Doctorate in

PROSOCIALITY INNOVATION AND COLLECTIVE EFFICACY IN

EDUCATIONAL AND ORGANIZATIONAL CONTEXTS

(XXVI cycle)

Doctoral Dissertation

Do Good, Feel Good: The Relation between Prosociality and Self-esteem during Adolescence and Early Adulthood

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INTRODUCTION

In his masterpiece *A Christmas Carol* (1843), Charles Dickens told us the story of Ebenezer Scrooge, a greedy misanthrope man who spent most of his life accumulating money and treating people badly without showing any form of empathy or compassion for others. The novella finishes with Scrooge repented of his past behavior, prone to be generous towards the other human beings and, of great importance, as a new man full of joy eager to spend Christmas Day with his loved ones. Beyond the meaning of being charitable towards people, the Dickens book contains another important message: *Helping others helps people to feel better about themselves*. This is the thesis that will be sustained throughout the present work.

More than 30 years of psychological research has clearly indicated that the benefits of *behaving prosocially* (i.e., those voluntary behaviors aimed to benefit others, Eisenberg, Fabes, & Spinrad, 2006) are not limited to the recipient of the "good action", but they also extend to the actor. An impressive body of empirical findings has consistently documented that prosocial individuals are less prone to depression (e.g., Bandura, Pastorelli, Barbaranelli, & Caprara, 1999), are more satisfied with their life (e.g., Caprara & Steca, 2005), feel more happy (e.g., Dunn, Aknin, & Norton, 2008), and have a better physical health (e.g., Musick, Herzog, & House, 1999). Following this line of research, the present thesis addresses the possibility that the tendency to help and care for others may also influence the individuals' evaluation of *being person worthy of value* (i.e., self-esteem). In other words, our main research questions are: *Are prosocial individuals more likely to have a high self-esteem? And if so, why?*

For instance, Yates and Youniss, (1996) in a large review, found that volunteers tend to experience higher feelings of self-worth than non-volunteers. The authors argued that

volunteering represents an experience that requires responsibility and competence that can increase feeling of self-worth and confidence among volunteers (see Yates & Youniss, 1996). Thoits and Hewitt (2001) proposed that reciprocal effects related volunteering to self-esteem. The authors reported the results of a longitudinal study in which people who had greater personal well-being (including higher self-esteem) invested more time in volunteer activities and, conversely, the more hours people spent in volunteer work, the greater their later level of self-esteem.

Yet, beyond the possible circularity of the effects (that will be investigated in the present work), why should prosociality be related to self-esteem? Two hypotheses (that are not mutually exclusive) might be considered (see also Post, 2005). In the first one, according to the relevance of positive emotion for our well-being (Fredrickson, 2001), it is plausible that helping and taking care of someone represent an experience that nourishes positive feelings and, consequently, enhances our perception of being valuable. Although in part supported by empirical findings (mainly in a short term perspective, see Le, Impett, Kogan, Webster, & Cheng, 2012), our opinion is that this hypothesis does not fully capture the function of self-esteem for people's life. In this regard, the sociometer theory (Leary, Tambor, Terdal, & Downs, 1995) pointed out to self-esteem as a thermometer (evolved over the human evolutionary course) indicating the degree to which individuals feel valued and accepted by their social groups. Accordingly, since other-regarding behaviors enhance the probability of the establishment of rewarding interpersonal relationships (Caprara & Steca, 2005), we hypothesized that prosocial individuals are more likely to feel worthy of value because they are surrounded by a social environment in which they feel accepted and cared for.

In the next chapters, we tried to offer our contribution to the comprehension of the relation between prosociality and self-esteem in three different longitudinal studies. In the first study we investigated if prosociality and self-esteem are two related phenomena from adolescence to young adulthood. In detail, after having reviewed the previous works investigating the relation between prosociality and self-esteem, we adopted a long term perspective (from middle-adolescence to young adulthood) in which we tried to clarify: (a) to which extent the development of prosociality is correlated to development of self-esteem, and (b) the likely direction of the effects between the two constructs. In the second study we deepen this relation through the identification of one possible mediational mechanism responsible for the effect of prosociality on self-esteem. We relied on the arguments of the sociometer hypothesis (Leary et al., 1995) and we tested the role of quality of friendships (i.e., friendships characterized by reciprocity, supportiveness, solidarity, etc.) in mediating the effect of prosociality on self-esteem. In the third study, instead, we shifted our focus from theory to practice. In detail, we presented a new school-based intervention program (called CEPIDEA) aimed at promoting prosocial behaviors among early adolescents. First results of the CEPIDEA have already attested to the effectiveness of the program in promoting prosocial behaviors and academic achievement, as well as in counteracting aggressive conducts (Caprara et al., 2013). In line with the scope of the present dissertation, we further deepen the effects of the CEPIDEA by analyzing the impact of the program on participants' self-esteem. Moreover, we also investigated the effect of the intervention on hedonic balance (i.e., the overall equilibrium between positive and negative affect; Steel, Schimdt, & Shultz, 2008) and the possible role of this variable in mediating the effect of the intervention on self-esteem.

Finally, it is worthy to spend some words on the samples considered in this dissertation. The participants in the first two studies were part of an ongoing longitudinal project that started in Genzano (a residential community near Rome) in 1989 aimed to investigate the main determinants of successful development and maladjustment from childhood to early adulthood. This longitudinal study has been carried on by Prof. Gian Vittorio Caprara and Prof. Concetta Pastorelli and has covered an invaluable role in the prosocial literature by highlighting important predictors (e.g., Caprara, Alessandri, & Eisenberg, 2012) and consequences of behaving prosocially (e.g., Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). Importantly, this longitudinal study has also created the theoretical basis for the *prosocial intervention* described in the third study (Caprara et al., 2013). The participants in the last study, indeed, were part of the CEPIDEA project that was implemented in one middle school of Genzano in 2009. This project was funded by the Italian Ministry of Health as part of a National Strategic Research Program (grant RFPS-2007-5-641730) on adolescent mental health.

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STUDY 1

THE RELATION BETWEEN PROSOCIALITY AND SELF-ESTEEM: A LONGITUDINAL PERSPECTIVE

Abstract

The present longitudinal study examined the relation between prosociality and self-esteem over time. Participants were 386 middle adolescents (50.3% males) assessed over a 10-year period until they entered into young adulthood. The mean age of participants was 15.6 years at the beginning of the study and 25.7 years at the end. Analyses were based on five time-points. First, multivariate latent curve analysis indicated that the developmental increase of prosociality was positively related to the parallel increase of self-esteem. Then, an autoregressive cross-lagged revealed that, at each time point, prosociality had a small but statistically significant effect in predicting later self-esteem above and beyond its high stability (both for males and females). Self-esteem, instead, did not predict prosociality. These findings corroborated from a longitudinal perspective previous studies highlighting the benefits of behaving prosocially for the actor in terms of an increased perception of self-worth. The theoretical and practical implications of these results are discussed.

Keywords: prosociality; self-esteem; adolescence; young adulthood; multivariate latent curve; autoregressive cross-lagged model.

Self-esteem (i.e., the degree to which people judge themselves as worthy of value, Rosenberg 1965) has been widely recognized as one of the most relevant indicators of well-adjustment in adolescence and young adulthood (e.g., Erol & Orth, 2011; Orth, Robins, & Roberts, 2008). Possessing a robust self-esteem in these developmental periods has been related to better physical health (e.g., Trzesniewski et al., 2006), and relationship satisfaction (Orth, Robins, & Widaman, 2012; for a review see Harter, 2003), and with lower levels of depression (e.g., Orth et al., 2008), drug and alcohol consumption (Baumeister, Campbell, Kruegger, & Vohs, 2003; Leary & MacDonald, 2003), and aggressive behavior (e.g., Donnellan, Trzesniewski, Robins, Moffitt & Caspi, 2004). Therefore, due to its relevance, many psychologists have stressed the need to identify potential predictors of self-esteem development (Robins & Trzesniewski, 2005).

In this regard, whereas a large amount of research has been devoted to analyze the direction of the effects between self-esteem and aggressive behavior (e.g., Donnellan et al., 2004), the relation between the tendency to act in ways that benefit others (i.e., prosociality, Eisenberg, Fabes, & Spinrad, 2006) and self-esteem has received lesser attention (e.g., Eisenberg et al., 2006; Johnson, Beebe, Mortimer, & Snyder, 1998; Laible, Carlo, & Roesch, 2004; Leary & MacDonald, 2003). This is quite surprising since both prosociality and self-esteem are clearly recognized as fundamental ingredients for human positive development. Prosociality, indeed, has been posited among the more important factors fostering psychological well-being (Caprara, Alessandri, & Eisenberg, 2012; Penner, Dovidio, Piliavin, & Schroeder, 2005), in particular during adolescence and young adulthood (e.g., Caprara & Steca, 2005; Eisenberg et al., 2006; Eisenberg & Morris, 2004; see also Keltner, Kogan, Piff, & Saturn, 2013, for a review). For example, prosocial adolescents perform better at school (e.g., Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000), are less prone to depression (Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Eccles & Barber, 1999), and

have better peer relationships compared with less prosocial adolescents (e.g., Markiewicz, Doyle, & Brendgen, 2001).

Interestingly, as noted by Weinstein and Ryan (2010), the positive link between prosociality and self-esteem has been mainly highlighted by studies investigating the effect of volunteerism on youths' self-regard (e.g., Johnson et al., 1998; Rhodes, Grossman, & Resch, 2000; Yates & Youniss, 1996). Overall, the common result of these studies was that young volunteers reported a high level of self-esteem. As discussed by Brown, Hoye, and Nicholson (2012), it is likely that volunteers experience high self-regard because helping others enhances their perception of being competent and helpful as well as their sense of social connectedness. Midlarsky and Kahana (2007) also highlighted that being involved in volunteering can distract the helpers from focusing on other troubles and can increase their sense of having a meaningful life. Thoits and Hewitt (2001), instead, pointed out to the fact that the relation between volunteerism and self-esteem can be bi-directional. Indeed, since volunteering is an important manifestation of *human agency*, high personal resources (like a robust and positive sense of self-worth) are needed to "becoming involved and staying involved in volunteer activities" (p.118). Similar arguments about a possible reciprocal effect have been also hypothesized by Eisenberg et al. (2006). The authors speculated that people with high self-esteem are more likely to be involved in helping activities because their own needs are being met (Eisenberg et al., 2006).

