two waves of data collection, with αs pre-test ranging from .70 to .91 and from .73 to .88, and αs post-test ranging from .74 to .90 and from .78 to .89, for the control and experimental group, respectively.

Environmental Sensitivity. The personality trait of Environmental Sensitivity was measured only at the first wave (pre-test, T1) of data collection by using the Highly Sensitive Child (HSC) scale (Pluess et al., 2018). The 12 items from which HSC scale was composed to capture the individuals’ sensitivity to environmental influences, were rated by students on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Extremely*). Sample items were: “I notice when small things have changed in my environment” and “Loud noises make me feel uncomfortable”.

An overall HSC score was computed by averaging the 12 item scores with a higher score indicating higher levels of environmental sensitivity.

Cronbach’s αs pre-test were .88 and .84, for the control and experimental group, respectively.

EfE conditions. We used as key intervention-related construct a categorical variable including two groups: control (i.e., student who had not received any kind of intervention) coded with a value of 0, and experimental group (i.e., students who participated to EfE program) coded with a value of 1.

Control variables. Sociodemographic characteristics of the sample were collected asking students to indicate their own age, gender (1 = *male*, 2 = *female*) and school grade (1 = *middle school*, 2 = *high school*).

Analytic Strategy

The statistical analyses were carried out in IBM SPSS statistics version 21 (IBM Corp.; Armonk, NY) and Mplus 8 (Muthén & Muthén, 1998–2017) and have been structured around the steps described below.

Preliminary Analyses

Attrition analyses were performed in order to test if attrition (adolescents with data across the two assessments, i.e., T1 and T2, and those with missing data at T2) was different across groups (control *vs.* experimental group) and if there were differences in attrition by groups on measures collected at T1.

Next, in order to meet the recommendations of the Standards of Evidence as established by Society for Prevention Research (Gottfredson et al., 2015), according to which "*Pretest differences must be measured and statistically adjusted, if necessary*", before testing our study hypotheses, we verified the comparability (i.e., baseline equivalence) of the two groups (control *vs.* experimental group) analyzing the differences between them at the pre-test assessment. Specifically, we performed a Multivariate Analysis of Variance (MANOVA) on the target variables of EfE program, both on social-cognitive processes (i.e., self-serving CDs and AtLBBs) and behavioral (i.e., bullying perpetration) outcomes as well as on the individual trait of environmental sensitivity. Based on previous findings revealing significant differences between the control and the experimental group on gender and given that gender- and age-based differences have been observed in CDs (Lardén et al., 2006; Owens et al., 2014) and bullying behavior (e.g., Salmivalli et al., 1996) in previous research, we included adolescent gender and school grade in the analyses as observed covariates, to control their potential confounding effects on all study variables.

The partial eta-squared (η^2_p) statistic was used to establish the effect size. Levels of η^2_p effect size were interpreted as follows: small (.01), medium (.06), and large (.14) effect size. A *p*-value probability level of < .05 was adopted for all statistical tests.

Main Effects of EfE Program and Individual Personality Traits as Moderating Factor

Subsequently, we carried out a set of Repeated Measures Univariate Analyses of Variance (RMANOVAs) to investigate the intervention effects on social-cognitive (i.e., self-serving CDs and AtLBBs) and behavioral (i.e., bullying perpetration) outcomes by including such variables, measured before and after the intervention (pre-test/post-test), as “within-subjects” factors and the variable “EfE conditions” (0 = control group *vs.* 1 = experimental group) as “between-subjects” factor, in the analyses. Moreover, to investigate whether the individual differences in environmental sensitivity trait could moderate the response to the EfE program we firstly identified, within the whole sample and based on the 30/40/30 split approach provided by Pluess et al. (2018), three distinct “sensitivity” groups: *low* (“*dandelions*”, bottom 30% of HSC scores), *high* (“*orchids*”, top 30% of HSC scores), with the remaining 40% making up the *medium* (“*tulips*”) sensitive individuals (see Table 2 for the characterization of detected sensitivity groups); then, we added in the RMANOVAs the belonging to the different sensitivity groups (i.e., with *low*-, *medium*-, and *high*-environmental sensitivity) as “between-subjects” factor. Furthermore, given the findings of previous studies (Nocentini et al., 2018) highlighting gender-based differences in the moderating role of environmental sensitivity to enhance the effects of anti-bullying intervention program, we also included adolescent gender as “between-subjects” factor in the repeated measures analyses.

Overall, the RMANOVAs allow to test the main effects for time, group, environmental sensitivity, and gender as well as the two- and three-way interaction effects of time x group, time x environmental sensitivity, time x gender, time x group x gender, time x group x environmental sensitivity and, finally, the four-way interaction effect of time x group x environmental sensitivity x gender. Significant interactions were followed up with simple slopes by investigating change across time (i.e., pre- *vs*. post-assessment) and across groups (i.e., control *vs*. experimental group) for the three distinct sensitivity groups (i.e., *low*, *medium*, and *highly* sensitive adolescents) as well as for males and females, to illustrate detected moderation effects for easier interpretation.

Table 2. Identification and sociodemographic characteristics of sensitivity groups

	***Low* HSC**		***Medium* HSC**		***High* HSC**	
	≤ 30% HSC		30% < HSC ≥ 70%		> 70% HSC	
	Males	Females	Males	Females	Males	Females
Total sample	64	32	72	70	33	53
N = 324	37.9%	20.6%	42.6%	45.2%	19.5%	34.2%
Control group	39	12	49	28	17	22
n = 167	37.1%	19.4%	46.7%	45.2%	16.2%	35.5%
Experimental group	25	20	23	42	16	31
n = 157	39.1%	21.5%	35.9%	45.2%	25%	33.3%

Note. Reported number of subjects belonging to the control and experimental groups refer to those participated at both waves of data collection. Reported percentages are valid percentages.

Indirect Effects of EfE Program and Cognitive Distortions as Mediating Factor

Lastly, as regards the mediation processes involved in explaining “why” the EfE program could be efficacy, consistent with the model of “three *D*s” (Gibbs, 2013) underlying the EfE program according to which, at the heart of EfE psychoeducational curriculum is the correction of “thinking errors” or self-serving CDs (DiBiase et al., 2011) and given the findings of previous studies (Nocentini et al., 2018) highlighting the moderating role of both gender and environmental sensitivity to enhance the effects of anti-bullying intervention program, we tested a moderated mediational model to investigate if the change in the general AtLBBs as well as in the bullying perpetration (i.e., social-cognitive and behavioral outcomes, respectively) was the consequence of the change in CDs derived by the EfE program and if such indirect effects were conditional on adolescent gender (male *vs*. female) in combination with the sensitivity groups (with *low*-, *medium*-, and *high*-environmental sensitivity). For a graphical representation of the hypothesized moderated mediational model see Figure 2.

A structural equation modeling (SEM) with latent variables was tested in Mplus 8 (Muthèn & Muthèn, 1998–2017) using a moderated mediational analysis. We used as independent variable the probability of belonging to the control (= 0) *vs*. experimental group (= 1), as moderators the gender groups (1 = male *vs*. 2 = female) and the belonging to the sensitivity groups (Low *vs*. Medium *vs*. High) that was dummy coded with the control group as the reference group, and as dependent variables the tendency to make self-serving CDs (mediator) and the overall measures of AtLBBs and bullying perpetration (outcomes). More specifically, for each data wave, given the sample size, complexity of the model and the number of items and guided by a theory-driven approach, distinct parcels reflecting the respective categories of CDs (i.e., self-centered, blaming others, minimizing/mislabeling, and assuming the worst) and bullying perpetration (i.e., physical-, verbal-, and indirect or relational-forms of bullying) were built through a partial disaggregation approach (Bentler & Wu, 1995; Dabholkar, Thorpe, & Rentz, 1996) and used as indicators of latent CDs and bullying variables, respectively. Instead, as regards the AtLBBs measure, given the acceptability of both models (four first-order factors and second-order factor, see the 3rd chapter of the present dissertation for the factorial structure of the scale), an overall AtLBBs latent variable loaded onto the four subscales, which in turn were defined by the 25 items, was used.

All the effects on T2 mediator and outcomes were controlled for their baseline values (T1), with all variables at T1 allowed to covary. Due to the non-normality of self-serving CDs and bullying perpetration measures (skewness and kurtosis values ranged from 1.33 to 2.04 and from 2.50 to 15.87, respectively) the analyses were performed using the maximum likelihood estimation with robust estimators (MLR). Missing data were handled by using full-information-maximum-likelihood (FIML) estimation of the parameters. Finally, to evaluate the significance of the moderated mediation effects, we ascertained that the associated confidence intervals did not include zero, thus supporting that the indirect effects via the specific mediator were conditional on the levels of specific moderators (i.e., gender and sensitivity groups).

As a preliminary step, we tested that the measurement structure of the study scales was equivalent across time (i.e., pre-test and post-test). Indeed, testing for measurement invariance is a very important aspect for properly interpreting psychological findings of latent variable analyses of repeated measures designs (Alessandri, Zuffianò, & Perinelli, 2017; Baron & Kenny, 1986; Hayes & Preacher, 2014) because, in the absence of such evaluation, it cannot be determined whether temporal change in a construct is due to true change or to change in the structure or measurement of the construct over time (Brown, 2015). Therefore, before testing our moderated mediational process model, we analyzed measurement invariance across time (i.e., pre-test and post-test). In this case, a series of nested Confirmatory Factor Analyses (CFAs) were used to evaluate three levels of measurement invariance (i.e., configural, metric, and scalar invariance). The first level of invariance, the configural invariance, provides a baseline against which subsequent models can be compared (Vandenberg & Lance, 2000) and indicates that the factor structure is the same across time. Configural invariance is attained if a CFA fits well when the intercepts, factor loadings, and residual variances vary freely across time, and the factor means are fixed to zero at all time points. Metric (i.e., “weak” invariance) and scalar (i.e., “strong” invariance) invariance were tested through models in which pattern factor loadings (i.e., both metric and scalar invariance) and intercepts (i.e., only scalar invariance) are constrained to be equal across time.

In addition to the overall fit indices mentioned above (see previous chapters of the present dissertation), the evidence for factorial invariance was tested through the significance of the difference in the chi-square values between the nested models. A non-significant chi-square difference test of model fit indicates that the more constrained is better that the preceding measurement invariance model. Conversely, when the more constrained model was rejected, a less restrictive model of partial measurement invariance was tested in which, in accordance with modification indices, equality constraints on one or more parameters were relaxed until the change in fit was no longer significant.

Likewise, as a preliminary step, concurrently and longitudinally associations among study variables were performed through Pearson correlations.

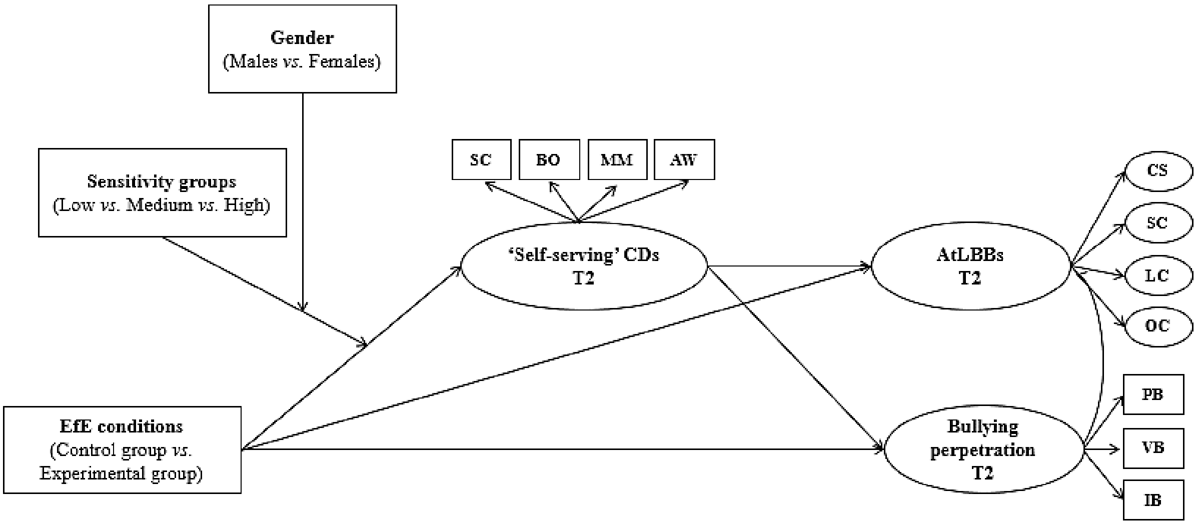

Gender
(Males *vs.* Females)
Sensitivity groups
(Low *vs.* Medium *vs.* High)
SC
BO
MM
AW
'Self-serving' CDs
T2
AtLBBs
T2
CS
SC
LC
OC
PB
VB
IB
EfE conditions
(Control group *vs.* Experimental group)
Bullying perpetration
T2

Figure 2. Conceptual representation of the hypothesized longitudinal moderated mediational model. For the sake of clarity, covariates were not shown in the figure. CDs = Cognitive Distortions; SC = Self-centered; BO = Blaming others; MM = Minimizing/Mislabeling; AW = Assuming the worst; AtLBBs = Attitudes towards Law-Breaking Behaviors; CS = Civic sense; SC = Street code; LC = Loyalty code; OC = Organized crime; PB = Physical bullying; VB = Verbal bullying; IB = Indirect-relational bullying.