Yet, since great attention has been mainly paid to investigating volunteerism (i.e., a specific prosocial behavior enacted in an organized context), the relation between self-esteem and the individuals' general tendency to behave prosocially during daily life deserves further investigation (Weinstein & Ryan, 2010). Indeed, it is important to note that, although all volunteers are likely prosocial individuals, not all prosocial individuals volunteer. Therefore, it seems necessary to replicate these positive findings by using measures of prosociality that

are not uniquely limited to volunteerism. In this regard, most of the available studies used cross-sectional research designs to ascertain empirically the conceptual links between prosociality and self-esteem (e.g., Laible et al., 2004; Simonson, Paternite, & Shore, 2001).

To our knowledge, the few works focused on prosociality and self-esteem from a longitudinal perspective mainly rested on a short time span (e.g., Le, Impett, Kogan, Webster, & Cheng, 2012; Weinstein & Ryan, 2010). For instance, Le et al. (2012) reported that communally oriented people (i.e., people assigning great value to the welfare of others) tended to experience a greater sense of self-worth over the course of four weeks through the activation of positive emotions related to caring for others. Weinstein and Ryan (2010) found that autonomous motivation to help (i.e., the tendency to enact those prosocial acts that are experienced as free and self-initiated) predicted increased self-esteem over 14 days through the satisfaction of participants' needs of competence, autonomy, and relatedness. Yet, the daily diary method used in both studies (well suited to investigate short-term effects) do not allow to generalize these results in a long run perspective. In this regard, the next section addresses the possibility of understanding the relationship between prosociality and self-esteem from a broader developmental perspective.

According to the above arguments, the present study tries to address some of these gaps in the prosocial literature. First, we tried to expand previous studies on volunteerism by using a general measure of prosociality. Second, we investigated the longitudinal relations between prosociality and self-esteem by adopting a long-term longitudinal perspective (i.e., ten years). In particular, we focused on the transition from middle adolescence to young adulthood in light of the positive outcomes associated with possessing a robust self-esteem (e.g., Harter, 2003; Orth et al., 2008; Trzesniewski et al., 2006) and a high level of prosociality during this developmental phase (see Eisenberg et al., 2006, and Keltner et al., 2013, for a review). Third, we tried to analyze the relation between prosociality and self-

esteem by employing two types of analyses which helped us to understand (1) to which extent the developmental trajectories of both variables are related to each other (i.e., latent curve modeling) and (2) the likely flow of influences between constructs (i.e., cross-lagged regression models).

Prosociality and Self-Esteem from Middle Adolescence to Young Adulthood

The development of prosociality has been widely investigated in the psychological literature in particular during childhood (e.g., Eisenberg & Fabes, 1998; Eisenberg et al., 2006). The studies investigating age-related changes in prosociality across adolescence and young adulthood, instead, are few and the results are mixed. Eisenberg and Fabes (1998), in their meta-analysis of prosocial development, found that older adolescents reported an increasing level of prosociality than children (in detail, for sharing and donating behaviors). This high level of prosocial responding during middle/late adolescence is likely to be due to the parallel increase of important socio-cognitive mechanisms like empathy, perspective taking, and moral reasoning (Eisenberg et al., 2006) and to the capacity to appropriately regulate one's own behavior and emotion (see Luengo Kanacri, Pastorelli, Eisenberg, Zuffianò, & Caprara, 2013). Luengo Kanacri et al. (2013), in one of the few studies about the prosocial development from adolescence to young adulthood, found a quadratic trend from 13 years of age to 21 years (both for males and females). In detail, prosociality tended to decrease from 13 years to 16-17 years, and then to increase from middle/late adolescence to young adulthood (21 years). Eisenberg, Cumberland, Guthrie, Murphy, and Shepard (2005), instead, found a general decline for helping behavior from middle adolescence (i.e., 15 years) to the early 20s, followed by an increase until 25 years old. However, as noted by Luengo et al. (2013), the specific sample used in Eisenberg et al. (2005)'s study (i.e., upper middle-class of European Americans), and the specific prosocial behavior assessed (i.e., helping) can limit the generalizability of these findings. In summary, according to the above findings, it is likely

to expect an increase trend of prosociality from middle/late adolescence to young adulthood both for males and females. In addition, since sex-typed socialization processes have been found to reinforce more consistently prosocial action in females than in males (Eisenberg et al., 2006), females should consistently report higher level of prosociality over time.

Referring to self-esteem, studies investigating age changes related in adolescents' self-worth reported mixed findings. Robins and Trzesniewski (2005) indicated a decline of self-esteem during adolescence. The authors hypothesized that this decline was principally due to the pubertal problems (in particular for females who tended to report lower levels of self-esteem than males) and to the increasing academic challenges associated with the transition from middle school to high school. Erol and Orth (2011), instead, identified a small increase from adolescence (14 years) to young adulthood (30 years), with high emotionally stable, conscientious, and extraverted people as those who reported high level of self-esteem over time. Interestingly, a similar increasing trend from adolescence to adulthood has been also reported by Orth et al. (2012) in a large sample of Caucasian individuals. The authors found a cubic trend, with self-esteem increasing from adolescence to adulthood and peaking at age 51. Although one must be cautious in extending these conclusions to other socio-cultural contexts (because many of these previous studies have been conducted using uniquely North-Americans samples) it seems that self-esteem development may follow a non linear increase during this transition.

Accordingly, we expected that both prosociality and self-esteem should increase from middle adolescence to young adulthood. Yet, our main research question is if the (expected) increase in prosociality can be related to the (expected) increase in self-esteem. Although, to the best of our knowledge, no previous studies have investigated the joint development of prosociality and self-esteem, we presumed that the two developments are positively correlated. In order to better address this question, can be useful to consider the role of social

support from significant others for self-esteem development (Harter, 1999, 2003). In several empirical studies (see Harter, 1999 for a review), Harter found that parental and peer support were among the most important determinant of self-worth during adolescence. Indeed, adolescents with parents (or caregivers) who do not provide them with approval and care are not able to build positive images of themselves as persons worthy of value because they do not feel accepted within the family context. Similarly, lack of peer acceptance during adolescence can be related to the individual's perception of inadequacies in important domains like school competence, physical appearance and peer likeability, thereby contributing to develop a low and instable self-esteem. Therefore a history of social exclusion can provoke the individual to internalize very negative self-evaluations that lead to develop a low trait self-esteem (Harter, 1999).

Of importance for our thesis, it must be noted that prosociality has been usually considered as a relevant factor able to elicit social support and acceptance within social groups (please see Study 2 of this thesis for a deeper discussion of this point). For example, by adopting a perspective of children as active agents within the family, it is likely that children's prosociality is not only a consequence of parental warmth and acceptance (see Eisenberg et al., 2006), but it can also influence and sustain positive parent-child relationships (see Knafo & Plomin, 2006). Similarly, prosocial adolescents, through their high interpersonal skills, also have better interpersonal relationships and are more popular among peers (e.g., Caprara et al., 2000, Eisenberg et al., 2006). Accordingly, since behaving prosocially promotes and sustains the formation of supportive social environments in which individuals feel valued and accepted, one may hypothesize that the development of prosociality and self-esteem could be positively correlated. In detail, we presumed that steeper increases in prosociality over time might be associated with higher level of self-esteem. As described earlier, in order to test this hypothesis, we used a Latent Curve Model

(LCM) framework that allowed us to analyze simultaneously the intraindividual mean-level change over time of prosociality and self-esteem and to identify if the developmental trajectories of the two constructs were positively related to each other.

Although, in terms of the direction of effects, our principal hypothesis is that prosociality positively affects self-esteem, we did not exclude a priori a reciprocal relation between the two constructs by also considering the reverse path in our analysis (see Eisenberg et al., 2006, Leary &MacDonald, 2003; Thoits & Hewitt, 2001). In this regard, in order to test the temporal sequence of the effects between the two constructs (but not the causal direction; see Cole & Maxwell, 2003), we employed an Autoregressive Cross-lagged (ARC) model which allowed to control for the rank-order stability of the variables over time. Finally, since previous studies reported sex differences in the development of self-esteem (higher self-esteem for males than for females; Robins & Trzeniewski, 2005) and prosociality (higher level for females than males; Luengo Kanacri, et al., 2013) during this transitional phase, we controlled for the possible moderation effect of sex in the following analyses.

Method

Participants and Design

The current study includes 386 participants (50.3% males) from Genzano, a community near Rome, who were from families involved in an ongoing longitudinal study in that community that started in 1989. The families of Genzano matched the national socio-economic profile of Italian society across the years in which the study was performed (Istituto Italiano di Statistica, 2002). Approximately 14% of the families were in professional or managerial ranks, 25% were merchants or operators of other businesses, 31% were skilled workers, 29% were unskilled workers, and 1% were retired. At the beginning of the study, families' composition matched national data with regard to type of family and number of children. Most participants were from intact families (90.1%) and only 5.9% were from

single-parent homes (i.e., separated or divorced). We used five time-points (over a 10-year period) to model the relations between prosociality and self-esteem: Time 1 (T1) was in 1998, Time 2 (T2) was in 2000, Time 3 (T3) was in 2002,Ttime 4 (T4) was in 2004, and Time 5 (T5) was in 2008. Participants' mean age was 15.6 (*SD* = 0.58) at T1 and 25.7 (2008) at T5 (*SD* = 0.57).

Attrition and Missing Data Analyses

Participation rate was high from T1 to T2 (79%), and from T1 to T3 (77%), whereas it decreased from T1 to T4 (55%), and from T1 to T5 (38%). The attrition was mainly due to the unavailability of individuals to take part in the later phases of the study or, in some cases, their relocation from the area of Genzano. Analyses of variance reported that the missing participants at T5 did not significantly differ from their counterparts on self-esteem and prosociality level in the previous assessment, nor did the groups differ in the covariance matrices as indicated by the *Box-M* test for homogeneity of covariance matrices. Significantly, our data met the strict assumption of missing completely at random (MCAR) as the Little's test (1988) was not statistically significant $\chi^2(78) = 93.99$, p=.11, namely, the missingness on one variable is unrelated to the other measured or unmeasured variables (Enders, 2010). The assumption of MCAR allowed unbiased full information maximum-likelihood (FIML) estimates of missing data in the following structural equation models (Enders, 2010).

Procedures

Self-esteem and prosociality measures were collected in classroom from T1 to T3. At each of these time points, two researchers administered the scales in the classroom, offering explanations about questionnaires and highlighting its confidentiality. In this phase, parental informed consent and approval from school councils were obtained for the students involved in the longitudinal project. At T4 and at T5, participants received the questionnaire after

being contacted by phone. They also received a small payment. Questionnaires and informed consent forms were returned by participants to researchers during specifically scheduled meetings in one school in Genzano.