Results

Preliminary Analyses: Attrition Rates and Missing Data Analysis

The participation rate was approximately 92% across the two time points, with 30 (8.5%) of T1(pre-assessment) participants missed at T2 (post-assessment) (Total N = 324). The total attrition rate was mainly due to the absence of adolescents from school at assessments. The Little's test (Little & Rubin, 2002) for data missing completely at random (MCAR) in SPSS 21 (IBM Corp.; Armonk, NY) was nonsignificant ($\chi^2(1) = .11$, $p > .05$), indicating no significant difference in attrition rates between the control (20 missed the post-assessment) and experimental group (10 missed the post-assessment), thus confirming that there were no different attrition rates due to the study conditions. However, attrition analysis showed some significant differences in attrition by groups (control *vs.* experimental group) on measures collected at T1. Specifically, the interaction between attrition by experimental group was significant in relation to bullying perpetration ($F_{(1, 350)} = 7.06$, $p < .01$, $\eta^2_p = .02$) with adolescents missing at T2 and belonging to the experimental group reported significantly higher levels of bullying at T1 than those who had data at all assessments. Differently, no significant differences in attrition by groups emerged for self-serving CDs ($F_{(1, 350)} = .65$, $p > .05$, $\eta^2_p = .00$) neither for any of the AtLBBs subscales ($F_{(4, 347)} = 1.01$, $p > .05$, $\eta^2_p = .01$).

Overall, it seems reasonable to assume that missing data across time were randomly distributed among the two groups (control *vs.* experimental group) though it has been found that missing data were related to the behavioral outcome (i.e., bullying), thus they cannot be ignored. Accordingly, full information maximum-likelihood (FIML) was used to handle missing data, enabling us to include all available data in the analyses. FIML does not estimate the missing data, rather it fits the covariance structure model directly to the observed and available raw data for each participant, offering unbiased estimates under the assumption that the missing data are missing at random (Enders, 2013).

Baseline Equivalence: Comparison between Control and Experimental Group before EfE Intervention

Preliminarily, a MANOVA was conducted to investigate group (0 = control *vs.* 1 = experimental group) differences with respect to the baseline measures also controlling for the potential confounding effects of adolescent gender (1 = males *vs.* 2 = females) and school grade (1 = middle *vs.* 2 = high school students).

There were only significant main effects of school grade (Wilks's $\lambda = .94$; $F_{(7, 340)} = 2.91$, $p < .01$, $\eta^2_p = .06$) and gender (Wilks's $\lambda = .88$; $F_{(7, 340)} = 6.35$, $p < .001$, $\eta^2_p = .12$) on baseline measures, while no significant main effect of EfE conditions (Wilks's $\lambda = .98$; $F_{(7, 340)} = 1.16$, $p > .05$, $\eta^2_p = .02$) was found. Moreover, any interaction effects between gender and school grade (Wilks's $\lambda = .96$; $F_{(7, 340)} = 1.85$, $p > .05$, $\eta^2_p = .04$), as well as between such variables with EfE conditions (Wilks's $\lambda = .98$; $Fs_{(7, 340)} = 1.09$ and .80, $p > .05$, $\eta^2_p = .02$, for gender and school grade, respectively,) emerged.

In Table 3 are reported descriptive statistics for CDs, AtLBBs subscales, bullying perpetration, and environmental sensitivity, and the results of One-way ANOVAs. As can see in Table 3, at the pre-test assessment no significant differences were found between control and experimental group on the tendency to make self-serving CDs ($F_{(1, 346)} = .53$, $p > .05$, $\eta^2_p = .00$) as well as on the AtLBBs ($Fs_{(1, 346)} = 1.58$, .00, .88, and .48, $p > .05$; $\eta^2_p s = .01$, and .00, for the Civic sense, Street code, Loyalty code, and Organized crime dimensions, respectively), on the involvement in bullying perpetration ($F_{(1, 346)} = .63$, $p > .05$, $\eta^2_p = .00$), and regarding individual trait of environmental sensitivity ($F_{(1, 346)} = .12$, $p > .05$, $\eta^2_p = .00$). Differently, looking at the gender- and age-related effects, significant differences were found with males scoring higher in the tendency to make self-serving CDs ($F_{(1, 346)} = 4.53$, $p < .05$, $\eta^2_p = .01$) as well as in all dimensions of AtLBBs, specifically in the Civic sense ($F_{(1, 346)} = 7.35$, $p < .01$, $\eta^2_p = .02$), Street code ($F_{(1, 346)} = 17.65$, $p < .001$, $\eta^2_p = .05$), Loyalty code ($F_{(1, 346)} = 18.30$, $p < .001$, $\eta^2_p = .05$), and Organized crime ($F_{(1, 346)} = 5.68$, $p < .05$, $\eta^2_p = .02$), in bullying perpetration ($F_{(1, 346)} = 7.10$, $p < .01$, $\eta^2_p = .02$), and lower in environmental sensitivity ($F_{(1, 346)} = 14.76$, $p < .001$, $\eta^2_p = .04$) compared to females whereas older were higher only in the Civic sense ($F_{(1, 346)} = 4.30$, $p < .05$, $\eta^2_p = .01$) and Street code ($F_{(1, 346)} = 4.08$, $p < .05$, $\eta^2_p = .01$) dimensions of the AtLBBs, compared to younger students.

Table 3. Descriptive statistics (Means, *SDs*, and *n* size) and ANOVAs results by groups (control *vs.* experimental group), gender (males *vs.* females), and school grade (middle *vs*. high school students) in self-serving CDs, AtLBBs dimensions, bullying perpetration, and environmental sensitivity traits, before EfE intervention

Measures		**Groups** ($n_{control}$ = 187; $n_{experimental}$ = 167)		**Gender**		**School grade**		**Groups-based differences at pre-test**		**Gender-based differences at pre-test**		**School grade-based differences at pre-test**	
				Males (*n* = 183)	**Females** (*n* = 171)	**Middle** (*n* = 156)	**High** (*n* = 198)						
				Mean *(SDs)*				F$_{(1, 346)}$	η^2_p	F$_{(1, 346)}$	η^2_p	F$_{(1, 346)}$	η^2_p
Self-serving CDs		**Control group**	2.08 *(.74)*	2.18 *(.76)*	2.00 *(.73)*	2.10 *(.83)*	2.08 *(.68)*	.53	.00	4.53*	.01	.12	.00
		Experimental group	2.10 *(.76)*										
AtLBBs	***Civic sense***	**Control group**	3.69 *(1.01)*	3.62 *(.99)*	3.93 *(.90)*	3.67 *(1.14)*	3.85 *(.78)*	1.58	.01	7.35**	.02	4.30*	.01
		Experimental group	3.86 *(.90)*										
	Street code	**Control group**	3.59 *(.99)*	3.41 *(.96)*	3.84 *(.92)*	3.51 *(1.10)*	3.70 *(.82)*	.00	.00	17.65***	.05	4.08*	.01
		Experimental group	3.65 *(.92)*										
	Loyalty code	**Control group**	3.14 *(.95)*	3.01 *(.97)*	3.47 *(.95)*	3.26 *(1.06)*	3.21 *(.93)*	.88	.00	18.30***	.05	.31	.00
		Experimental group	3.33 *(1.02)*										
	Organized crime	**Control group**	3.77 *(1.09)*	3.68 *(1.07)*	3.96 *(1.02)*	3.72 *(1.20)*	3.89 *(.93)*	.48	.00	5.68*	.02	2.97	.01
		Experimental group	3.87 *(1.01)*										
Bullying perpetration		**Control group**	1.35 *(.49)*	1.39 *(.53)*	1.24 *(.35)*	1.36 *(.48)*	1.28 *(.44)*	.63	.00	7.10**	.02	3.76	.01
		Experimental group	1.28 *(.43)*										
		Control group	3.03 *(.84)*	2.91 *(.86)*	3.25 *(.74)*	3.01 *(.93)*	3.12 *(.73)*	.12	.00	14.76***	.04	2.12	.01

Environmental sensitivity	**Experimental group**	3.12 *(.73)*

Note. CDs = Cognitive Distortions; AtLBBs = Attitudes towards Law-Breaking Behaviors, with lower score reflecting a greater endorsement of law-breaking behaviors. For the sake of simplicity, nonsignificant interaction effects are omitted. * $p < .05$, ** $p < .01$, *** $p < .001$; η^2_p = partial eta-squared effect size.

Effects of EfE Program on Social-Cognitive Processes and Behavioral Outcomes: Comparison between Control and Experimental Groups after EfE Intervention

For the sake of clarity, in Table 4 are reported only the significant unique and interactive effects emerged. Indeed, as resulted from the RMANOVAs, no significant Time effect (Wilks's λ = .99; $F_{(1, 312)} = 1.06$, $p > .05$, $\eta^2_p = .00$) neither Time × Group interaction effect (Wilks's λ = 1; $F_{(1, 312)} = .00$, $p > .05$, $\eta^2_p = .00$) on change of prevalence of bullying perpetration emerged. Similarly as regards the change in the AtLBBs, no significant Time effects (Wilks's λ = .99; $Fs_{(1, 312)}$ = 1.43, 2.86, 3.54, and 2.89, $p > .05$, $\eta^2_p = .01$, for the Civic sense, Street code, Loyalty code, and Organized crime dimensions, respectively) neither Time × Group interaction effects (Wilks's λ = 99; $Fs_{(1, 312)}$ = .01, .19, .98, and .34, $p > .05$; $\eta^2_p = .00$, for the Civic sense, Street code, Loyalty code, and Organized crime dimensions, respectively) were found. Conversely, a significant Time effect (Wilks's λ = .91; $F_{(1, 312)} = 32.66$, $p < .001$, $\eta^2_p = .10$) and Time × Group interaction effect (Wilks's λ = .98; $F_{(1, 312)} = 6.89$, $p < .01$, $\eta^2_p = .02$) on change of self-serving CDs emerged.

As displayed in Figures 3a-f, the descriptive statistics showed that while a significantly higher decrease in the tendency to make self-serving CDs after EfE intervention in the experimental group compared to the control group was found, all AtLBBs dimensions as well as the prevalence rates of bullying perpetration remain quite stable over time, both in the experimental and control group.

Looking at the interaction effects with the sensitivity groups and gender, the RMANOVAs showed that no significant three-way interaction (Time × Group × Sensitivity Groups and Time × Group × Gender) was found for all the target variables, specifically for the self-serving CDs (Wilks's λ = .99; $F_{(2, 312)} = 2.00$, $p > .05$, $\eta^2_p = .01$, and Wilks's λ = 1; $F_{(1, 312)} = .03$, $p > .05$, $\eta^2_p = .00$, respectively) as well as for the AtLBBs dimensions, specifically for the Civic sense (Wilks's λ = 1; $F_{(2, 312)} = .27$, $p > .05$; $\eta^2_p = .00$, and Wilks's λ = 1; $F_{(1, 312)} = .36$, $p > .05$, $\eta^2_p = .00$, respectively), Street code (Wilks's λ = 1; $F_{(2, 312)} = .37$, $p > .05$; $\eta^2_p = .00$, and Wilks's λ = .99; $F_{(1, 312)} = 1.92$, $p > .05$, $\eta^2_p = .01$, respectively), Loyalty code (Wilks's λ = .99; $F_{(2, 312)} = 1.15$, $p > .05$;

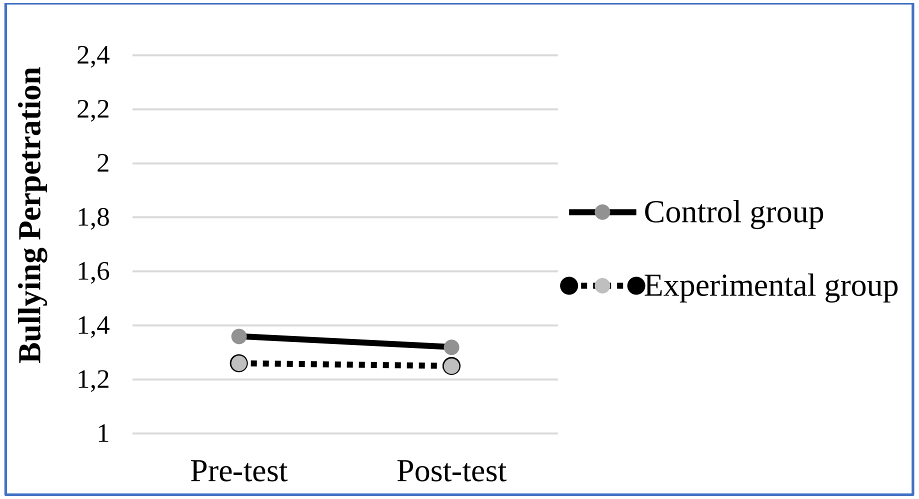
η^2_p = .01, and Wilks's λ = .99; $F_{(1,\,312)}$ = 2.88, $p > .05$, η^2_p = .01, respectively), and Organized crime (Wilks's λ = 1; $F_{(2,\,312)}$ = .30, $p > .05$; η^2_p = .00, and Wilks's λ = 1; $F_{(1,\,312)}$ = 1.17, $p > .05$, η^2_p = .00, respectively), neither for bullying perpetration (Wilks's λ = .99; $F_{(2,\,312)}$ = 1.49, $p > .05$, η^2_p = .01, and Wilks's λ = 1; $F_{(1,\,312)}$ = .17, $p > .05$, η^2_p = .00, respectively).

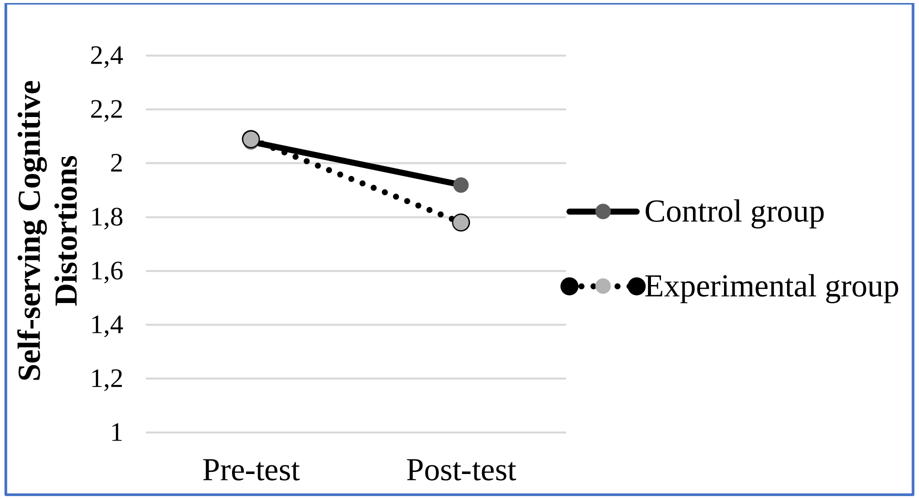
However, a significant four-way interaction effect (Time x Group × Sensitivity Groups x Gender) on the change of self-serving CDs emerged (Wilks's λ = .97; $F_{(2,\,312)}$ = 5.69, $p < .01$, η^2_p = .04), suggesting that such social-cognitive change between T1 and T2 differed between the two groups (i.e., control *vs.* experimental group) and was moderated by both individual differences in environmental sensitivity and gender. More specifically, as reported in Table 4 and as can see in more detail in Figures 4a-b, highly sensitive males benefited significantly more from the effects of EfE intervention than did *low*- and *medium*- sensitivity regarding reduced self-serving CDs whereas among females the effects of EfE remain quite stable regardless of environmental sensitivity score.

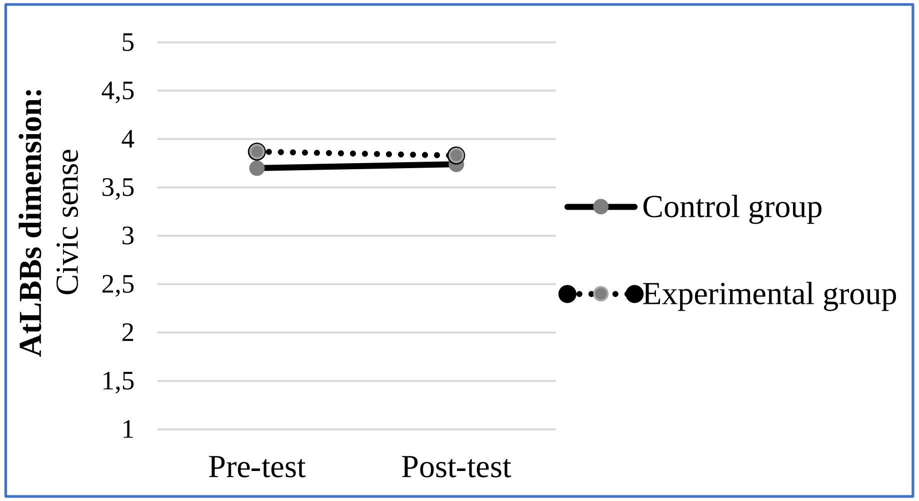
Table 4. Descriptive statistics (Mean, *SDs*, and *n* size) and RMANOVAs results for the two groups (control *vs*. experimental group) in self-serving CDs, before and after the EfE intervention, distinguishing males and females with low, medium, and high scores on the Highly Sensitive Child (HSC) scale.

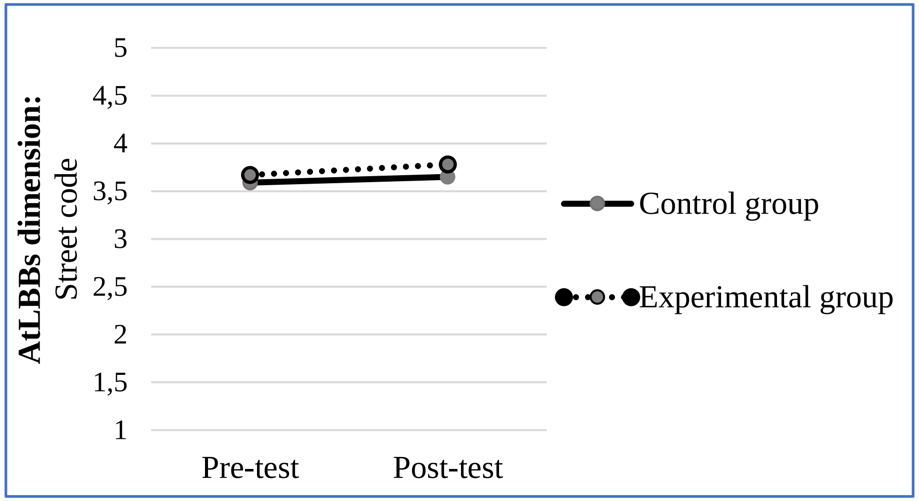
Social-cognitive processes											
Measures	**Groups** ($n_{control}$ = 167; $n_{experimental}$ = 157)	**Sensitivity Groups**	**Gender** (n_{males} = 169; $n_{females}$ = 155)	**Mean *(SDs)***		**Time**		**Time x Groups**		**Time x Groups x Sensitivity Groups x Gender**	
				Pre-test	**Post-test**	$F_{(1, 312)}$	η^2_p	$F_{(1, 312)}$	η^2_p	$F_{(2, 312)}$	η^2_p
Self-serving CDs	**Control group**	*Low* HSC	Males	1.89 *(.77)*	1.74 *(.72)*	32.66***	.10	6.89**	.02	5.69**	.04
			Females	1.60 *(.57)*	1.72 *(.58)*						
		Medium HSC	Males	2.27 *(.65)*	2.09 *(.80)*						
			Females	2.00 *(.62)*	1.77 *(.60)*						
		High HSC	Males	2.33 *(.90)*	2.38 *(1.18)*						
			Females	2.15 *(.86)*	1.81 *(.58)*						
	Experimental group	*Low* HSC	Males	1.95 *(.70)*	1.80 *(.74)*						
			Females	1.82 *(.61)*	1.43 *(.46)*						
		Medium HSC	Males	2.12 *(.46)*	2.04 *(.82)*						
			Females	1.90 *(.73)*	1.55 *(.50)*						
		High HSC	Males	2.76 *(.96)*	2.05 *(.81)*						
			Females	2.26 *(.82)*	1.96 *(.88)*						

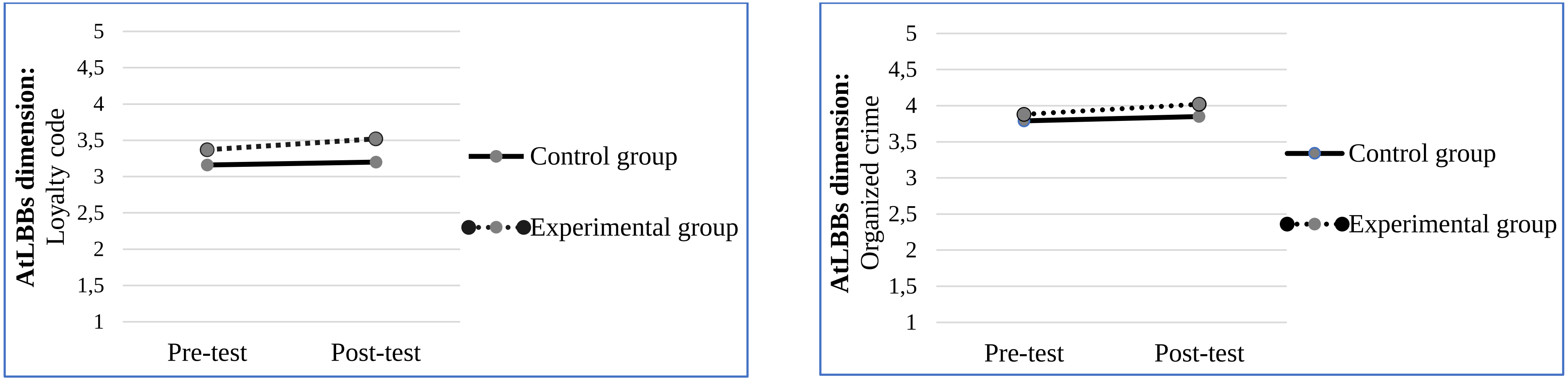
Note. CDs = Cognitive Distortions. The lower number of subjects belonging to the control and experimental groups is due to the missing data at T2. For the sake of clarity, all other nonsignificant unique and interactive effects are omitted. ** $p < .01$, *** $p < .001$; η^2_p = partial eta-squared effect size.


Bullying Perpetration
2,4
2,2
2
1,8
1,6
1,4
1,2
1
Pre-test
Post-test
Control group
Experimental group

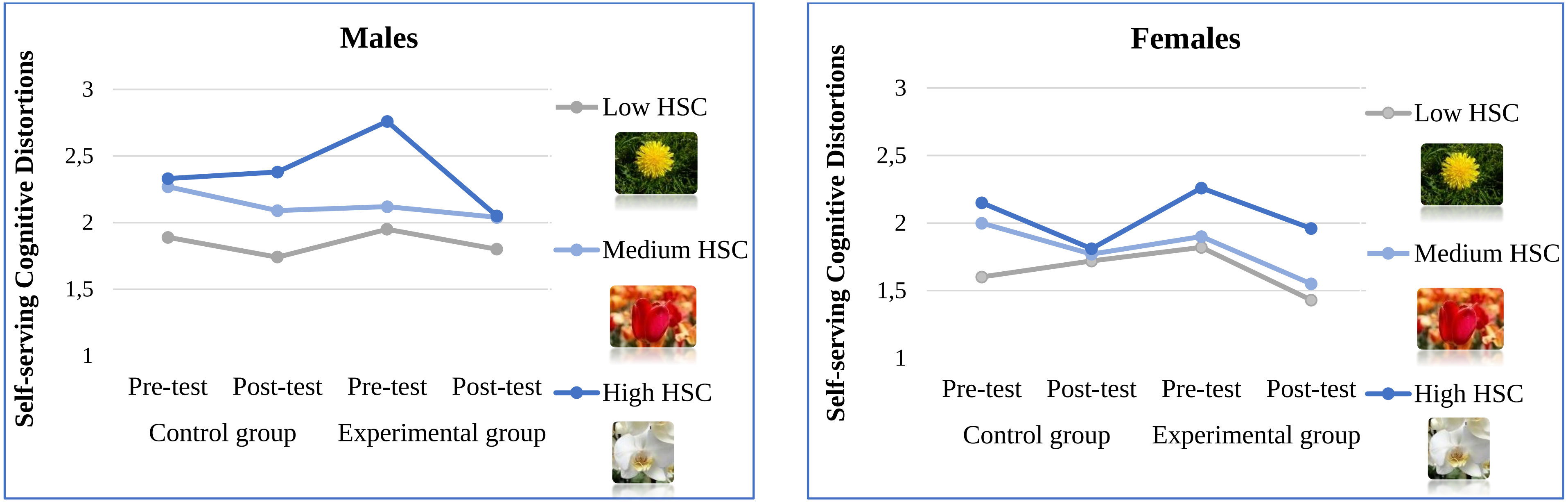

Self-serving Cognitive Distortions
2,4
2,2
2
1,8
1,6
1,4
1,2
1
Pre-test
Post-test
Control group
Experimental group


AtLBBs dimension:
Civic sense
5
4,5
4
3,5
3
2,5
2
1,5
1
Pre-test
Post-test
Control group
Experimental group


AtLBBs dimension:
Street code
5
4,5
4
3,5
3
2,5
2
1,5
1
Pre-test
Post-test
Control group
Experimental group



Figures 3a-f. Trends for bullying perpetration, self-serving cognitive distortions, and AtLBBs dimensions in the control *vs.* experimental group: pre(before EfE intervention)- and post(after EfE intervention)-assessment means.



Figures 4a-b. Trends for self-serving cognitive distortions across time, distinguishing between control *vs.* experimental group, and adolescents with low, medium, and high score on the Highly Sensitive Child (HSC) scale: pre(before EfE intervention)- and post(after EfE intervention)-assessment means.

Longitudinal Measurement Invariance

Self-Serving Cognitive Distortions (CDs)

Before testing our moderated mediational process model, we estimated measurement invariance across time (i.e., pre-test and post-test) of both mediator and outcome variables. In proceeding to test longitudinal CDs measurement invariance, we firstly specified a model in which all factor loadings were freely estimated across time. This baseline model testing configural invariance resulted in an acceptable fit, YBχ^2(19, N = 354) = 116.32, $p < .001$; CFI = .95; RMSEA = .08, 90% C.I. [.08, .10]; SRMR = .03. Subsequently, we ran a model in which all factor loadings were constrained equally across the time points (i.e., metric model). Also the full metric invariance model fits the data well, YBχ^2(22, N = 354) = 121.34, $p < .001$; CFI = .95; RMSEA = .08, 90% C.I. [.08, .10]; SRMR = .03. Furthermore, the chi-square difference test between the configural invariance and metric invariance model was non-significant, ΔSBχ^2(3) = 1.92, $p > .05$, suggesting that metric invariance across time was attained.