Measures

Prosociality. Participants rated their prosociality on a 16-item scale (1 = *never/almost never true* to 5 = *almost always/always true*) that assesses the degree of engagement in actions aimed at sharing, helping, taking care of others' needs, and empathizing with their feelings (e.g., "I try to help others" and "I try to console people who are sad"; Caprara, Steca, Zelli, & Capanna, 2005). Researchers have also found a moderately high correlation (r =.44) between self- and other-ratings on this prosociality scale, further supporting its validity (Caprara et al., 2012). Alpha coefficients were .93 (T1), .92 (T2), .93 (T3), .94 (T4), and .94 (T5).

Self-esteem. To assess self-esteem, we used the 10-item Rosenberg (1965) self-esteem scale, which is considered by several scholars (see Baumeister et al., 2003) the most popular and highly reliable measure of global self-esteem. This scale measures the extent to which participants feel they possess good qualities and have achieved personal success (e.g., "I feel that I have a number of good qualities"). Each item is scored on a 4-point scale (from 1= *strongly disagree* to 4= *strongly agree*). Alpha coefficients were .85 (T1), .87 (T2), .87 (T3), .86 (T4), and .83 (T5).

Results

Correlation Analysis and Descriptive Statistics

Overall, prosociality and self-esteem showed positive cross-sectional and longitudinal correlations. Furthermore, constructs proved to have a high/moderate stability across time. (Table 1.1.). The observed means of self-esteem seemed indicating an increase for females

whereas a mean-level stability for males. Prosociality, instead, reported an increase over time both for males and females.

Developmental Trajectories of Prosociality and Self-Esteem

We identified the developmental trajectories of prosociality and self-esteem by adopting a LCM framework (Bollen & Curran, 2006). LCM captures the development of a construct by identifying several *growth latent factors* using the means of the observed variables at each time-point. In our case, due to the presence of five time-points, complex pattern of change over time could be tested. We tested, both for prosociality and self-esteem, an intercept only (i.e., *strict stability*), *linear*, *quadratic*, and cubic *models*. In the strict stability model we only estimated a latent factor (i.e., the intercept) with the parameters fixed at 1 in order to represent a mean-level stability (or no change) of the variables over time. In the linear change model we added another latent growth factor (i.e., the linear slope) with the parameters fixed to represent a constant mean-level rate of change over time (0, 1, 2, 3, and 5). We fixed the last factor loading at 5 because the lag between T4 and T5 was twice longer than the others. In this model, since the slope has been centered at the first time point (i.e., the factor loading at T1 was fixed at 0), the latent intercept represented the initial status (i.e., T1) of the variable considered in the analysis. In the quadratic model, the inclusion of the quadratic slope is aimed to capture any possible acceleration in the linear change (Bollen & Curran, 2006). In this model, in order to avoid excessive multicollinearity among the latent factors (see Bollen & Curran, 2006), the quadratic model has been centered at the middle (i.e., T3) by fixing the parameters to represent a quadratic trend (i.e., 4, 1, 0, 1, and 9). In the cubic model, instead, the inclusion of a further growth factor allowed us to capture any acceleration (cubic) in the acceleration (quadratic) of the linear change.

Table 1.1. Descriptive Statistics and Correlations

Variables	Males	Females	1	2	3	4	5	6	7	8	9	10
1. EST T1	3.43 (0.45)	3.14 (0.50)	—	.57**	.52**	.58**	.41**	.21**	.09	.16†	.04	.07
2. EST T2	3.37 (0.45)	3.14 (0.54)	.35**	—	.72**	.63**	.44**	.02	.06	.08	.01	-.01
3. EST T3	3.32 (0.50)	3.19 (0.50)	.32**	.59**	—	.62**	.49**	.03	.12	.18*	-.01	-.04
4. EST T4	3.33 (0.48)	3.28 (0.49)	.26*	.39**	.53**	—	.55**	.11	.10	.09	.05	.10
5. EST T5	3.35 (0.51)	3.29 (0.46)	.32*	.36**	.42**	.66**	—	.06	.13	.17	.15	.19†
6. PRO T1	3.35 (0.66)	3.76 (0.60)	.21**	.27**	.23**	.27**	.04	—	.56**	.42**	.41**	.44**
7. PRO T2	3.46 (0.60)	3.82 (0.55)	.11	.30**	.27**	.28**	.14	.62**	—	.48**	.40**	.56**
8. PRO T3	3.38 (0.60)	3.82 (0.58)	.08	.17*	.19*	.24*	.19	.47**	.52**	—	.59**	.58**
9. PRO T4	3.55 (0.64)	3.85 (0.60)	.29**	.32**	.22**	.38**	.26*	.43**	.60**	.46**	—	.75**
10. PRO T5	3.58 (0.64)	3.94 (0.63)	.03	.16	.24†	.16	.28*	.24†	.39**	.39**	.56**	—

Note. Means and standard deviations (in parentheses). Correlations are reported separately for sex (correlations for males are below the main diagonal). EST = Self-esteem, PRO = Prosociality. †p <.10, *p <.05, **p <.01

As for the quadratic model, the cubic growth factor has been centered at the middle by fixing the parameters to represent a cubic change (i.e., -8, -1, 0, 1, 27). Therefore, both in the quadratic and cubic models the latent intercept represented the average level of the construct at T3. Importantly, all these models were tested simultaneously both for males and females using a multiple-group approach (Bollen & Curran, 2006). We first modeled separately the development of prosociality and self-esteem (i.e., *univariate LCM*) and then, once identified the best fitting models for each construct, we analyzed their development simultaneously (i.e., *multivariate LCM*) in order to evaluate to which extent the trends of the two variables are related to each other.

In order to establish the best fitting LCM for prosociality and self-esteem, the chi-square difference test for nested models has been used ($\Delta\chi^2$). The $\Delta\chi^2$ has been also used to detect gender differences in the parameter estimates by comparing the *constrained model* (with the parameters constrained to equality across sex) with the *unconstrained model* (with the parameters freely estimated across sex). A non-statistically significant $\Delta\chi^2$ indicated that the two models were statistically equivalent (Kline, 2010). All the models were analyzed in M*plus* 7 (Muthén & Muthén, 2012). FIML was used as a method for estimating missing data (Enders, 2010). This method offers unbiased estimates under the assumption of MCAR. Due to the sensitiveness of χ^2 statistic to sample size that easily produces a statistically significant result, we also considered comparative-fit-index (CFI) and Tucker-Lewis-index (TLI) >.90, and root-mean-square of approximation (RMSEA) value <.08 with 90% confidence interval (CI) as indicators of acceptable model's fit (Kline, 2010).

Univariate LCMs. As reported in Table 1.2., prosociality and self-esteem reported a different trend from middle adolescence to young adulthood. In particular, prosocial development followed a linear increase trend, whereas the quadratic model resulted the best

fitting LCM for self-esteem. [1] Then, both for prosociality and self-esteem, we constrained one at a time the parameters to be equal across sex in order to identify which parameters differed between males and females. In detail, we found that: (a) the *constrained model* of prosociality $\chi^2(24) = 28.21$, $p = .25$, CFI = .99, TLI = .99, RMSEA = .03 (90% CI .00, .07) in which all the unstandardized parameters were equated across gender (except the intercept mean) was not statistically different from the *unconstrained model* (i.e., $\Delta\chi^2(4) = 4.20$, $p = .38$); (b) the *constrained model* of self-esteem $\chi^2(21) = 33.01$, $p = .05$, CFI = .97, TLI = .97, RMSEA = .05 (90% CI .01, .08) in which all the unstandardized parameters were equated across gender (except the intercept mean and the covariance between the intercept and the linear slope) was not statistically different from the *unconstrained model* (i.e., $\Delta\chi^2(6) = 9$, $p = .17$). We plotted the developmental trajectories of prosociality and self-esteem in Figure 1.1., and in Figure 1.2.

According to the results reported in Table 1.3., the mean of the latent linear slope of prosociality (see column Ls μ) was positive and statistically significant, indicating a linear increase over time of this variable. Interestingly, also the variance of the slope was significant (see column Ls σ^2), attesting to a certain degree of interindivdual variability in the linear change. Considering self-esteem, the (positive) mean and the variance of the linear slope were both significant, revealing an increase over time characterized by variability among individuals. Importantly, only the variance (see column Qs σ^2), but not the mean of the quadratic factor (see column Qs μ), was statistically significant.

[1] In the quadratic and cubic models, a small negative residual variance at T5 was detected both for prosociality and self-esteem. Since it was non-statistically significant, it has been fixed to a small value (i.e., .001) in order to allow model identification (see Bollen & Curran, 2006). In addition, in the cubic model we only estimated the mean of the cubic growth factor (but not its variability and its covariance with the other growth factors) in order to allow the latent variables covariance matrix (Ψ) to be positive definite (Bollen & Curran, 2006; Kline, 2010).

Table 1.2. Fit Indices

		χ^2	*Df*	*CFI*	*TLI*	*RMSEA* (90% CI)	*MC*	$\Delta\chi^2$	Δdf
	1. Strict Stability	80.51**	26	.87	.90	.10 (.08 ─ .13)	---	---	---
	2. Linear	**24.01**	**20**	**.99**	**.99**	**.03 (.00 ─ .07)**	**1. Vs 2.**	**56.50****	**6**
Prosociality	3. Quadratic	18.02	13	.99	.98	.05 (.00 ─ .09)	2. Vs 3.	5.99	7
	4. Cubic	15.95	11	.99	.98	.05 (.00 ─ .10)	2. Vs 4.	8.06	9
	5. Strict Stability	76.62**	26	.88	.91	.10 (.08 ─ .13)			
	6. Linear	46.08**	20	.94	.94	.08 (.05 ─ .11)	5. Vs 6.	30.54**	6
Self-esteem	**7. Quadratic**	**24.01**†	**15**	**.98**	**.98**	**.06 (.00 ─ .10)**	**6. Vs 7.**	**21.72****	**5**
	8. Cubic	20.79	13	.98	.98	.06 (.00 ─ .10)	7. Vs 8.	3.57	2

Note. Best fitting models are in bold. MC = Model Comparison; df = Degrees of Freedom; † p <.10, ** p <.01, * p <.05.

Table 1.3. Mean (μ), Variances (σ^2) and Covariances ($_{cov}$) relative to the Intercept (I), Linear Slope (Ls), and Quadratic Slope (Qs)

Prosociality	I μ	I σ^2	Ls μ	Ls σ^2	Qs μ	Qs σ^2	I_{cov}Ls	I_{cov}Qs	Ls_{cov}Qs
Males	3.38**	.22**	.04**	.01**	---	---	-.02**	---	---
Females	3.75**	.22**	.04**	.01**	---	---	-.02**	---	---
Self-Esteem	**I μ**	**I σ^2**	**Ls μ**	**Ls σ^2**	**Qs μ**	**Qs σ^2**	**I_{cov}Ls**	**I_{cov}Qs**	**Ls_{cov}Qs**
Males	3.37**	0.16*	0.02**	0.01**	0.01	0.01**	0.01**	-0.01**	0.00
Females	3.19**	0.16*	0.02**	0.01**	0.01	0.01**	0.00	-0.01**	0.00

Note. † p <.10, ** p <.01, * p <.05.