Next, the model for full scalar invariance was run. This model in which both the factor loadings and subscales intercepts were constrained to be equal across time points had acceptable fit, YBχ^2(25, N = 354) = 130.38, $p < .001$; CFI = .95; RMSEA = .08, 90% C.I. [.08, .10]; SRMR = .03, and the chi-square difference test comparing the full metric invariance model with the full scalar invariance model was not statistically significant, ΔSBχ^2(3) = 3.96, $p > .05$, indicating that also the full scalar invariance was met.

Therefore, a *strong measurement invariance* for self-serving CDs scale has been established.

Attitudes towards Law-Breaking Behaviors (AtLBBs)

The measurement invariance across time points for the AtLBBs measure was attained and has been previously illustrated in the 3rd chapter of the present dissertation.

Bullying Perpetration

Likewise as described above for the previous measurement scales, in proceeding to test longitudinal invariance of bullying measure, we firstly specified a model in which all factor loadings were freely estimated across time (pre-test and post-test). This baseline model testing configural invariance resulted in an acceptable fit, YBχ^2(8, N = 354) = 35.66, $p < .001$; CFI = .92; RMSEA = .08, 90% C.I. [.08, .10]; SRMR = .05. Subsequently, we ran a model in which all factor loadings were constrained equally across the time points (i.e., metric model). Also the full metric invariance model fits the data well, YBχ^2(10, N = 354) = 36.12, $p < .001$; CFI = .92; RMSEA = .08, 90% C.I. [.08, .10]; SRMR = .07. Furthermore, the chi-square difference test between the configural invariance and the full metric invariance model was non-significant, ΔSBχ^2(2) = 3.17, $p > .05$, suggesting that full metric invariance across time was attained.

Next, the model for full scalar invariance was run. This model in which both the factor loadings and subscales intercepts were constrained to be equal across time points shows a worse fit, YBχ^2(12, N = 354) = 43.24, $p < .001$; CFI = .91; RMSEA = .09, 90% C.I. [.08, .10]; SRMR = .08, with the chi-square difference test comparing the full metric invariance model with the full scalar invariance model was statistically significant, ΔSBχ^2(2) = 6.95, $p < .05$. In accordance with modification indices, the equality constraint on the intercept for the 'Indirect-Relational Bullying' subscale was relaxed in order to improve the model fit, YBχ^2(11, N = 354) = 39.07, $p < .001$; CFI = .92; RMSEA = .08, 90% C.I. [.08, .10]; SRMR = .07, so that the chi-square difference increment was no longer significant, ΔSBχ^2(1) = 1.61, $p > .05$.

Therefore, a partial *strong measurement invariance* for bullying perpetration scale has been reached.

Correlations among Study Variables

Zero-order correlations among study variables are shown in Table 5. Overall, as shown in Table 5, all variables were significantly intercorrelated with each other, both in the control and experimental group, both concurrently, within the same time point, and longitudinally, across time with some exceptions represented by the lack of associations between the involvement in bullying perpetration at T1 with the T1 Civic sense, Loyalty code, and Organized crime dimensions, and with the T2 Loyalty code in the control group, with the T2 Civic sense and Organized crime dimensions both in the control and in the experimental group; moreover, there were no associations of the involvement in bullying perpetration at T2 with the T1 Loyalty code and T2 Civic sense, in the control and experimental group, respectively, and with T2 Organized crime dimension both in the control and in the experimental group.

Table 5. Zero-order correlations among study variables

			AtLBBs									
Measures	***Self-serving CDs***		***Civic sense***		***Street code***		***Loyalty code***		***Organized crime***		***Bullying perpetration***	
	1. T1	***2. T2***	***3. T1***	***4. T2***	***5. T1***	***6. T2***	***7. T1***	***8. T2***	***9. T1***	***10. T2***	***11. T1***	***12. T2***
1.	1	.62***	-.33***	-.31***	-.43***	-.42***	-.27***	-.32***	-.31***	-.19***	.47***	.40***
2.	.61***	1	-.27***	-.41***	-.42***	-.51***	-.31***	-.44***	-.28***	-.29***	.33***	.46***
3.	-.35***	-.25***	1	.37***	.81***	.34***	.62***	.22**	.79***	.31***	-.14	-.24**
4.	-.24**	-.28***	.44***	1	.29***	.79***	.27***	.64***	.27***	.71***	-.12	-.17*
5.	-.52***	-.34***	.78***	.40***	1	.41***	.73***	.33***	.76***	.26***	-.22**	-.28***
6.	-.32***	-.37***	.41***	.85***	.48***	1	.32***	.73***	.29***	.68***	-.22**	-.37***
7.	-.47***	-.31***	.72***	.38***	.81***	.42***	1	.40***	.61***	.25***	-.08	-.15
8.	-.31***	-.30***	.39***	.72***	.41***	.75***	.45***	1	.17*	.55***	-.05	-.24**
9.	-.46***	-.26***	.76***	.44***	.72***	.46***	.67***	.43***	1	.39***	-.10	-.22**
10.	-.26***	-.22**	.40***	.80***	.36***	.73***	.38***	.68***	.53***	1	.01	-.15
11.	.35***	.30***	-.19*	-.15	-.26***	-.25**	-.29***	-.18*	-.20*	-.11	1	.52***
12.	.34***	.42***	-.17*	-.11	-.31***	-.25**	-.24**	-.18*	-.22**	-.10	.35***	1
Scores range	*1-6*		*1-5*								*1-5*	

Note. CDs = Cognitive Distortions; AtLBBs = Attitudes towards Law-Breaking Behaviors, with lower score reflecting a greater endorsement of law-breaking behaviors. Data for the control group appear above the diagonal and data for the experimental group appear below the diagonal.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Moderated-Mediational Process Model: Testing the Indirect Effects of EfE Program on Attitudes towards Law-Breaking Behaviors (AtLBBs) and Bullying Perpetration

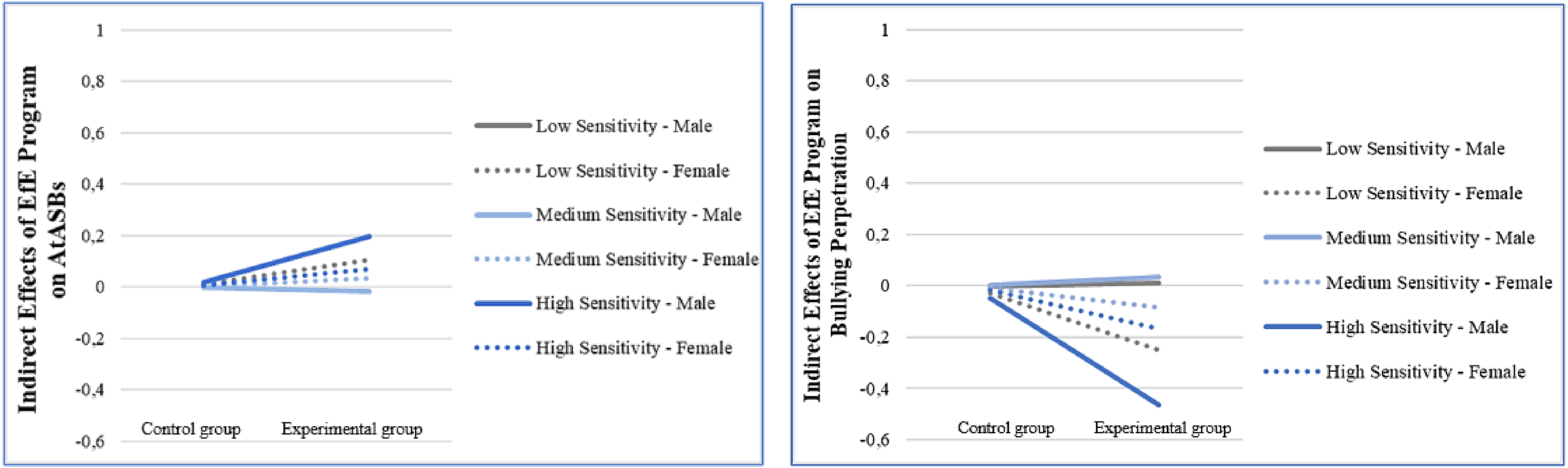
Results of the moderated-mediational SEM evaluating if the EfE program was associated to the development of less positive AtLBBs and to the reduction of bullying perpetration over time through the decrease of self-serving CDs, and if the hypothesized indirect effects of the EfE program were conditioned by gender and by the belonging to the distinct sensitivity groups, controlling for prior (baseline) measures of each variables, were displayed in Table 6. Given the preliminary findings discussed above revealing a significant four-way interaction effect (Time x Group × Sensitivity Groups x Gender) on the change of self-serving CDs, we estimated in the moderated-mediational model the interaction effects only on the change of self-serving CDs after the EfE program.

As shown in Table 6, the two-way and three-way interaction terms between the EfE conditions (= belonging to the experimental group) and sensitivity groups (= belonging to the group with high levels of environmental sensitivity) as well as between such variables with gender groups (= males) on the change of self-serving CDs were significant (bs = -16.94 and 10.98, $p < .01$, 95% C.I.s [-27.84, -6.04] and [3.96, 17.99], respectively), controlling for the baseline (T1) measure of CDs. The analysis of indirect effects moderated by sensitivity groups and gender showed a marginally significant moderated mediation effect for males belonging to the high (*vs*. low) sensitivity group, both for AtLBBs and bullying perpetration ($bs_{\text{indirect effects}}$ = .20 and -.46, *ps* = .05 and < .05; 90% C.I.s [.02, .37] and [-.86, -.07], respectively). All the conditional indirect effects are plotted in Figures 5a-b. Overall, these results suggest that participating to the EfE program led to a decrease in law-breaking supporting attitudes as well as in bullying perpetration by equipping youth with skills for correcting their “thinking errors” or self-serving CDs with highly sensitive males benefitting significantly more from the effects of the intervention than females and those with lower levels of environmental sensitivity.

Table 6. Direct and Indirect effects of EfE Program on Attitudes towards Law-Breaking Behaviors (AtLBBs) and Bullying Perpetration through Self-serving Cognitive Distortions (CDs) conditional on Gender and Sensitivity Groups with Low, Medium, and High Scores on the Highly Sensitive Child (HSC) Scale

		Unique and Interactive Effects								
	Predictors	**Self-serving CDs (T2)**			**AtLBBs (T2)**			**Bullying perpetration (T2)**		
		B	SE	95% C.I.	B	SE	95% C.I.	B	SE	95% C.I.
	EfE conditions (Control *vs*. Experimental group)	4.46	3.56	[-2.51, 11.43]	.01	.07	[-.12, .14]	.02	.13	[-.24, .28]
	Sensitivity groups (Low *vs*. Medium HSC)	4.24	3.12	[-1.87, 10.36]	-.02	.08	[-.17, .14]	-.07	.16	[-.38, .24]
	Sensitivity groups (Low *vs*. High HSC)	9.85*	3.87	[2.27, 17.44]	.09	.09	[-.10, .26]	-.04	.18	[-.39, .32]
	Gender (Male *vs*. Female)	1.52	1.87	[-2.15, 17.44]	.19**	.07	[.05, .33]	-.10	.14	[-.38, .17]
	Experimental group x Medium HSC	-1.84	4.77	[-11.18, 7.51]	-	-	-	-	-	-
	Experimental group x High HSC	-16.94**	5.56	[-27.84, -6.04]	-	-	-	-	-	-
	Experimental group x Gender	-4.29	2.52	[-9.24, .66]	-	-	-	-	-	-
	Medium HSC x Gender	-3.07	2.30	[-7.58, 1.43]	-	-	-	-	-	-
	High HSC x Gender	-6.11*	2.61	[-11.23, -.99]	-	-	-	-	-	-
	Experimental group x Medium HSC x Gender	2.27	3.21	[-4.02, 8.57]	-	-	-	-	-	-
	Experimental group x High HSC x Gender	10.98**	3.58	[3.96, 17.99]	-	-	-	-	-	-
	Self-serving CDs (T2)	-	-	-	-.03***	.01	[-.04, -.02]	.06***	.01	[.04, .08]
Conditional Indirect Effects of EfE Program at Different Values of Gender and Sensitivity Groups (Moderators)										
Self-serving CDs (T2 – Mediator)	Males with Low HSC	-	-	-	-.00	.04	[-.07, .06]	.01	.09	[-.13, .16]
	Females with Low HSC	-	-	-	.11	.06	[.00, .11]	-.25	.13	[-.47, .03]
	Males with Medium HSC	-	-	-	-.02	.04	[-.08, .05]	.04	.09	[-.11, .18]
	Females with Medium HSC	-	-	-	.04	.04	[-.02, .10]	-.09	.09	[-.23, .05]
	Males with High HSC	-	-	-	.20†	.11	[.02, .37]	-.46*	.24	[-.86, -.07]
	Females with High HSC	-	-	-	.07	.12	[-.13, .27]	-.17	.28	[-.63, .30]

Note. Both for medium and highly sensitive subjects the reference group was that with low sensitivity. B = Unstandardized estimates; SE = Standard error; C.I. = Confidence intervals; For the sake of simplicity, the relations with control variables are omitted. **p* < .05, ***p* < .01, ****p* < .001, †*p* = .05.



Figures 5a-b. Plot of the Indirect Effects of EfE Program on Attitudes towards Law-Breaking Behaviors (AtLBBs) and Bullying Perpetration through Self-serving Cognitive Distortions conditional on Gender and Sensitivity Groups. Positive indirect effects on the AtLBBs indicate a lower endorsement of law-breaking after intervention through the decrease of CDs.

Discussion

Starting from the growing need for a rigorously evidence-based framework that can inform preventive and intervention policies efforts against antisocial behaviors among peers as bullying (Eisner & Malti, 2012; Gottfredson et al., 2015) and given the lack of studies having investigate the effects of EfE program in Italian school context, the main aim of the present study was intended to fill the gap in the literature by analyzing the effects of EfE program– implemented as universal prevention program (DiBiase et al., 2005)– in counteracting bullying perpetration, as well as in correcting adolescents' use of self-serving CDs and in promoting less positive AtLBBs, by using a quasi-experimental pre-test/post-test with control group design. Furthermore, following the global indication suggested by Smith et al. (2012) to move from investigating "whether a specific program works or not" to uncovering "what works, through which mechanisms, for whom, and under what circumstances", we tried to clarify the mediation and moderation mechanisms involved in explaining "why" and "for whom" EfE program may work effectively.

Firstly, regarding the main effects of EfE program, the findings only partially confirm our expectations having found that the EfE is a useful program for remediating the key social-cognitive limitations of the behaviorally at-risk youth; on the contrary, it does not seem to be effective in counteracting school bullying perpetration as well as in developing less positive AtLBBs among youth. More specifically, a significantly higher decrease in the tendency to make self-serving CDs was found after intervention for the experimental group when compared to the control group, although the effect size was small (Cohen, 1988).

Referring to previous effectiveness research on the same program outcomes of our study, the results we found seem in line with those have established that the program is successful in promoting changes in social-cognitive processes, such as self-serving CDs, both in juvenile correctional facilities (e.g., Brugman & Bink, 2011; Nas et al., 2005) and school settings (e.g., DiBiase et al., 2011; van der Meulen et al., 2010; Van der Velden et al., 2010) in spite of other studies (Helmond et al., 2012; Liau et al., 2004) having found that the program was not effective in reducing the CDs. Conversely, the lack of efficacy of the program in promoting less positive AtLBBs does not corroborate the results of previous studies highlighting that both the original treatment version of the EQUIP program for juvenile offenders (Nas et al., 2005) as well as the preventive version of EfE program for high school students equip youth with skills for developing more negative pro-violence attitudes (van der Meulen et al., 2010; Van der Velden et al., 2010). However, while in the study by Nas et al. (2005) only the post-test scores for the pro-violence attitudes were considered, thus limiting the validity of the obtained results, that of Van der Velden et al. (2010) shown that the effects of the program on pro-violence attitudes varied depending on the ethnic background with the Dutch students participating to the program displayed stronger intervention effects reporting more negative attitudes towards antisocial behaviors whereas those from ethnic minority groups in both the experimental and control group showed more negative attitude towards antisocial behavior at the post-test regardless of the intervention.

Furthermore, with regard to the expected behavioral changes, in our study the EfE program was not effective in directly reducing the perpetration of school bullying. To our knowledge, only one study (van der Meulen et al., 2010) have specifically investigated whether the EfE program might be useful to work on various aspects involved in peer victimization finding an increase in prosocial behaviors by bystanders towards the victims and a decrease in bullying as perceived by the students themselves during their daily school life. Overall, the authors (van der Meulen et al., 2010) showed a slight decrease in the peers' observation of bullying victimization in the classroom in the experimental group after the intervention compared to the control group for whom the perception of bullying and social exclusion situations has suffered a small increase. However, although these results provide some support for the idea of increased bullying awareness among students, really behavioral changes in victimization were not confirmed, requiring the findings several cautions because of the relatively small sample size.

Therefore, our study represents the first attempt to evaluate whether the EfE program could be effective in counteracting bullying by perpetrators in a broader school-based sample of adolescents. Although contrary to our expectations, our findings may be understood in the light of a previous meta-analytic review (Van Stam et al., 2014) specifically focused on the effects of the program on more serious antisocial acts or recidivism rates. As discussed by the authors (Van Stam et al., 2014), although most of previous studies have well documented the efficacy of the program in addressing the main youthful offender problematic tendencies or limitations (in terms of sociomoral developmental delays or deficiencies), its overall effect on recidivism was not significant. For example, previous attempts (Brugman & Bink, 2011; Liau et al., 2004) to implement the program with offenders sample reached similar results highlighting that the program fails in reducing the speed or seriousness of reoffending (Brugman & Bink, 2011) as well as in decreasing self-reported aggression and delinquency (Liau et al., 2004). Conversely, other studies have found a substantial reduction of recidivism rates after the intervention (Devlin & Gibbs, 2010; Leeman et al., 1993; Liau et al., 2004).

Furthermore, referring to the study by Liau et al. (2004), the authors found a moderating effect on behavioral outcome due to gender differences with female, but not male participants, who received the EQUIP psychoeducational curriculum, were less likely to recidivate than those in the control group after six months from intervention. Besides the gender, also some program-related factors have been recognized to moderate the intervention effects on treatment outcomes such as the levels of program integrity, that is the extent to which the program procedures are carried out as intended (Kazdin, 1994), although studies on this topic have reached mixed results. For example, while some meta-analyses using proxies of program integrity have established positive relations between program integrity and effectiveness of interventions aimed at reducing recidivism (Andrews & Dowden, 2005; Landenberger & Lipsey, 2005; Lipsey, 2009), the others showed that the higher program integrity did not strengthen the effectiveness of EQUIP on the prevalence, frequency, and seriousness of recidivism (Helmond et al., 2015). Moreover, it seems that the more youth display higher levels of compliance towards the aims of the program and actively participate to the EQUIP group sessions, the more likely they could reach more favorable treatment outcome

(Liau, 1999) and the latter will become more visible over time (van der Velden et al., 2010). Overall, as some previous authors argued (Brugman & Bink, 2011), the weak implementation of the program, combined with having more at-risk students (van der Velden et al., 2010) and with having evaluate the program after a relatively short time period following its implementation, as in our study, could be reasonable explanations of the lacking effects of the program on both attitudinal and behavioral outcomes we found.

Taken together, the findings discussed above corroborate that the EfE program to do at least part of what it is intended to do, namely, to encourage and equip youth to think (more) responsibly. However, as previously pointed out, understanding “whether a specific program works or not” can be considered the first essential step in the evaluation of its efficacy whereas encovering “for whom” or “why” it could lead to the expected outcomes represents a step ahead in research (Eisner & Malti, 2012; Smith et al., 2012). Indeed, the virtuous circle between practice and theory needs to be informed by research on processes influenced by the intervention programs. To this end, we tried to clarify the mediation and moderation processes involved in explaining “why” and “for whom” the EfE program could work better to promote the expected cognitive and behavioral changes. In both cases (i.e., mediation and moderation processes), the findings of the present study supported our expectations. Specifically, referring to the psychological characteristics which could moderate the EfE effectiveness in reducing self-serving CDs, our results showed the enhancer effect of personality trait of environmental sensitivity to improve adolescents’ treatment response accounting for gender-based differences with most pronounced effects among boys scoring high in environmental sensitivity compared with females and less sensitive adolescents. As discussed above, although the EfE program significantly reduced self-serving CDs across the whole sample (derived from comparison between experimental and control group), with a significantly higher decrease over time (from pre-test to post-test) in the experimental group compared with the control group, highly sensitive males participating to the EfE seem to benefit significantly more from the effects of the intervention on self-serving CDs because of their heightened sensitivity to positive aspects of the environment than females for whom the effects of EfE to reducing self-serving CDs remain quite stable regardless of their environmental sensitivity (i.e., displaying vantage resistance).

As regards the mediation mechanisms involved in explaining “why” the EfE program may activate expected cognitive and behavioral changes, informed by previous meta-analyses highlighted the role of social-cognitive processes, such as CDs, in promoting behavioral changes, as the reduction of externalizing problem behaviors (see Ciardha & Gannon, 2011; Maruna & Copes, 2005; Maruna & Mann, 2006) we investigated whether the development of less positive attitudes towards law-breaking behaviors and the reduction of bullying perpetration could be mediated through the social-cognitive changes in the self-serving CDs, whose correction is at the heart of EfE psychoeducational curriculum (DiBiase et al., 2011). Moreover, given the moderating role of environmental sensitivity and gender to enhance the effects of EfE on the reduction of self-serving CDs, we examined whether the hypothesized indirect effects of the EfE program varied depending on gender and the belonging to the distinct sensitivity groups.

Our results confirming that by altering adolescents’ biased thinking patterns, represented in the current study by the self-serving CDs, it has been possible to modify antisocial aspects of personality and consequent behaviors, can be interpreted in the light of social-cognitive approach (e.g., Bandura, 1977, 1986) according to which people act upon their interpretation of social events and antisocial behavior is based on deficiencies in interpreting these events, i.e., CDs.

Furthermore, in line with our results previously discussed, we found marginally significant moderated mediation effects of the EfE program on social-cognitive and behavioral outcomes through the decrease of self-serving CDs with highly sensitive males who participated to the EfE benefitting more from the effects of the program compared with females and those less sensitive to environmental influences.

Taken together, such findings are consistent with previous similar research aimed at investigating whether cognitive-behavioral interventions specifically designed to address the cognitive attitudes or beliefs may impact on the subsequent behaviors. More in detail, previous studies using the original treatment version of the EQUIP program with juvenile (Brugman & Bink, 2011; Leeman et al., 1993) and adult (Devlin & Gibbs, 2010; Liau et al., 2004) offenders, in examining whether gains in social-cognitive processes, as measured by CDs reductions, as well as in social skills (Brugman & Bink, 2011; Devlin & Gibbs, 2010; Liau et al., 2004) and moral judgment (Leeman et al., 1993) would mediate the changes in the behavioral outcomes related to treatment (i.e., institutional violations, speed and rates of recidivism) found that the reduction in the level of CDs among participants to the program was significantly related to fewer serious institutional infractions as well as to the speed of recidivism with a longer time interval latency before reoffending (Brugman & Bink, 2011; Liau et al., 2004) and lower recidivism rates (Devlin & Gibbs, 2010), whereas no mediating effect of moral judgment was found (Leeman et al., 1993).

In addition, as regards the development of less positive AtLBBs after intervention, although the magnitude of the moderated mediation effect of CDs was relatively modest, such result could be explained in the light of the close interconnection between the use of “self-exculpatory” or self-serving CDs as pseudo-justifications and rationalizations for deviant behavior, and the following offense supporting attitudes (see Van der Velden et al., 2010). As argued by the authors (Van der Velden et al., 2010), the change to more negative attitudes towards antisocial behaviors mediated by the decrease in the tendency to make self-serving CDs after intervention might indicate that students re-labeled antisocial behaviors by correcting their “thinking error” or CDs which, in turn, can be an important step in the process of changing actual behavior. In other words, it seems that youth may need to develop CDs as pseudo-justifications and rationalizations to adapt their attitudes and behavior to the social norms of their criminal or deviant subculture (Banse et al., 2013).

However, the weakness of the moderated mediation effect we found as well as the lack of a direct effect of EfE program on the changes in the AtLBBs could be understood taking into account the specific cultural context from which youth participating to the program come from. Indeed, when living in a high-risk urban area known for the highly rooted presence of organized crime (e.g., Bacchini & Esposito, 2020; see official data from Public Security Department of Italian Ministry of

Interior, 2018) as well as for the massive exposure to neighborhood violence (Bacchini & Esposito, 2020), it is more likely that youth acquire subculture-specific norms and values about violence (Bacchini et al., 2015) which reinforce their normative beliefs and attitudes towards sanctioning of deviant behavior and so supply a rationale allowing those inclined to aggression to precipitate violent encounters in an approved way (Anderson, 1999, p. 33).

Overall, the findings of the current study seem to make sense in the light of the structuring of EfE program which is specifically focused on the cognitive restructuring, i.e., the reframing or correction of CDs which is expected result in behavioral changes (Maruna & Copes, 2005; Maruna & Mann, 2006) whereas no module is dedicated to work on culturally-based attitudes towards more serious antisocial acts as illegal conducts. Indeed, most of activities provided in the *Anger Management* or *Thinking Error Correction* component of EfE program were devoted to working intensively to equip students with skills, such as self-monitoring of emotions and thoughts and thinking ahead, to manage anger and to correct self-serving CDs, that can help them to refute the rationalizations or justifications that block or neutralize their empathy for actual or prospective victims (DiBiase et al., 2005), thus, enhancing the possibility to inhibit their antisocial behaviors towards the peers, such as bullying.