Figure 1.1. Estimated Means of Prosocial Development

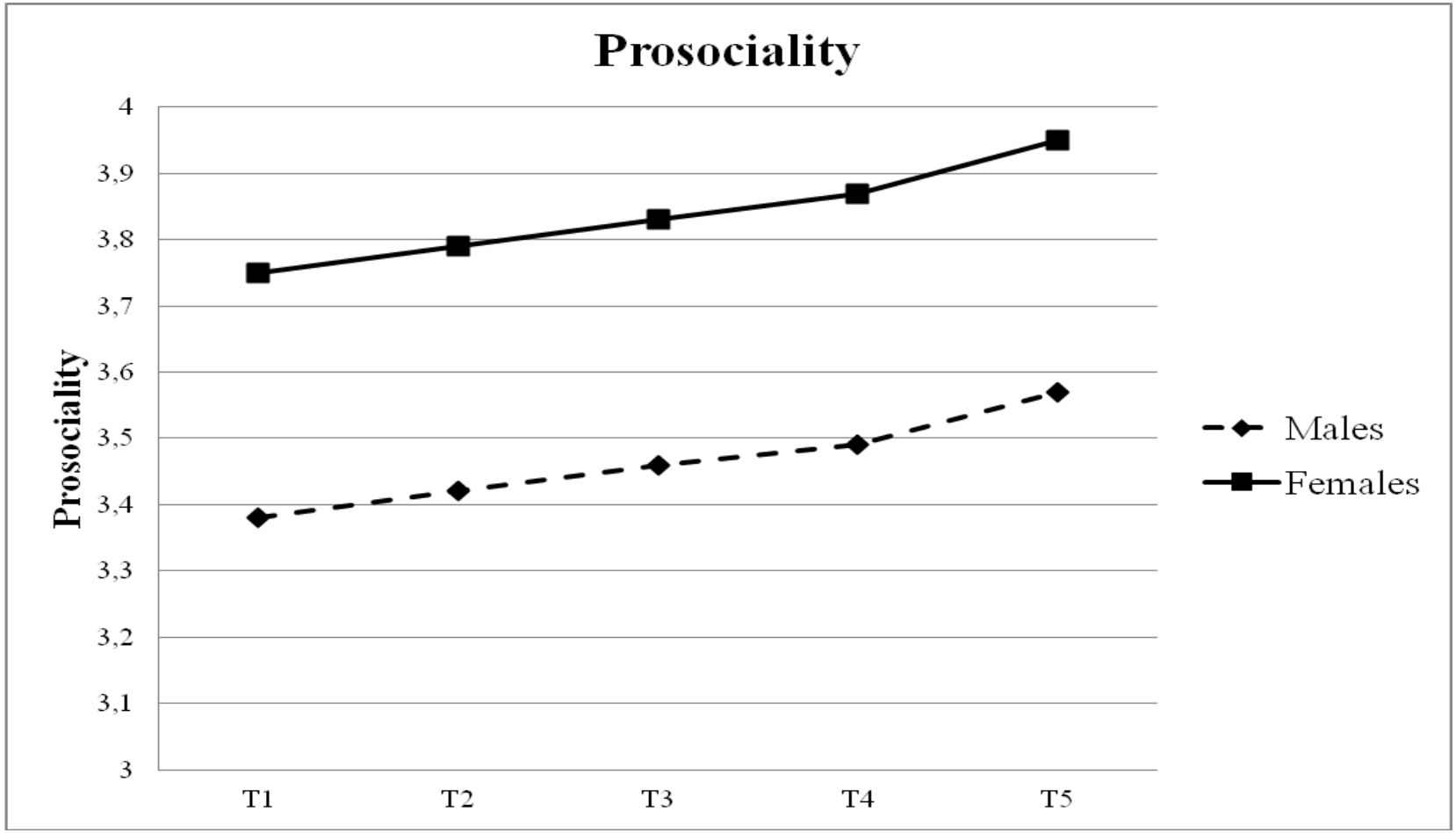
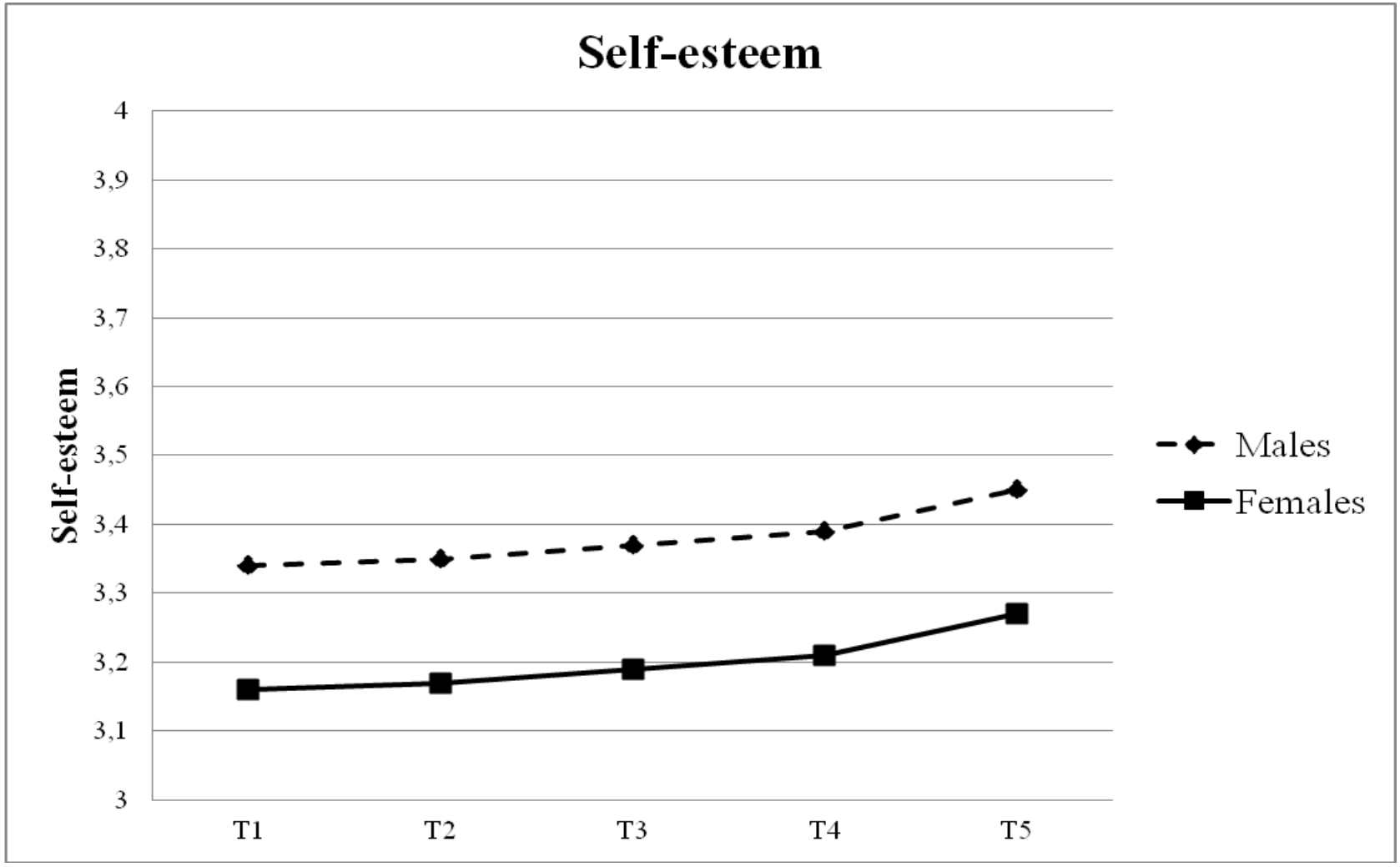


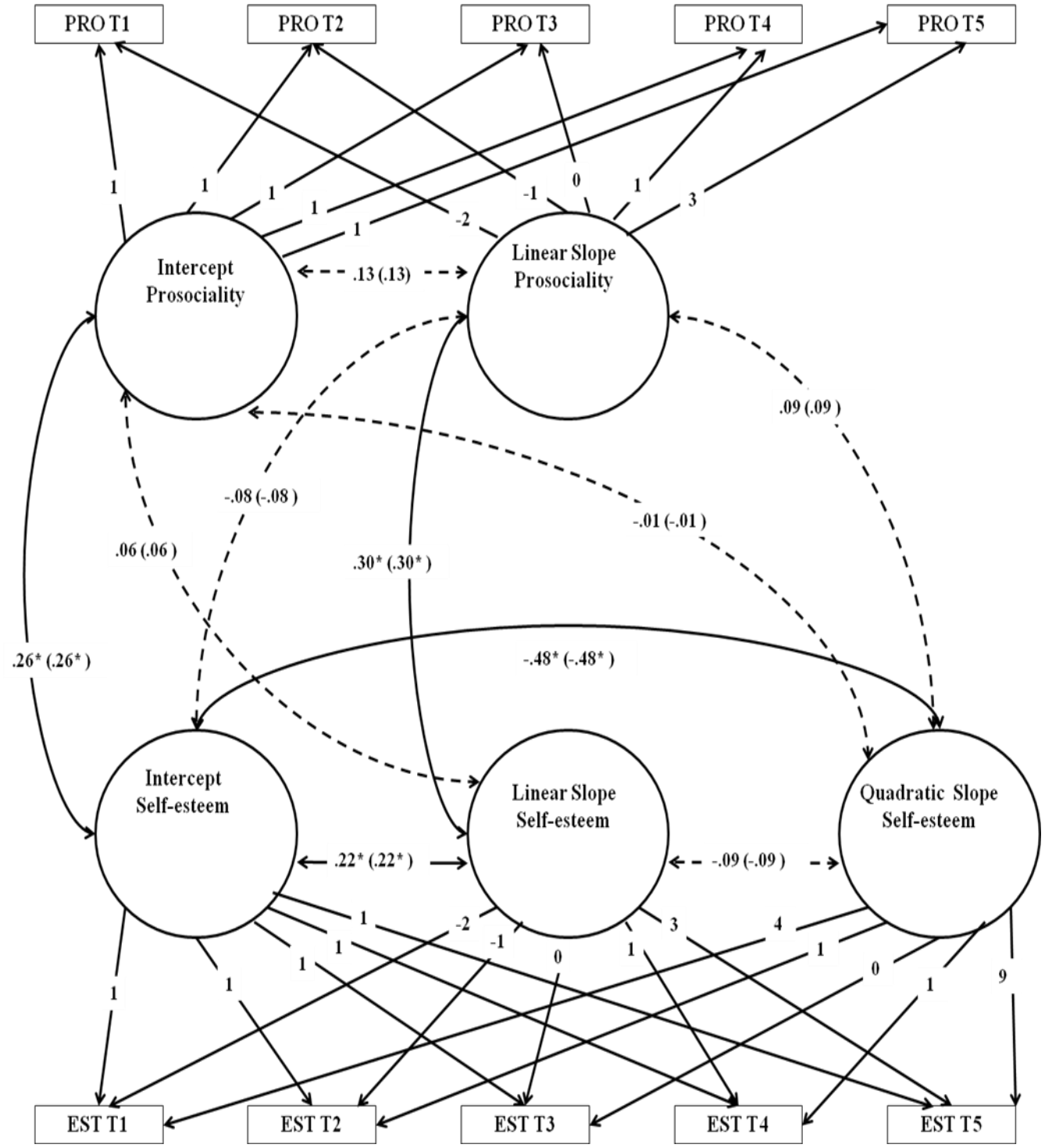
Figure 1.2. Estimated Means of Self-esteem Development