Another noteworthy issue which needs to be deepened is related to the moderating role of gender and environmental sensitivity when considering the mediation effects of EfE program on social-cognitive and behavioral outcomes. Informed by the concepts of *differential susceptibility* (Belsky & Pluess, 2009) and *vantage sensitivity* (Pluess, 2015; Pluess & Belsky, 2013), our results are consistent with those of previous studies showing the moderating role of individual differences about environmental sensitivity traits in predicting childrens' treatment response to established psychological intervention, from that conducted by Pluess and Boniwell (2015) related to a school-based depression prevention program to that of Nocentini et al. (2018) which was more specifically focused on addressing anti-bullying goal. In line with the study by Nocentini et al. (2018), we found that the moderating effects of environmental sensitivity varied depending on gender with more pronounced effects in males than in females. Given findings of previous studies about gender-based differences in bullying behaviors (e.g., Salmivalli et al., 1996) as well as in CDs (e.g., Lardén et al., 2006; Owens et al., 2014), a reasonable justification for the moderating role of gender may be that sensitive males could (a) benefit directly from a treatment-induced reduction in CDs and (b) be generally more perceptive of positive changes in the school and classroom context.

Furthermore, as argued by the authors cited above (Nocentini et al., 2018; Pluess & Boniwell, 2015), behind the “advantage” of environmental sensitivity in enhancing the treatment response may be that highly sensitive youth could be more likely to register program-induced improvements, as the reduction of self-serving CDs, more easily and more deeply (Aron & Aron, 1997), thus leading to better internalization of the acquired cognitive thinking patterns than other less sensitive youth (e.g., Pluess & Boniwell, 2015). Indeed, it is assumed that individuals scoring high on environmental sensitivity may be characterized by a more sensitive central nervous system which enables them to process environmental stimuli more deeply (Aron & Aron, 1997; Aron, Aron, & Jagiellowicz, 2012). This claim is supported by both neuroimaging and genetic studies which provide empirical evidence for a significant association between sensitivity trait and a greater activity in brain regions involved in visual processing (Jagiellowicz et al., 2011) as well as genetic contribution of dopaminergic and serotonergic systems (Chen et al., 2011). Hence, the greater treatment response of highly sensitive individuals may be due to their specific neural and genetic characteristics that contribute to brain activities related to deeper processing of environmental influences, greater ability to direct attention heightened, and reward sensitivity (Pluess & Belsky, 2013). However, further research is needed to elucidate the exact mechanisms underlying the heightened environmental sensitivity associated with a pronounced sensory-processing sensitivity.

Summarizing, the present study provides empirical evidence that by equipping youth to think more responsibly, through the correction of “thinking errors” or self-serving CDs when interpreting social events, the EfE program may leads positive changes, both in the adolescents’ attitudes and behaviors - specifically, a more responsible way of thinking about social and legal rules violations and (inter)acting with peers with significant effects for males highly sensitive to environmental influences. Therefore, these findings suggest that the social-cognitive approach (e.g., Bandura, 1977, 1986) together with the *Vantage Sensitivity* are useful frameworks with significant relevance for our understanding of the mediating mechanisms underlying the program efficacy as well as of the widely observed heterogeneity in treatment response, thus informing about “why” and “for whom” the intervention could work better to counteract law-breaking supporting attitudes as well as school bullying perpetration.

Limitations and Future Directions

Prior reaching conclusions, some limitations of the current study must be acknowledged. Overall, most of the study weaknesses pertain to the research design and the measures we relied on. More specifically, as first methodological limitation we lacked an important standard of evidence-based evaluation (Gottfredson et al., 2015) because we were unable to conduct a randomized control trial (RCT) rather a quasi-experimental research design. In other words, although we tried to pair the control and experimental samples based on the schools’ characteristics (i.e., matched control design), the assignment to one or another condition was not randomized (see the procedure section for more details) since the intervention was implemented on class level and all students in the class participated. Likewise related to this issue, another potential selection bias can be due to the self-selection inclusion process of schools in which the control and experimental classes were picked by the school staff increasing the possibility that at-higher risk students were involved in the intervention. However, although in defining the standard of evidence-based intervention has been declared that a “well-implemented” random assignment is the strongest possible design for generating statistically unbiased estimates of intervention effects (Gottfredson et al., 2015), it was also recognized that “for some kinds of policy or community-wide interventions, where randomization is impossible, other approaches may be acceptable, but only when used with caution and methodological expertise, and when careful attention is given to ruling out plausible alternative explanations” (Flay et al., 2005, p. 157). Specifically, the matched control designs – as in the case of our study - “are credible only when there is a pre-test demonstration of group equivalence [...]” (Flay et al., 2005, p. 159). For all these reasons, both in preliminary analyses and in all the subsequent analyses, we tested for the baseline differences between the two groups and controlled the possible effects of sampling (i.e., the effects of the program were controlled for the baseline values of the target variables). Although the methods we used can be considered at least acceptable, it would be desirable to replicate our findings using RCTs.

Another potential caveat related to the program implementation that may have influenced the program-related outcomes evaluation and that we have not thoroughly investigated concerns the program integrity. Indeed, evaluate the extent to which the EfE program was implemented as originally intended (i.e., program integrity) might have enabled us to understand if the lack of significant directly intervention effects on attitudinal and behavioral outcomes could be explained as a lack of effectiveness of the intervention itself, or as a failure to implement the intervention as originally intended (Helmond et al., 2012). It should be noted that, in our study, although the deep structure of EfE program remained unchanged with only minimal changes we have made respect to the original version of the program (see the procedure section for more details), the lower intensity or frequency and the shorter duration of the program may have influenced the outcomes achieved, as found in previous studies (e.g., Liau et al., 2004). However, in trying to ensure that staff members had followed the necessary procedures in facilitating each EfE equipment meetings, some self-monitoring and observational procedures were held. Future studies on the effectiveness of EfE could benefit more from the inclusion of more objective measures of program integrity.

Despite the recommendations reported in the standard for evidence-based intervention, we were unable to carry out “at least one long-term follow-up at an appropriate interval beyond the end of the intervention […]” (Gottfredson et al., 2015, p. 897). Future longitudinal studies are needed to shed light on whether the EfE program might be effective to promote long-term cognitive and behavioral changes.

Furthermore, all the measures were self-evaluated and they could be subject to social desirability bias. Indeed, although adolescents have direct knowledge of their own experiences and behaviors, it is widely known (e.g., Wang, Ryoo, Swearer, Turner, & Goldberg, 2017) that they are more careful about their social image than other age groups and may be unlikely to report attitudes or behaviors that display them in a negative light. Thus, regarding the tendency to make self-serving CDs as well as to evaluate the wrongness of law-breaking behaviors and to perpetrate bullying behaviors, in future research, observational or multiple-source data (e.g., peers' and teachers' reports), could be used to provide more objective information collected by people different from those who are involved in the intervention, as recommended by Gottfredson and colleagues (2015). Similarly, referring to the measurement-level, another limitation concerns the lack of information about further relevant program-related variables; indeed, since this is the first attempt for implementing the EfE program in the Italian school context, in our study we only focused on the effects of the program on self-serving CDs, AtLBBs, and bullying perpetration. Future research should also include other relevant components of the program, such as the social skills and the moral judgment as well as also more qualitative data from students which could shed more light on their perceptions of the group dynamics before, during, and after the program and of changes of their own and their classmates' cognitions and behaviors.

A final methodological limitation is related to the generalizability of our results, as the study included a sample from a limited geographical area in Southern Italy. Since this is the first study carried out in Italy, and being aware that multiple factors, including culture-specific beliefs and values, influence an individual's cognitions and behaviors (Bacchini et al., 2015), additional studies involving adolescents populations from other, possibly differing, cultural contexts are needed to generalize the effectiveness of EfE program.

Conclusions and Policy Implications

Notwithstanding the limitations discussed above, the present study integrates previous knowledge and provides some relevant suggestions to researchers and practitioners for implementing useful interventions aimed at reducing adolescents' involvement in bullying behaviors.

Overall, our findings, in trying to meet the recommendations of the Standards of Evidence of the Society of Prevention Science (Gottfredson et al., 2015) and guided by a clear theory of causal mechanisms related to our social-cognitive and behavioral outcomes, represented by the social-cognitive theoretical approach (e.g., Bandura, 1977, 1986), highlighted the potential mechanisms involved in explaining "why" and "for whom" the program could work better to promote the expected changes. Specifically, the results we obtained allow us to conclude that the EfE program was efficacious in counteracting both law-breaking supporting attitudes and bullying perpetration through the reduced use of self-serving moral cognitions which are more likely to decrease among males higher in sensitivity to environmental influences. In sum, it can be concluded that, as originally intended (DiBiase et al., 2011), the EfE has the potential to change cognitions and problem behaviors by equipping students to think and act more responsibly. As the correction of "thinking errors" or self-serving CDs have been found to play a crucial role in counteracting the law-breaking supporting attitudes as well as the bullying perpetration among students participating to the program, our study points to the benefit of school-based approaches that target the strengthening of youth' moral cognition and that makes cognitive restructuring techniques (i.e., the reframing or correction of CDs; Maruna & Copes, 2005; Maruna & Mann, 2006) one of its main strengths. Indeed, although the self-serving CDs are assimilated into one component (i.e., *Anger Management and Thinking Error Correction*) of EfE curriculum, the thinking-error language is the core element for the entire program and is the crucial precondition to provide a rich array of opportunities for the students to take the perspectives of others, and thereby motivate erstwhile behaviorally at-risk youth to help one another change.

Based on a positive peer culture, in which adolescents feel responsible for each other and help one another, it could be useful to implement the EfE program in other school contexts where it is expected to have a great public impact given that it promotes, in the long-term, the development of a nonviolent and law-abiding culture, which represents the crucial condition for ensuring success in preventing and reducing bullying phenomena among youth in their daily school life.

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CHAPTER V

GENERAL CONCLUSIONS:

CONTRIBUTION TO THE LITERATURE, IMPLICATIONS FOR PRACTICE, AND DIRECTIONS FOR FUTURE RESEARCH

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Contribution to Understanding and Prevention of School Bullying Perpetration

The present dissertation contributes in many ways both to the research literature on bullying phenomena and on evidence-based prevention research and can be viewed as a bridge between basic research and the applied settings. Starting from the consideration that by identifying the causal risk factors and mechanisms that lead to violence and aggressive behaviors it might be possible to make prevention efforts more effective in counteracting detrimental aggressive behaviors as bullying (Eisner & Malti, 2012), the main aims of the present dissertation were to provide a comprehensive explanatory model of bullying perpetration in adolescence also implementing and evaluating an anti-bullying prevention intervention which is rooted on the same theoretical framework. More in details, guided by the social-ecological model of the development of conduct problems in adolescence (Bronfenbrenner, 1979; Dodge & Pettit, 2003), the Study 1 (see 2nd chapter of the present dissertation) aimed at investigating the developmental and transactional pathways linking violence exposure within the more proximal-, i.e., the family, and distal-, i.e., the neighborhood/community, -*microsystems* and across multiple forms (i.e., through witnessing and direct victimization), individual pro-violence moral cognitions, with school bullying during adolescence. Furthermore, in an attempt to expand the knowledge on the mechanisms linking violence exposure and bullying behavior, a cognitive desensitization process that the literature has supposed to develop in response to chronically violent contexts (Dodge, Bates, & Pettit, 1990; Huesmann & Kirwil, 2007; Mrug, Loosier, & Windle, 2008; Ng-Mak et al., 2002) was tested by considering the moral cognitive distortions as indicative of cognitive desensitization that would occur after repeated experiences of violence within the family and community. Among others, some noteworthy findings of the Study 1 suggested that experiencing violence in everyday life contexts increases the likelihood that adolescents would develop self-serving cognitive distortions which, in turn, would promote the future perpetration of bullying in the school context. Such findings highlighting that violence exposure across different contexts seems to eventuate in the same social-cognitive and behavioral outcomes are consistent with the concept of equifinality and also corroborate a basic postulate of social learning theory (Bandura, 1978) and its crime-related extension (Dodge & Pettit, 2003) according to which growing up in violent contexts undermines the normative process of moral development, thus, causing the moral delay that consolidates into self-serving cognitive distortions (Gibbs, 2004). Therefore, it seems confirmed that violence likely to breed violence since a “cognitive desensitization to violence” process occurs when chronically exposed to violent contexts in everyday life (Huesmann & Kirwil, 2007). Indeed, due to repeated observation of violent models when exposed to violence, youth are more likely to develop more approving deviant or immoral thinking patterns (Gannon, Ward, Beech, & Fisher, 2007) which could lead to the perpetration of future episodes of violence. In line with these considerations are the findings of our study which extending the predictive role of cognitive distortions as conceptualized by Gibbs and colleagues (1995), in also explaining peer-related aggression or bullying behavior, and not only serious delinquent acts such as antisocial or delinquent behavior (Barriga, Hawkins, & Camelia, 2008; Gini, Camodeca, Caravita, Onishi, & Yoshizawa, 2011). Therefore, consistent with social-cognitive approach (e.g., Bandura, 1977, 1986) that link behavior to the way one thinks about situations, our findings contribute to the understanding how the crystallization of self-serving cognitive distortions after repeated observation of violent models legitimatizes and reinforces the recourse to aggressive and violent behaviors over time, such as bullying.