Therefore, only some subjects reported a further acceleration in the linear increase over time. In particular, given the significant negative covariance between the intercept and the quadratic component (see column $I_{cov}Qs$), those subjects with low self-esteem values at T3 (the intercept has been centered now at the middle) were those who accelerated more in the linear increase.

Multivariate LCMs. In order to evaluate if the linear increase of prosociality was associated with the quadratic trend of self-esteem, we estimated a multivariate LCM in which we examined the relation between growth processes through covariances of growth factors of prosociality (e.g., the intercept and linear slope) and self-esteem (the intercept, linear, and quadratic slope). In order to ease the interpretation of the correlation between the two intercepts, the linear slope of prosociality has been also centered at the middle (i.e., the factor loadings were -2, -1, 0, 1, and 3). In this way, both the intercepts of prosociality and self-esteem represented the average level of the two constructs at T3. Significantly, the $\Delta\chi^2$ did not reveal the moderation effect of gender. Indeed, the multivariate LCM in which the correlations among the latent growth factors were constrained to equality across sex (i.e., constrained model) $\chi^2(89) = 129.14$, $p = .00$, CFI = .95, TLI = .95, RMSEA = .05 (90% CI .03, .07) was not different from the unconstrained model in which the correlations were freely estimated for males and females $\Delta\chi^2(5) = 4.99$, $p = .55$. As reported in Figure 1.3., the two linear slope factors are positively correlated ($r = .30$, $p < .05$). Males and females with higher slopes in prosociality (i.e., steeper increases) tended to have higher slopes in self-esteem (i.e., steeper increases). Finally, the two intercepts were also positively correlated. Individuals with high prosociality levels at T3 had also high levels of self-worth at the same time point.

Figure 1.3. Multivariate LCM



Note. Correlations are reported separately for males and females (in parentheses). Dotted lines represented non-significant correlations ($p > .05$). * $p < .05$.

Cross-lagged Effects

In order to estimate correct cross-lagged effects, a ARC model with maximum-likelihood estimation of the parameters has been implemented. In ARC the autoregressive parameters capture inter-individual rank order stability of the variables over time, whereas the cross-lagged paths reflect the influence that one variable *x* at time T has on *y* at time T+1, while controlling for the autoregressive prediction of *y* at time T (Cole & Maxwell, 2003). In order to deal with measurement error, all variables included in the model were posited as single indicator latent variables by estimating the error terms from reliabilities (Kline, 2010). The possible moderation effect of sex has been assessed by using a multiple-group approach in which we imposed equal unstandardized paths between sexes. The plausibility of these equality constraints is examined with the chi-square difference test between nested models (i.e., constrained model vs. the unconstrained model). All the models were analyzed in M*plus* 7 (Muthén & Muthén, 2012). FIML was used as a method for estimating missing data (Enders, 2010) and the same criteria for LCM have been used to evaluate the model fit.

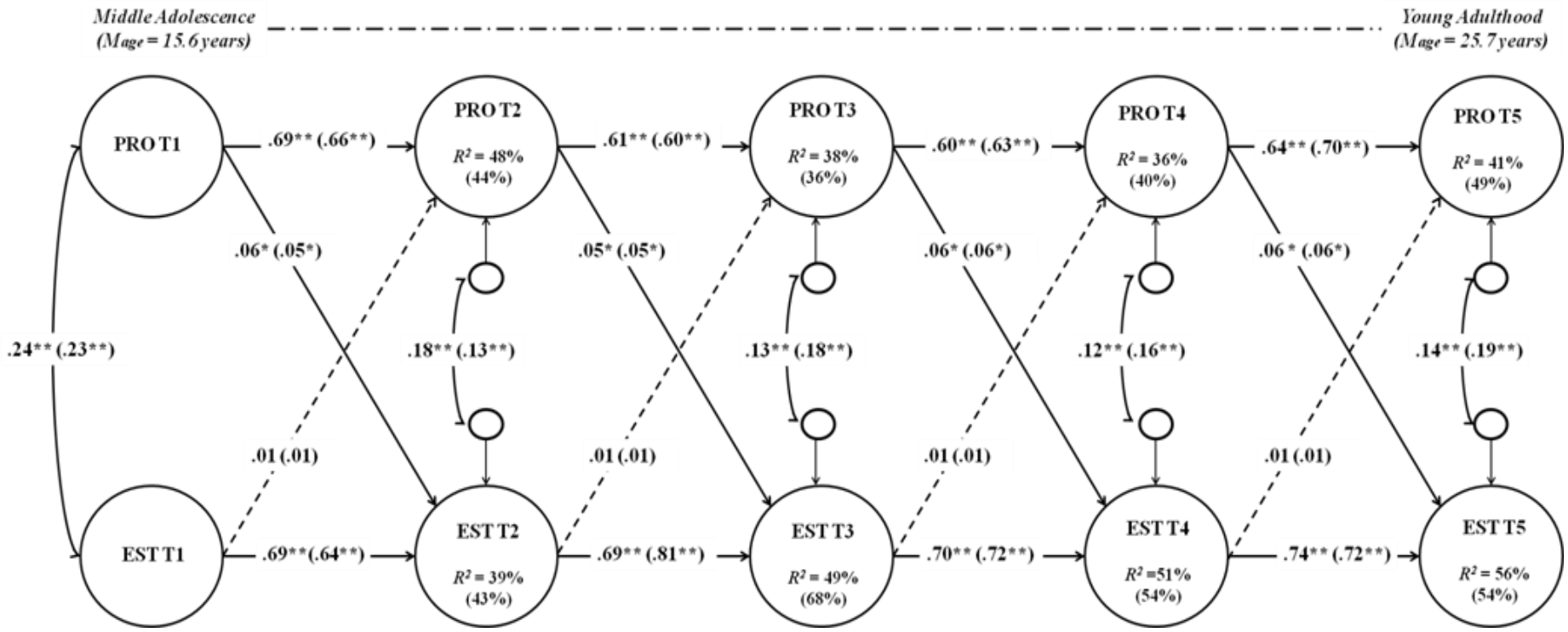
The ARC *sex-time constrained* model (Figure 1.4.), in which the parameters were constrained to equality over time and across sex, reported a good fit to the data $\chi^2(84) = 135.25$, $p = .00$, CFI = .94, TLI = .94, RMSEA = .06 (90% CI .04, .07), and was not statistically different from the *unconstrained* model $\Delta\chi^2(36) = 44.30$, $p = .16$ in which the parameters were freely estimated. In particular, in the ARC *sex-time constrained* model the equality of the unstandardized estimates of the (a) autoregressive paths (e.g., SE T1 → SE T2 = SE T2 → SE T3 and so forth) and (b) the cross-lagged paths (e.g., PRO T1 → SE T2 = PRO T2 → SE T3 and so forth) reflected an unchanging relation structure over time (Cole & Maxwell, 2003). In other words, there were not differences related to specific ages or to the fact that the last time-lag (i.e., from T4 to T5) was twice longer than the previous ones. In the ARC *sex-time constrained* model the autoregressive coefficients were all statistically

significant ($p < .05$) and attested to a high stability of prosociality (Mean $\beta \approx .64$) and self-esteem (Mean $\beta \approx .71$). The cross-lagged paths revealed the positive and statistically significant prediction of prosociality on self-esteem over time (Mean $\beta \approx .06$). Whereas these effects were quite small, they hold above and beyond the high self-esteem stability, and their size remained stable at each time point (both for males and females). Importantly, the opposite cross-lagged paths, stemming from self-esteem to prosociality, was positive but did not reach statistical significance.

Discussion

According to Robins and Trzesniewski (2005), there is a strong need to identify psychological variables capable of counteracting the pernicious effects of drops in self-esteem during adolescence and adulthood. Among the different psychological constructs positively associated with self-esteem, some previous studies highlighted the possible role of prosociality in predicting self-esteem. Nevertheless, these studies were mainly focused on a specific prosocial behavior (i.e., volunteerism) or rested on cross-sectional designs (e.g., Laible et al., 2004) or on a short-time span (e.g., Weinstein & Ryan, 2010). The present findings corroborate the role of prosociality in predicting feelings of value and worthiness and extend previous works by adopting a long-term perspective (i.e., from middle adolescence to young adulthood) and by using a very general measure of the individual's tendency to help others. Significantly, in order to obtain more robust information, we analyzed the relation between prosociality and self-esteem both from a mean-level and rank-order perspective by using two sophisticated data analysis techniques (i.e., LCM and ARC).

Figure 1.4. ARC Sex-Time Constrained Model



Note. All the reported parameters are standardized and separately for males and females (in parentheses). Standardized coefficients could differ across sex as the unstandardized parameters have been fixed to equality. Solid lines represent statistically significant paths (p <.05), whereas dotted lines are not statistically significant paths (p >.05). EST = Self-esteem; PRO = Prosociality. *p < .05; **p < .01.

In terms of mean-level changes, in line with previous studies (i.e., Luengo Kanacri et al., 2013; Erol & Orth, 2011), we found that both prosociality and self-esteem increased from middle-adolescence to young adulthood. Of most importance, our data revealed that the developmental increase over time in prosociality was positively related to the parallel increase in self-esteem. From a developmental perspective, as discussed in the introduction, this result might be explained by considering the role of prosociality in promoting the establishment of positive interpersonal ties (Caprara & Steca, 2005) that help individuals to build a positive image of themselves (Harter, 1999, 2003). This seems particularly evident during adolescence, when adolescents' prosociality enhances the probability of being accepted by peers that, in turn, are fundamental for adolescents' physical and mental health (e.g., Bukowski, Hoza, & Boivin, 1993; Eisenberg & Morris, 2004; Harter, 2003; Uchino, 2009). Importantly, our data indicated that this positive relation is significant throughout the transition from middle-adolescence to young adulthood. Therefore, the positive effects of the high interpersonal capacities of prosocial individuals are not limited to the period of middle adolescence. Probably, since the transition into young adulthood is a developmental phase characterized by several challenges that ─ at the same time ─ can enhance and undermine the individuals' perception of being competent and valuable (e.g., independent living, labor market entrance, parenthood, etc., see Arnett, 2000, for a deeper discussion), high levels of prosociality may help young adults to maintain a supportive social environment that protects their self-esteem.

Moreover, since LCMs are not properly suited to test the directionality of the effects between prosociality and self-esteem, the use of ARC modeling allowed us to identify the likely flow of influence between the variables. In agreement with our hypothesis, results revealed that prosociality consistently predicted self-esteem from middle adolescence to young adulthood. Whereas the observed effects of prosociality were small in size, it is

important to recognize that they (a) held both for males and females, and (b) remained statistically significant while controlling for the high rank-order stability of self-esteem over time. Of interest, whereas Thoits and Hewitt (2001) in a sample of adult individuals (25 years or older) reported a bidirectional effect between self-esteem and volunteerism, our findings did not provide empirical support for the reciprocal influence between prosociality and self-esteem (see also Eisenberg et al., 2006). In our sample, possessing high self-esteem seems not to represent a prerequisite to behave in favor of others. This inconsistence with Thoits and Hewitt (2001) might be due to the different level of specificity of the constructs considered (volunteerism vs. general prosociality) and to the difference in age between the two samples. Future research must examine further this aspect.

Beyond the theoretical contribution of this work, present results may also have implications for those practitioners working in intervention programs aimed at promoting a robust sense of self-regard among youths. Indeed, limited evidence has been found about the positive effects of interventions directly aimed at boosting self-esteem (for a review see Baumeister et al., 2003). Therefore, the fact that prosociality may sustain individuals' self-esteem suggests the potential gain of including prosocial components in these programs. Prosociality, indeed, is a more "malleable" variable compared with self-esteem, well suited for improvement in intervention settings (see Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004). In addition, fostering prosociality through appropriate educational actions can avoid undesirable consequences stemming from an exclusive focus on the direct enhancement of youths' self-esteem (e.g., the excessive focus on self may lead to an overestimation of one's own value; Baumeister et al., 2003). In this sense, volunteer mentoring programs' interventions like *Big Brothers and Big Sisters* (Rhodes et al., 2000) and *Early Adolescent Helper Program* (Switzer, Simmons, Dew, Regalski, & Wang, 1995)

have already reported encouraging results in terms of increased adolescents' perception of their value.

In spite of a number of strengths, we acknowledge some limitations of the present study. First of all, we are aware that our study, which is based uniquely on longitudinal "field" data, cannot allow conclusions about causality (Cole & Maxwell, 2003). Moreover, our results are based on a single study and on a specific culture. Thus, more research is necessary to confirm these results. We further recognize that the sole use of self-report measures of the constructs of interest could limit the validity of our conclusions. Although self-reports are likely reliable sources of information about self-esteem (Thomaes Poorthuis, & Nelemans, 2011) and prosociality (especially after childhood, Nantel-Vivier et al., 2009), future studies should replicate these findings by using different evaluators (e.g., parents, peers, teachers). A final limitation might be represented by the high attrition rate of the participants during young adulthood. This data should be interpreted in the context of an extensive longitudinal study which covered ten years during an important transitional developmental phase characterized by several demographic and subjective challenges (Arnett, 2000). Participants were enrolled in our study when they had just entered high school and were followed since they were close to receiving a university degree, or were active in the labor market. Most of them dropped out from the study simply because they moved to another city or became uninterested in our project. This fact was reflected by the lack of selective attrition in our data, a condition commonly recommended to trust longitudinal studies. Despite these limitations, we believe that this study can offer a significant contribution to the literature by pointing to the value of promoting prosociality to improve self-esteem.

In closing, in order to increase our knowledge base in the important domain of promoting self-esteem and well-being among youths and adolescents, we would remark on

the relevance of identifying the mediational mechanisms that could relate prosociality to self-esteem (e.g., Le et al., 2012; Weinstein & Ryan, 2010), and of taking into account other variables like personality traits (e.g., Caprara et al., 2012), temperamental (e.g., Luengo Kanacri et al., 2013), and motivational characteristics (e.g., Batson, 2011) which could moderate the influence of prosociality on self-esteem.

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STUDY 2

THE RELATION OF PROSOCIALITY TO SELF-ESTEEM: THE MEDIATIONAL ROLE OF QUALITY OF FRIENDSHIPS

Abstract

The present longitudinal study examined the role of quality of friendship in mediating the relation of prosociality to self-esteem over time. Participants were 424 Italian young adults (56% females) assessed at two waves (M_{age} = 21.1 at Time 1 and M_{age} = 25 at Time 2). An autoregressive cross-lagged panel model was used to test the mediational model. Self- and friend-report measures of prosociality, quality of friendship, and self-esteem were included in the analyses. Results were in line with the hypothesized paths, with quality of friendship mediating the relation of prosociality on later self-esteem above and beyond its high stability. Self-esteem, in turn, predicted prosociality four years later. Overall, the present findings support the potential benefits of behaving prosocially for an actor in terms of increased perceived self-worth and also expand previous work by outlining the specific mediational role of the quality of friendships. The theoretical and practical implications of these results are discussed.

Keywords: prosociality; self-esteem; quality of friendships; sociometer theory; autoregressive cross-lagged model.

Prosociality refers to an individual's tendency to enact behaviors such as sharing, helping, and caring (Eisenberg, Fabes, & Spinrad, 2006; Penner, Dovidio, Piliavin, & Schroeder, 2005). It is an individual difference variable that has been related to quality of moral reasoning, moral emotion (e.g., sympathy), social competence, and low levels of aggression/externalizing problems, as well as personality/temperament (Eisenberg et al., 2006; Penner et al., 20005). According to evolutionary theorists, this tendency is likely a result of the selection processes associated with survival and evolution of the species (Batson, 2011) because prosocial individuals were more likely to establish *mutually supportive social bonds* necessary to cope with the dangers associated with harsh environmental conditions (e.g., predators, food shortages, etc.). More recently, researchers have found that helpers appear to benefit from their prosocial actions in terms of better psychological functioning (Eisenberg et al., 2006; Midlarsky & Kahana, 2007; Weinstein & Ryan, 2010). For instance, results of several studies are consistent with the assumption that prosocial behavior counteracts internalizing and externalizing problems (e.g., Bandura, Pastorelli, Barbaranelli, & Caprara, 1999; Eccles & Barber, 1999) and promotes positive developmental outcomes such as higher academic grades (e.g., Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Wentzel, McNamara-Barry, & Caldwell, 2004) and psychological well-being (Midlarsky & Kahana, 2007). Prosocial individuals might tend to be well adjusted partly because they elicit social closeness and supportiveness, and thus build a high supportive social environment (Caprara & Steca, 2005). In line with this line of reasoning, the main purpose of the present study was to examine if prosociality is a predictor of one component of psychological well-being, self-esteem (i.e., how favorably persons evaluate themselves; Baumeister, Campbell, Kruegger, & Vohs, 2003).

A theory dealing with more proximal mechanisms is also relevant to understanding the relation between prosocial behavior and self-esteem. The *sociometer theory of self-esteem* stresses the interpersonal nature of people's self-worth by conceiving it as an indicator of individuals' perceived degree of feeling socially included and valued by others (Leary & Baumeister, 2000). Consistent with this theory, we hypothesized that the beneficial effect of prosociality on self-esteem is at least partly mediated by the rewarding social relationships that prosocial people are able to develop and maintain. Specifically, we investigated the role of *friends.* According to the sociometer theory, friends, along with the family, represent one of the most important social groups involved in the development of the self (see Harter, 1999); thus, high-quality friendships could validate/invalidate individuals' perception of being worthy of value (Hartup & Stevens, 1997).

To our knowledge, this study represents one of the first attempts to investigate the relations among prosociality, quality of friendship, and self-esteem using the sociometer theory as an overarching theoretical framework. Although some researchers have highlighted the positive empirical association between prosociality and self-esteem (see Eisenberg et al., 2006; Yates & Youniss, 1996, for a review), prosociality and quality of friendship (e.g., Markiewicz, Doyle, & Brendgen, 2001), or self-esteem and quality of friendship (e.g., Keefe & Berndt, 1996), to the best of our knowledge, no one has simultaneously addressed these different relations. After a brief review of the empirical findings on the relation of prosociality to self-esteem, we discuss sociometer theory as the conceptual basis for our hypothesis about the mediational role of the quality of friendships in the aforementioned relation.

Self-esteem and Prosociality

Self-esteem is one of oldest and most popular individual differences constructs in psychology and the social sciences (see Donnellan, Trzesniewski, & Robins, 2011, for a

review). Its importance for human psychosocial functioning is supported by empirical findings indicating how possessing robust self-esteem is related to lower levels of aggressive behavior (e.g., Donnellan, Trzesniewski, Robins, Moffitt & Caspi, 2004), depression (e.g., Orth, Robins, & Roberts, 2008), drug and alcohol consumption (see Baumeister et al., 2003; Leary & MacDonald, 2003), better physical health (e.g., Trzesniewski et al., 2006), and higher relationship satisfaction (e.g., Orth, Robins, & Widaman, 2012). Therefore, due to its relevance, numerous researchers have investigated the factors that might foster self-esteem (Baumeister et al., 2003; Trzesniewski et al., 2006).