Moreover, since a transactional developmental model is best equipped to describe the emergence of chronic antisocial behavior across time (Dodge & Pettit, 2003), the reciprocal influences among individual dispositions, behaviors, and daily life contexts were also taken into account. The bidirectional relations we found among violent contexts, moral cognitions and bullying behaviors provide further support for the lifestyle exposure theory (Hindelang, Gottfredson, & Garofalo, 1978) and for the transactional approach to the development of conduct problems in adolescence (Dodge & Pettit, 2003) according to which a vicious circle between adolescents' attitudes and behaviors and the risk to being victims and/or witnesses of violence in their daily life environments could take place, thus perpetuating in the long-term the negative spiral of violence.

Lastly, another key issue addressed in the Study 1 need to be raised: when dealing with domestic and community violence exposure, are witnessing and victimization two distinct experiences which differentially contribute to the development of maladaptive outcomes? In trying to answer such question and in detecting the differential effects of violence exposure across multiple contexts and multiple forms, the findings of our study revealed that while for domestic violence only experiencing direct victimization was associated to the aforementioned social-cognitive (i.e., self-serving cognitive distortions) and behavioral (i.e., bullying) outcomes, for community violence exposure a crucial role was assigned to the witnessing experiences of violence. Future studies perhaps considering other relevant variables (e.g., impairments in emotional self-regulation, internalizing problems, etc.; see Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009, for a review) are needed to shed light on this issue.

Closely related to the considerations discussed above according to which the cognitive desensitization process would result in more approving violence beliefs, in more positive moral evaluations of aggressive acts, and in more justification for inappropriate aggressive behavior inconsistent with social and an individual's moral norms (Huesmann & Kirwil, 2007), prevention and intervention efforts targeting delinquency and other antisocial acts could benefit by a deeper understanding and evaluation of the pro-violence thinking patterns characterizing antisocial youth. However, to date, well-standardized tools for a comprehensive evaluation of adolescent antisocial thinking taking into account the multiple facets through which social or legal rules violations could be expressed in high-risk violent contexts are still poor. In trying to bridge the measurement gap, the Study 2 of the present dissertation provided a culturally-appropriate assessment tool of "Attitudes towards Law-Breaking Behaviors" (AtLBBs) in adolescence able to capture the multiple dimensions from which antisocial acts may drawing on in the high-risk local context under consideration.

In this regard, the factorial structure of the AtLBBs scale was tested using Confirmatory Factor Analyses which revealed that four first-order factors model composed of distinct although inter-correlated dimensions was the best-fitting model; however also the second-order factor model was acceptable. Such findings together with the satisfactory psychometric properties of the developed scale, both in terms of internal consistency and test-retest reliability as well as criterion-related validity, provide empirical evidences that the AtLBBs scale could be a valid and reliable tool for evaluating the multi-dimensional rather than unidimensional nature of adolescent antisocial thinking as well as for detecting the underlying more general attitudes to evaluate the wrongness of law-breaking behaviors in adolescence.

More specifically, based on the conceptual intent of items, the four intercorrelated dimensions of adolescents antisocial thinking we found have been labelled as follow: (i) *Civic sense* (i.e., violations carried out against social or legal norms without any direct contact with other people); (ii) *Street code* (i.e., violations that imply harming other persons by legitimize the use of violence as an acceptable problem-solving tool to achieve and maintain respect, as conceptualized in the Anderson's (1999) "code of the street" theoretical framework); (iii) *Loyalty code* (i.e., violations of social or legal norms specifically legitimized in the name of loyalty and protection to friends, partners, and family); and (iv) *Organized crime,* which refers to how adolescents evaluate antisocial behaviors that are intrinsically related to the adherence to the values and norms proper of deviant subcultures, represented in our study by the organized crime, or that are committed under its control. This latter dimension represents the innovative contribution of our validation study since, to date, the tools aimed at evaluating culturally-based pro-violence beliefs and attitudes are still missing; the scale we developed allowed us to capture those pro-violence attitudes deeply rooted into the geographically-circumscribed high-risk area where our sample comes from and where organized crime assumes the control of territorial illegal activities (e.g., Bacchini & Esposito, 2020; see official data from Public Security Department of Italian Ministry of Interior, 2018) to become a sort of “State-surrogate” or “anti-State” (Armao, 2016). For the same reasons, in order to make cross-cultural comparisons, future research could adapt the scale we developed in other countries to verify its psychometric properties and to improve the generalizability of our results.

Finally, another specific statistical property of the AtLBBs scale refers to the measurement invariance which supported that the AtLBBs scale measures the same factors in the same way for both genders and over time. Such aspect of crucial importance for properly interpreting whether temporal change in the construct is due to true change or to change in the structure or measurement of the construct over time (Brown, 2015) further bolsters our confidence in the scale allowing for its widespread use by the future research in the field of intervention programs evaluation.

Consequently, we used the AtLBBs measure as social-cognitive outcome in the following study presented in the current dissertation (i.e., the Study 3, see chapter IV) which sought to address the growing need for rigorously evidence-based prevention programs as to clarify the potential mechanisms involved in explaining “why, for whom, and under what circumstances” some interventions work against antisocial behaviors among peers as bullying (Eisner & Malti, 2012; Gottfredson et al., 2015). For this purpose, we evaluated for the first time in the Italian school context the effects of “Equipping Youth to Help One Another (EQUIP) for Educators” (EfE; DiBiase, Gibbs, Potter, & Spring, 2005) program which was developed within Gibbs’ (2013) theoretical framework according to which antisocial behavior can stem from perception structured by schemas of self-serving cognitive distortion. Based on this main assumption, the EfE program has been implemented as universal prevention program to promote the development of less positive AtLBBs as well as to counteract bullying perpetration, trying to remedy to the key social-cognitive limitations (i.e., the self-serving cognitive distortions) displayed by antisocial youth, using a quasi-experimental pre-test/ post-test with control group design. Furthermore, following the growing demand to move from investigating “whether a specific program works or not” to uncovering “what works, through which mechanisms, for whom, and under what circumstances” (Smith, Salmivalli, & Cowie, 2012) we tried to clarify the mediation and moderation mechanisms involved in explaining “why” and “for whom” the EfE program may work effectively. Consistent with the social-cognitive approach (e.g., Bandura, 1977, 1986) according to which by altering individual biased thinking patterns, it would be possible to modify antisocial aspects of personality and consequent behaviors (Owens et al., 2011; Van der Velden et al., 2010) and informed by findings of previous studies (e.g., Nocentini et al., 2018) carried out into the *Vantage Sensitivity* theoretical framework (Pluess, 2015; Pluess & Belsky, 2013), we examined whether changes in the AtLBBs as well as in bullying outcomes after intervention would be mediated through the decrease in the tendency to make self-serving cognitive distortions and if the indirect intervention effects were moderated by both adolescent gender and individual differences in environmental sensitivity. The moderated mediational model we tested supported our hypotheses corroborating that youth who participated to the EfE program were more likely to develop less positive AtLBBs as well as to reduce their engagement in bullying perpetration by equipping them with skills for correcting their “thinking errors” or self-serving cognitive distortions with highly sensitive males benefitting significantly more from the effects of the intervention compared with females and those less sensitive to environmental influences.

These findings provide empirical evidence that the social-cognitive approach (e.g., Bandura, 1977, 1986) together with the *Vantage Sensitivity* are useful frameworks with significant relevance for our understanding of the mediating mechanisms underlying the program efficacy as well as of the widely observed heterogeneity in treatment response allowing us to suggest “why” and “for whom” the program could work better. Indeed, consistent with the “advantage” of environmental sensitivity, the more youth, especially the males, were able to perceive and process environmental stimuli because of heightened environmental sensitivity (Pluess, 2015), the more likely they have registered program-induced improvements, as the reduction of self-serving cognitive distortions, more easily and more deeply (Aron & Aron, 1997) which, in turn, induces positive social-cognitive and behavioral changes. Although several neuroimaging (e.g., Jagiellowicz et al., 2011) and genetic (e.g., Chen et al., 2011) studies provided empirical evidence for understanding the brain activity involved in deeper visual processing, greater ability to direct attention heightened, and reward sensitivity (Pluess & Belsky, 2013) linked to the heightened environmental sensitivity, further research could elucidate the exact mechanisms associated with a pronounced sensory-processing sensitivity.

In terms of practical implications, although the findings of the present dissertation contributed to partially bridging the gap in the field of anti-bullying preventive interventions qualifying the EfE as a promising intervention for equipping youth to think and act more responsibly, also clarifying the potential mediation and moderation mechanisms involved, it should be stressed the need for further research, possibly using a randomized control trial design, taking into account other relevant variables as the experiences of violence exposure in the daily life contexts given their strictly interconnection with both the tendency to make self-serving cognitive distortions and the bullying perpetration (as demonstrated in the Study 1 of the present dissertation). The inclusion of such contextual variables together with the implementation of "at least one long-term follow-up at an appropriate interval beyond the end of the intervention […]" (Gottfredson et al., 2015) could provide further insight into "why" and "for whom" the program could work better to promote the long-term expected social-cognitive and behavioral changes.

Therefore, only understanding the principles of "what, why and for whom" some interventions work could represent a step forward in designing more tailored interventions as a mean of advancing our research in the field of school bullying prevention.

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Appendix 1

Attitudes towards Law-Breaking Behaviors (AtLBBs) Scale
English version (EV), Italian version (IV) and item keys

EV: “*Please carefully read each statement and indicate how justifiable you think each behavior. You can rate each behavior as follows*”:
1 = Entirely justifiable, 2 = Quite justifiable, 3 = Neither justifiable nor unjustifiable, 4 = Only a little justifiable, 5 = Not at all justifiable

IV: “*Per favore leggi attentamente ciascuna affermazione e indica quanto ritieni giustificabile ciascun comportamento. Puoi valutare ciascun comportamento come di seguito*”:
1 = Del tutto giustificabile, 2 = Abbastanza giustificabile, 3 = Né giustificabile nè non giustificabile, 4 = Poco giustificabile, 5 = Per nulla giustificabile

Item keys	English version	Italian version
CS	1. Not making an invoice from a merchant.	1. Non emettere uno scontrino da parte di un negoziante
OC	2. Asking for organized crime protection to defend yourself from someone threatened you.	2. Chiedere la protezione della malavita organizzata per difenderti da qualcuno che ti ha minacciato.
SC	3. When someone disrespects you, it is important that you use physical force (violence) or aggression.	3. Usare la forza fisica (violenza) o l’aggressività contro qualcuno che ti ha mancato di rispetto.
LC	4. Not reporting a friend who committed a crime you witnessed.	4. Non denunciare un amico che ha commesso un reato di cui sei stato testimone.
CS	5. Gambling (e.g., betting, playing video poker, slot machines, virtual games, online gambling).	5. Giocare d’azzardo (ad es., scommesse clandestine, giocare ai video poker, slot machine, virtual game, giochi d’azzardo online).
OC	6. Turning to criminal organizations instead of the State to get a job.	6. Rivolgersi alle organizzazioni criminali invece che allo Stato per ottenere un lavoro.
SC	7. If someone uses violence against you, it is important that you use violence against him or her to get even.	7. Pareggiare i conti usando la violenza contro qualcuno che ha usato la violenza contro di te.
LC	8. Using physical force to punish those have courted or made appreciations towards your girlfriend/boyfriend.	8. Ricorrere alla forza fisica per punire chi ha corteggiato o fatto apprezzamenti sulla tua ragazza/sul tuo ragazzo.
CS	9. Breaking into private property without permission.	9. Introdursi senza permesso in una proprietà privata.
OC	10. Making use of organized crime to obtain security and protection.	10. Servirsi della malavita organizzata per ottenere sicurezza e protezione.