A number of studies provide support for the role of prosociality in fostering a positive sense of the self. In a review of 44 empirical studies, Yates and Youniss (1996) found that adolescents involved in volunteer activities (i.e., a specific prosocial behavior enacted in an organized context) reported high levels of self-esteem. Similarly, Midlarsky and Kahana (1994), in a survey of 400 older adults, reported how volunteering in late life was positively associated with four indices of well-being, including self-esteem. As discussed by Brown, Hoye, and Nicholson (2012), it is likely that volunteers experience high self-regard because helping others enhances their sense of social connectedness and social inclusion as well as their perception of being competent and helpful. Moreover, the benefits for the self stemming from caring for others have been documented by researchers who used broader measures of prosociality that were not limited to volunteerism (e.g., Laible, Carlo, & Roesch, 2004; Le, Impett, Kogan, Webster, & Cheng, 2012). For instance, Le et al. (2012) reported that communally-oriented people (i.e., people assigning great value to the welfare of others) tended to experience a greater sense of self-worth over the course of four weeks through the activation of positive emotions related to caring for others. Telzer and Fuligni (2009), investigating the effects of helping behaviors toward family members in adolescents from different ethnical backgrounds, found that providing daily assistance to the family was

associated with higher levels of psychological well-being. In addition, the authors found that this effect was mediated by adolescents' sense of role fulfillment within the family which helped them to feel appreciated and valued by their parents and siblings (Telzer & Fuligni, 2009).

Yet, there is an important debate in the prosocial literature about the direction of influence between behaving prosocially and self-esteem. Leary and MacDonald (2003) pointed to self-esteem as a cause of prosociality rather than vice-versa. The authors speculated that helping someone, like other interpersonal behaviors, might be rebuffed, which results in low self-esteem people refraining from prosocial acts in order to avoid social rejection (Leary & MacDonald, 2003). However, Eisenberg et al. (2006) hypothesized that the relation between prosociality and self-esteem is likely to be reciprocal. The engagement in prosocial activities (like helping someone in need, doing volunteer work, etc.) can strengthen people's perception of being good and helpful to others, which in turn can enhance their self-regard. In addition, behaving prosocially, like other social conducts, requires adequate motivational resources to be enacted, and a high level of self-esteem could lead individuals to feel "motivationally equipped" to help others. Indeed, it is likely that the better individuals feel about themselves, the better able they are to take care of others' needs because their own needs are satisfied (Eisenberg et al., 2006). Consistent with this hypothesis, Thoits and Hewitt (2001), in one of the few longitudinal studies on this topic, reported a reciprocal relation between volunteerism and self-esteem: Those individuals characterized by a high sense of self-worth were those more likely to engage in volunteer activities and vice-versa (Thoits & Hewitt, 2001).

In summary, there appears to be a positive relation between self-esteem and prosociality (see Eisenberg et al., 2006) and it is likely that this relation can be bi-directional (Eisenberg et al., 2006; Thoits & Hewitt, 2001). However, it should be noted that the

mediational mechanisms linking the two variables are unclear and merit further investigation. One plausible mediator of the relation of prosociality to self-esteem is the quality of friendships, as suggested by the *sociometer theory* of self-esteem (Leary & Baumeister, 2000).

Prosociality, Self-esteem, and the Mediational Role of Quality of Friendships

In the last 20 years, sociometer theory of self-esteem has received considerable attention in the psychological literature (see Leary, 2005; Leary & Baumeister, 2000). In contrast to other theorists who have proposed that the relevance of self-esteem for human well-being is due to the degree of congruency between a person's real and ideal selves (Rogers, 1959) or its capacity to buffer people against the terror of the death (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), sociometer theory emphasizes the interpersonal nature of people's self-worth by pointing to the *human desire to establish positive and rewarding social bonds*. Specifically, Leary and Baumeister (2000) conceptualized self-esteem as a social thermometer indicating the level of individuals' perception of being accepted and valued by the others. From this perspective, positive social relationships increase individuals' perceptions of their *relational value* (i.e., how they perceive themselves to be accepted by others), thereby positively influencing their self-esteem. Accordingly, individuals strive to seek and maintain social bonds in order to feel accepted and to perceive themselves as worthy of value.

Consistent with sociometric theory, many scholars agreed that having *high quality of friendships* (i.e., friendships characterized by supportiveness, intimacy, and closeness) represents one of the most important aspects of human's social life, with relevant implications for psychological adjustment and self-esteem (Hartup & Stevens, 1997). In general, friendships are characterized by reciprocity: Individuals expect their friends to provide them with joy, trust, and intimacy, and that they should reciprocate by giving the same emotional

support (Berndt, 2002; Hartup & Stevens, 1997). Therefore, one may assume that providing care to one's friends and helping them when they are in need can strengthen the friendships, providing positive feedback about the relational value of the persons involved in the relationship. For example, Keefe and Berndt (1996) found that positive features of friendship such as support and intimacy were positively correlated to global self-worth and social acceptance during early adolescence. Similarly, other authors argued for the importance of friends in early adulthood for promoting positive changes in self-conceptions (e.g., Rawlins, 1992) and several empirical studies have supported the role of friends for counteracting depression and anxiety (e.g., Bagwell et al., 2005; Cambron, Acitelli, & Steinberg, 2010). Interestingly, Denissen, Penke, Schimtt, and van Aken (2008) found that interaction quality with one's own closest friend, rather than the quantity of interaction (i.e., the time spent with the best friend), positively predicted feelings of self-worth.

Based on the research and aforementioned arguments, we presumed that prosociality could foster self-esteem through the positive and supportive friendships that prosocial individuals are able to create and maintain (see Figure 2.1). Indeed, the capacity to enact prosocial behaviors is critical to the maintenance of mutually rewarding friendship relationships (because such behavior is highly valued and rewarded by others; Caprara & Steca, 2005) which, in turn, would be expected to increase individuals' self-esteem by enhancing their perception of being positively accepted and valued by others. Moreover, although the contribution of self-esteem to prosociality was not the main focus of the present work, based on the discussion of some scholars (e.g., Eisenberg et al., 2006; Leary & MacDonald, 2003), we considered the statistical significance of a possible reverse effect, from self-esteem to prosociality. As discussed previously, it seems plausible that self-esteem can sustain prosociality by providing the motivational resources needed to help and to take care of others (Eisenberg et al., 2006; see also Thoits & Hewitt, 2001).

The present work, in comparison to relevant prior studies (e.g., Le et al., 2012; Telzer & Fuligni, 2009; Weinstein & Ryan, 2010), is novel in several respects. First of all, we used the conceptual framework offered by the sociometer theory of self-esteem to derive a hypothesis about the likely direction of relations among prosociality, self-esteem, and quality of friendships. Second, we examined the relevant relations with data across four years rather than a shorter period of time (e.g., Telzer & Fuligni, 2009; Weinstein & Ryan, 2010) or with cross-sectional data (e.g., Laible et al., 2004). Third, we extended previous studies investigating the mediators of the effect of prosociality on self-esteem (e.g., Brown et al., 2012; Weinstein & Ryan, 2010) by focusing on the specific mediational role of the quality of friendships. Fourth, we included both self- and friend-report measures of individuals' prosociality, quality of friendship, and self-esteem. Whereas the use of other-report measures of prosociality is usually common and recommended to reduce the social desirability bias arising from the sole use of self-evaluation of socially valued behaviors (Caprara, Alessandri, & Eisenberg, 2012), to our knowledge, few researchers have used other reporters for quality of friendship (e.g., Simpkins & Parke, 2001) and self-esteem (e.g., Donnellan et al., 2004). Finally, given the existence of gender differences in prosociality (e.g., Penner et al., 2005), self-esteem (e.g., Robins & Trzesniewski, 2005) and the quality of friendships (e.g., Thomas & Daubman, 2001), we corrected parameter estimates for the potential biasing effect of gender. Finally, according to a theoretical perspective suggesting that interpersonal relationships might be of greater relevance for females than for males (e.g., Thomas & Daubman, 2001), we investigated the possibility that the hypothesized relation of prosociality to self-esteem, mediated through the quality of friendships, is stronger for females.

Figure 2.1. Conceptual Model

Method

Participants and Design

The current study included 424 participants (56 % females) from Genzano, a community near Rome, involved in an ongoing longitudinal study started in 1989. Participants were originally drawn from two public junior high schools in Genzano. Participants' mean age was 21.1 years (*SD* = 0.99) at Time 1 (T1) and 25 years (*SD* = 1.03) at Time 2 (T2). At T2, about half (47 %) of the sample were college students. Of the remaining participants (i.e., 53 %), 70% had stable work, 10% worked occasionally, 13% were unemployed, and 7% were searching for a job. Across the years in which the study was performed, the families of Genzano matched the socio-economic national profile of the larger Italian society (Istituto Italiano di Statistica, 2002). At T1, approximately 14% of the parents were in professional or managerial ranks, 25% were merchants or operators of other businesses, 31% were skilled workers, 29% were unskilled workers, and 1% were retired. Participants received the questionnaire after being contacted by phone with a small payment for their participation. Questionnaires and consent forms were returned by participants to researchers during specifically scheduled meetings in one school of Genzano. Moreover, at T2, participants also were asked to provide copies of questionnaires designed for peer ratings to a friend who knew them very well. In total, 240 friend-evaluators (57 % females), with a mean age of 25.1 years (*SD* = 3.36), were considered in the present study. These individuals reported that they had been friends of the participants for a mean of 9 years (*SD* = 6.50), and

reported ("How well do you know the participant?"; 1 = *not at all* to 10 = *very well*) that they knew the target very well (M = 8.51; *SD* = 1.11).

Attrition and Missing Data Analysis

Participation at T2, four years later, was moderate (63%). The attrition was mainly due to the unavailability of individuals to take part in the later phase of the study due to their refusal to participate or their relocation from the area of Genzano. The lack of selective attrition in our data is supported by the Little's test (1988) for missing completely at random (MCAR), which was nonsignificant (i.e., $\chi^2(40) = 44.76$, $p = .28$), indicating that the missingness on one variable was unrelated to the other measured or unmeasured variables (Enders, 2010). Accordingly, we computed the maximum-likelihood estimates of missing data via the expectation–maximization (EM) algorithm (Enders, 2010). The EM algorithm restores the complete data matrix and offers unbiased estimates of missing data under MCAR assumption (Enders, 2010). The final sample for this study was composed by 187 males and 237 females. The following structural equation models (SEMs) were analyzed in M*plus* 7 (Muthén & Muthén, 2012).

Measures

The measures of prosociality, quality of friendship, and self-esteem at T1 (M_{age} = 21.1) were all self-report scales. At T2 (M_{age} = 25), friend-report measures of the same constructs were included. For the friend-report version of the following scales, the same items of the self-report scales were worded in the third person. Reliability coefficients for the scales are reported in Table 1.