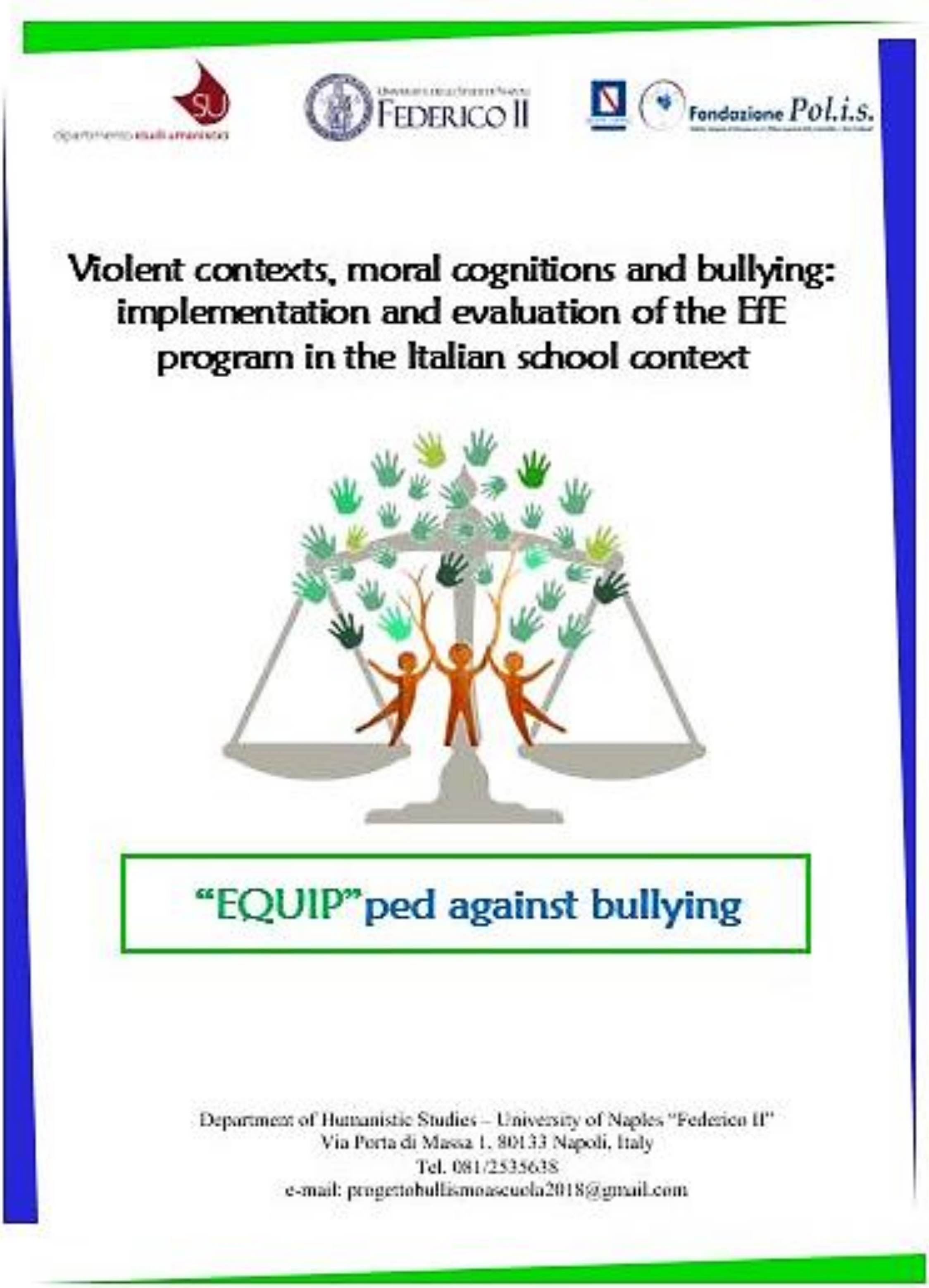
SC	11. Letting people know how tough you are to keep them from taking advantage of you.	11. Far sapere alle persone quanto si è forti per evitare che si approfittino di te.
LC	12. Always standing up in favor of own relatives even when guilty of serious crimes to protect the unity of family.	12. Schierarsi sempre a difesa dei propri parenti anche quando colpevoli di gravi reati per proteggere l’unità della propria famiglia.
OC	13. If there is a theft, turning to organized crime, instead of the law enforcement agencies, to try to get back what has been stolen.	13. Nel caso si subisca un furto, rivolgersi alla malavita locale, anziché alle forze dell’ordine, per cercare di riottenere quello che è stato rubato.
SC	14. Threatening people to get them to treat you fairly.	14. Minacciare le persone per convincerle a trattarti in modo equo.
SC	15. Humiliating and mistreating rivals by using physical force (violence).	15. Umiliare e maltrattare i rivali ricorrendo alle maniere forti (violenza).
SC	16. Using physical force (violence) to show others that you cannot be intimidated by them.	16. Mostrare con la forza agli altri che non puoi essere intimidito da loro.
CS	17. Damaging public property (e.g., telephone booths, benches, signs, etc.).	17. Danneggiare i beni pubblici (ad es., cabine telefoniche, panchine, cartelli, ecc.).
SC	18. When one is wronged, justice must be done alone.	18. Farsi giustizia da soli se si è subito un torto.
CS	19. Selling small amounts of hashish, marijuana, etc.	19. Vendere piccole quantità di hashish, marijuana, ecc.
SC	20. Engaging in a fight with supporters of a rival team.	20. Fare a botte con i tifosi di una squadra avversaria.
SC	21. Physically attacking someone weaker.	21. Ricorrere all’aggressione fisica verso qualcuno più debole.
CS	22. Riding with a drunk drive, riding a scooter without a helmet, exceeding speed limits, etc.	22. Guidare in stato di ubriachezza, andare in motorino senza casco, superare i limiti di velocità, ecc.
CS	23. Not paying public transport tickets.	23. Non pagare il biglietto sui mezzi pubblici.
CS	24. Selling alcohol to youth under 18.	24. Vendere alcol a minori di 18 anni.
LC	25. Physically assaulting someone who offend your family members.	25. Aggredire fisicamente chi offende i tuoi familiari.

Note. CS = Civic sense; SC = Street code; LC = Loyalty code; OC = Organized crime.

From the original version of the questionnaire three additional items were removed based on inter-item correlations: “*Smoking in public places*” and “*Downloading pirated material from Internet (e.g., movies, music, video games, etc)*” from the *Civic sense* and “*Not stopping to rescue a wounded person after unintentionally investing him/her*” from the *Street code* dimension.

Appendix 2

Agenda and psycho-educational materials of EfE meetings



Violent contexts, moral cognitions and bullying: implementation and evaluation of the EfE program in the Italian school context

"EQUIP"ped against bullying

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The 6-Week "EQUIP for Educators" Curriculum: Agenda and Main Features

Equipment meetings	**EfE modules**		
	Anger Management and Thinking Error Correction	**Social Skills**	**Social Decision Making**
1st week	**Evaluating anger/aggression** *Main contents:* Reevaluating, relabeling Anger management, not elimination	**Expressing a complaint constructively** *Main contents:* Think ahead what you'll say Say how you contributed to problem Make a constructive suggestion	**Martian's adviser's problem** *Key value:* Affiliation Planet A seen as self-centered Planet B labelled truly strong Guiding student toward Planet B
2nd week	**Anatomy of anger** *Main contents:* Self-talk (mind) as a source of anger Early warning signs (body) Anger-reducing self-talk	**Caring for someone who is sad or upset** *Main contents:* Notice and think ahead Listen, don't interrupt	**Gianni's and Ciro's problem situation** *Key values:* Relationships and respect Value of close friendships Breaking up in a considerate way Getting even is immature
3rd week	**Monitoring/correcting thinking errors** *Main contents:* Aldo's thinking errors exercise Daily logs	**Dealing constructively with negative peer pressure** *Main contents:* Think, "why?" Think ahead to consequences Suggest something else (less harmful)	**Mario's problem situation** *Key values:* Honesty and respect for property Can't trust friend with a stealing problem Stealing is wrong even if from a stranger
4th week	**Thinking ahead to consequences** *Main contents:* Thinking ahead (if-then thinking)	**Keeping out of fights** *Main contents:* Stop and think Think ahead to consequences Handle the situation another way	**Giorgio's and Roberto's problem situation** *Key values:* Quality of life, life Should tell on drug-dealing brother Others could get killed Important to send drug dealers to jail

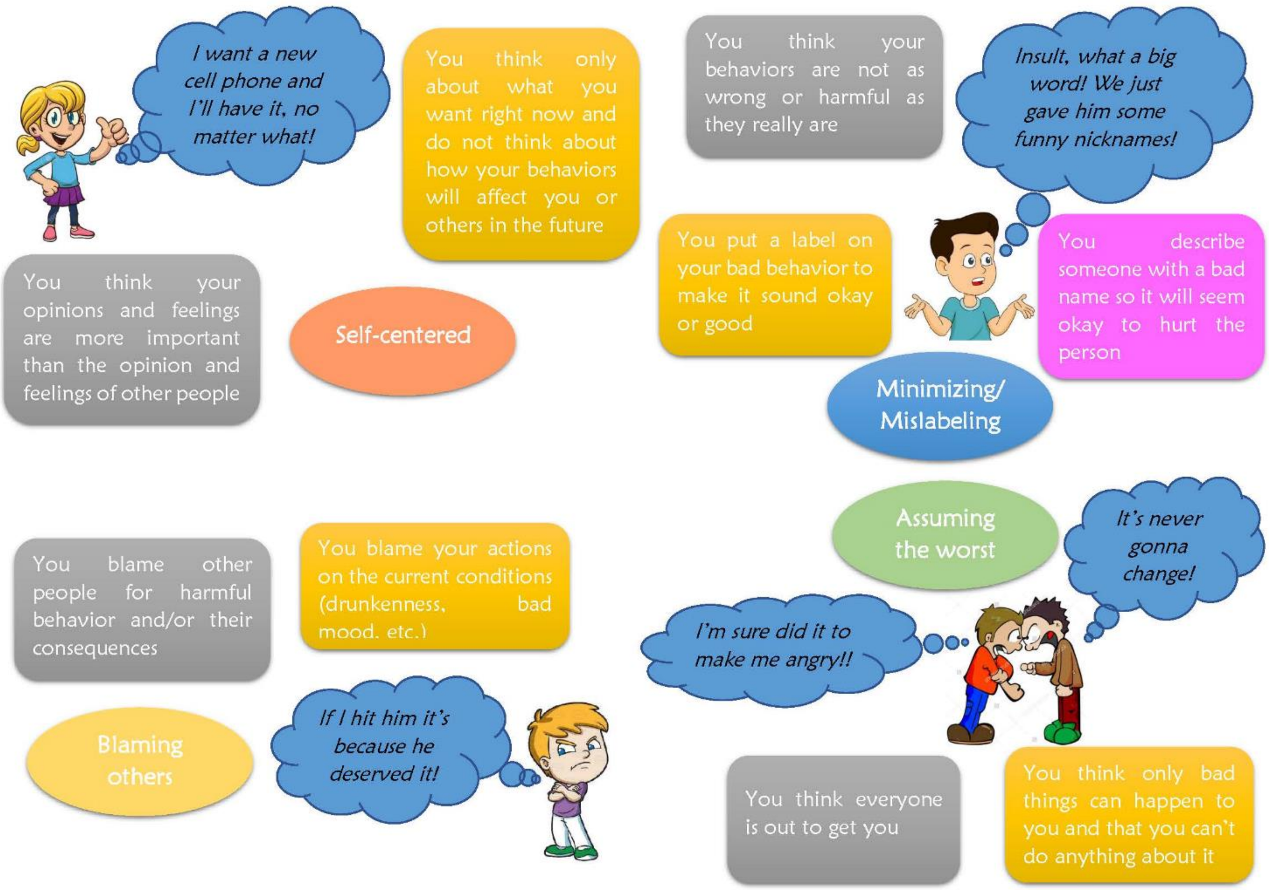
5th week	**Using "I" statements for achieving constructive consequences** *Main contents:* "You" statements (put-downs, threats) Use of "I" statements instead of "you" statements	**Preparing for a stressful conversation** *Main contents:* Imagine ahead your feelings, the other person's feelings Think ahead what to say Think ahead how the other person might reply	**Dario's problem situation** *Key value:* Quality of life Shouldn't deliver drugs for friend Others' life may be at stake Closing gap between judgment and behavior (relabeling, correcting thinking errors, exhorting)
6th week	**Grand review** *Main contents:* Learning how to say why you are angry without put-downs and what you want the other person to do	**Responding constructively to failure** *Main contents:* Ask yourself if you did fail Think what you could do differently Decide on a plan to try again	**Giovanni's problem situation** *Key value:* Life Should tell on friend's weapon Suicide is Self-Centered error Existential/spiritual concerns

Note. Respect to the original version of EfE program, the time schedule changed, and program duration became six weeks instead of ten consecutive week period, with each equipment meeting designed to fit into three hours instead of 45-50 minutes with the three modules sequentially embedded. Furthermore, some problem situations have been adapted to meet the specific Italian cultural context. Source: Adapted from DiBiase et al. (2011).

Ground rules for EQUIP discussions
1. Attend to the speaker. [How would you feel if someone was playing with something or writing while you were sharing your thoughts, feelings, and behaviors?]
2. Each student must be involved and participate. [Why is it important for the group that everyone be involved?]
3. Only one student talks at a time. [If by mistake you interrupt someone, what should you say to him or her?]
4. Listen to the other person who is talking. [Is waiting your turn to talk the same as listening?]
5. If you disagree with someone, do so respectfully. [Why is this important?]
6. If you criticize a fellow student, give him or her a chance to respond. [How do you feel when you are criticized? Why is it important to give the person a chance to respond?]
7. Never put down or threaten anyone. [How are put-downs and threats negative? What would be positive things to say instead?]
8. Stay focused on the subject. [Why is it important for participants to stay on the subject?]
9. Remember who said what. [Why is it important for participants to remember?]
10. Everything personal that is shared in the room, stays in the room. [What does “confidentiality” mean? Why is it important for every participant to respect confidentiality?]

Note. The ground rules listed above govern activity-related discussions during the EfE equipment meetings. In brackets are reported the key questions to prompt constructive discussion of the rationale for each rule. Source: DiBiase et al. (2011).

Thinking errors (or self-serving cognitive distortions) definitions


I want a new cell phone and I'll have it, no matter what!
You think only about what you want right now and do not think about how your behaviors will affect you or others in the future
You think your opinions and feelings are more important than the opinion and feelings of other people
Self-centered
You think your behaviors are not as wrong or harmful as they really are
Insult, what a big word! We just gave him some funny nicknames!
You put a label on your bad behavior to make it sound okay or good
You describe someone with a bad name so it will seem okay to hurt the person
Minimizing/ Mislabeling
You blame other people for harmful behavior and/or their consequences
You blame your actions on the current conditions (drunkenness, bad mood, etc.)
Blaming others
If I hit him it's because he deserved it!
Assuming the worst
It's never gonna change!
I'm sure did it to make me angry!!
You think everyone is out to get you
You think only bad things can happen to you and that you can't do anything about it

Note. Psycho-educational materials from the introduction session. Source: Adapted from DiBiase et al. (2011).