Prosociality. Participants rated (1 = *never/almost never* true to 5 = *almost always/always true*) their prosociality on a 16-item scale that assesses the degree of engagement in actions aimed at sharing, helping, taking care of others' needs, and empathizing with their feelings (e.g., "I try to help others" and "I try to console people who

are sad"; Caprara, Steca, Zelli, & Capanna, 2005). The psychometric properties of the prosociality scale have been cross-nationally validated on large samples of respondents (Luengo Kanacri, Tramontano, Regner, Vignale, & Caprara, 2013). Researchers have also found a moderate correlation (r = .44) between self- and other ratings on this prosociality scale, further supporting its validity (Caprara et al., 2012). For the friend-report version of the scale sample items are, "He/She tries to help others" and "He/She tries to console people who are sad".

Perceived quality of friendship. Six items based on the Friendship Qualities Scale of Bukowski, Hoza, and Boivin (1994) were used to assess participants' perception of their quality of friendships. All the items of the scale reflect the perceived amount of support, closeness, and solidarity *received* from friends (e.g., "How much help and support do you receive from your friends?", "How much do you trust your friends?"). Each item was rated on a 5-point scale (from 1= *not at all* to 5= *a lot*). The psychometric properties of this scale in terms of factorial structure and validity have been tested in samples of Italian adolescents and young adults (Lupinetti, 2006). For the friend-report version of the scale sample items are, "How much help and support does he/she receive from his/her friends?" and "How much does he/she trust his/her friends?"

Self-esteem. Self-esteem was assessed with the 10-item Rosenberg (1965) self-esteem scale which measures the extent to which participants feel they possess good qualities and have achieved personal success (e.g., "I feel that I have a number of good qualities," "On the whole, I am satisfied with myself"). Each item was rated on a 4-point scale (from 1= *strongly disagree* to 4= *strongly agree*). For the friend-report version of the scale sample items are, "He/She feels to have a number of good qualities" and "On the whole, he/she is satisfied with his/herself".

Results

Descriptive Statistics

As reported in Table 2.1., prosociality, quality of friendship, and self-esteem were positively and significantly intercorrelated, both concurrently and across time. Prosociality, quality of friendship, and self-esteem proved to be highly stable over time ($rs\,(424) = .80$; .65; and .63, $ps < .001$, respectively). In addition, self- and friend-reports of a given construct demonstrated moderate convergence. Indeed, the across-reporter correlations on the same variable (for example, self- and friend-rated prosociality) were .39 or higher, both concurrently (i.e., at T2 when both evaluators were available) or longitudinally (i.e., self-rated prosociality at T1 correlated .42 with friend-rated prosociality at T2). Finally, none of the variables presented a problematic deviation from normal distributions (i.e., skewness > 2 and kurtosis > 7, Curran, West, & Finch, 1996).

Preliminary Analyses

As a preliminary step to hypothesis testing via structural equation modeling, we investigated potential item overlap and construct distinctiveness between the two scales of prosociality and quality of friendship (separately at each time point) through Maximum-Likelihood Exploratory Factor Analysis (ML-EFA) with Promax rotation (at T2, we also performed a ML-EFA for the friend-report version of the scales). According to the scree-plot for self-reports, the three EFAs revealed clearly a two-factor structure corresponding to the hypothesized constructs (i.e., prosociality and quality of friendship). The principal loadings for the prosociality scale (self-report) were high and ranged from .49 to .87 ($M = .69$, $SD = .10$) for the two assessments. Conversely, the cross-loadings (for friendship items loading on prosociality) were all low and ranged from -.19 to .21 ($M = .02$; $SD = .11$) at the two assessments.

Table 2.1. Descriptive Statistics and Correlations among Prosociality, Quality of Friendship, and Self-esteem

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10
1. Sex	---	---	(---)									
2. PRO T1	3.74	0.62	.21**	(.93)								
3. QF T1	4.19	0.55	-.13**	.32**	(.90)							
4. EST T1	3.29	0.51	-.03	.17**	.30**	(.88)						
5. PRO T2	3.77	0.60	.27**	.79**	.29**	.20**	(.94)					
6. PRO T2 (friend)	3.70	0.56	.14*	.42**	.18**	.17**	.50**	(.94)				
7. QF T2	4.19	0.49	-.08	.32**	.65**	.24**	.31**	.24**	(.81)			
8. QF T2 (friend)	3.62	0.39	-.11*	.16**	.39**	.18**	.18**	.25**	.43**	(.85)		
9. EST T2	3.36	0.45	-.01	.15**	.33**	.63**	.20**	.21**	.30**	.21**	(.87)	
10. EST T2 (friend)	3.82	0.38	-.12*	.23**	.15**	.42**	.24**	.24**	.16 **	.18**	.45 **	(.86)

Note. SD = Standard deviations. Sex = 0 (male), 1 (female). Reliability coefficients are reported on the main diagonal. PRO = Prosociality; QF = Quality of friendship; EST = Self-esteem.* $p < .05$; ** $p < .01$.

The principal loadings for the quality of friendship scale (self-report) were also high and ranged from .66 to .89 (*M* = .77, *SD* = .08) across the two assessments. Again, the cross-loadings were very low and ranged from -.09 to .07 (*M* = -.01, *SD* = .05) across the two assessments. Factor correlations were moderate: .34 and .30 respectively at T1 and T2.

For the friend-report version of the scales, the principal loadings were high for both scales, and ranged from .42 to .88 for the prosociality scale (*M* = .69, *SD* = .13) and from .58 to .82 for the quality of friendship scale (*M* = .69, *SD* = .08). However, item 2 of the prosociality scale ("He/She shares the things that he/she has with his/her friends") resulted in a non-negligible cross-loading (i.e., .38), indicating a possible content overlap with the factor assessed by the friend-rated quality of friendships scale. On the basis of this result, we decided to remove item 2 of the prosociality scale from all subsequent analyses (at each time, and from both the self and the friend version of the measure) in order to avoid any possible source of unwanted construct overlap. All remaining cross-loadings of the items of the prosociality scale were low and ranged from -.17 to .22; *M* = .01, *SD* = .12). None of the items on the quality of friendship scale had high cross-loadings (i.e., they ranged from -.16 to .08; *M* = -.02, *SD* = .09). The factor correlation was .30. Overall, these EFAs support the distinctiveness of the two constructs and the lack of overlap among the items of the two scales.

Modeling Strategies

According to Batson's (2011) assertion that in longitudinal studies of helping behaviors "rarely have cross-lagged correlations been adequately tested" (p.185), we investigated our hypothesized mediational model by using a two-wave Autoregressive Cross-lagged model (ARC). Two-wave ARC mediational models are superior to cross-sectional designs in that they (a) allow one to better investigate (although not to prove) the likely direction of causal influence among variables, (b) allow for more stringent testing of

alternative models, and (c) control for the autoregressive prediction of variables over time (Cole & Maxwell, 2003; Maxwell & Cole, 2007). In order to deal with measurement error, all variables included in the model at T1 were posited as single indicator latent variables by estimating the error terms from reliabilities (Kline, 2010). At T2, instead, based on the moderate convergence between the self- and friend-report evaluations, we modeled prosociality, quality of friendship, and self-esteem as latent dimensions using the ratings of the two informants. We also controlled for gender by using it as a covariate in our SEMs. Model fit was evaluated following standard procedure (Kline, 2010): χ^2 likelihood ratio statistic, comparative fit index (CFI), Tucker-Lewis Index (TLI), and the root-mean-square error of approximation (RMSEA) with associated 90 per cent confidence intervals (90% CI) were considered. Because the χ^2 is sensitive to large sample sizes, we accepted CFI and TLI $\geq$ .90, and RMSEA < .08 as indicative of acceptable model fit (Kline, 2010). In addition to the fit indexes previously described, the Akaike Information Criterion (AIC) was also used to evaluate model fit (with lower values indicating a better fit; Kline, 2010) because it is appropriate for comparing the fit of non-nested models. In this regard, Burnham and Anderson (2004) recommended that difference in AIC (Δ AIC) computed between Model $_i$ (where i = 1, 2, . . ., R alternative models in the set) and the Model reporting the minimum AIC (Δ AIC_i = AIC_i - $AIC_{minimum}$) should be considered before selecting the best fitting model. This transformation forces the best model to have Δ AIC_i = 0. The authors suggested "as a rule of thumb" that models with Δ $AIC_i \leq 2$ have substantial support; Models with $4 \leq \Delta$ $AIC_i \leq 7$ have considerably less support; Models with Δ $AIC_i \geq 10$ have essentially no support (Burnham & Anderson, 2004).

Mediation Analysis

We examined the hypothesized pattern of influences by estimating (1) all the autoregressive paths (which reflect inter-individual rank-order stability over time in the

variables of interest) and the across-time paths from (2) prosociality at T1 to quality of friendship at T2; (3) from quality of friendship at T1 to self-esteem at T2; and (4) from self-esteem at T1 to prosociality at T2. In addition, all variables within T1 and all variables within T2 were allowed to covary (Cole & Maxwell, 2003). The hypothesized model (see Figure 2.2.) fit the data well $\chi^2(23) = 69.63$, $p = .00$, CFI = .97, TLI = .94, RMSEA = .07 (90% CI = .05 ─ .09), AIC = 4218.08. In accordance with our hypotheses, prosociality at T1 predicted quality of friendship at T2, quality of friendship at T1 predicted self-esteem at T2; in addition, self-esteem at T1 predicted prosociality at T2. According to recent recommendations of Hayes and Scharkow (2013), we used the Monte Carlo (MC) confidence interval method to formally test the significance of the mediated effect of prosociality on self-esteem through quality of friendship. This method has been found to offer good Type 1 error protection (Hayes & Scharkow, 2013; see also MacKinnon, Lockwood, & Williams, 2004). The upper and lower values for the 95% confidence limits (CI) of the indirect effect were calculated with 20000 repetitions (Selig &Preacher, 2008). According to the recommendations of Cole and Maxwell (2003; Maxwell & Cole, 2007) for two waves ARC mediational models, we used the product between the unstandardized cross-lagged regression coefficients of prosociality at T1 on quality of friendship at T2 (path α) and of quality of friendship at T1 on self-esteem at T2 (path β) as the estimate of the mediated effect (see Caprara et al., 2012, for a similar approach). The unstandardized mediated effect ($\alpha\beta = .01$; 95% CI = .001 ─ .021) was statistically significant (the 95% lower and upper CI limits did not include zero), highlighting the role of quality of friendship in mediating the effect of prosociality on self-esteem. The model depicted in Figure 3.2. accounted for a large proportion of variability for all variables, with our control variable sex (coded 0 = male, 1 = female) predicting significantly prosociality at T1 ($\beta = .25$, $p < .01$) and at T2 ($\beta = .10$, $p < .01$), and quality of friendship at T1 ($\beta = -.06$, $p < .05$) and at T2 ($\beta = -.08$, $p = .08$). Sex did

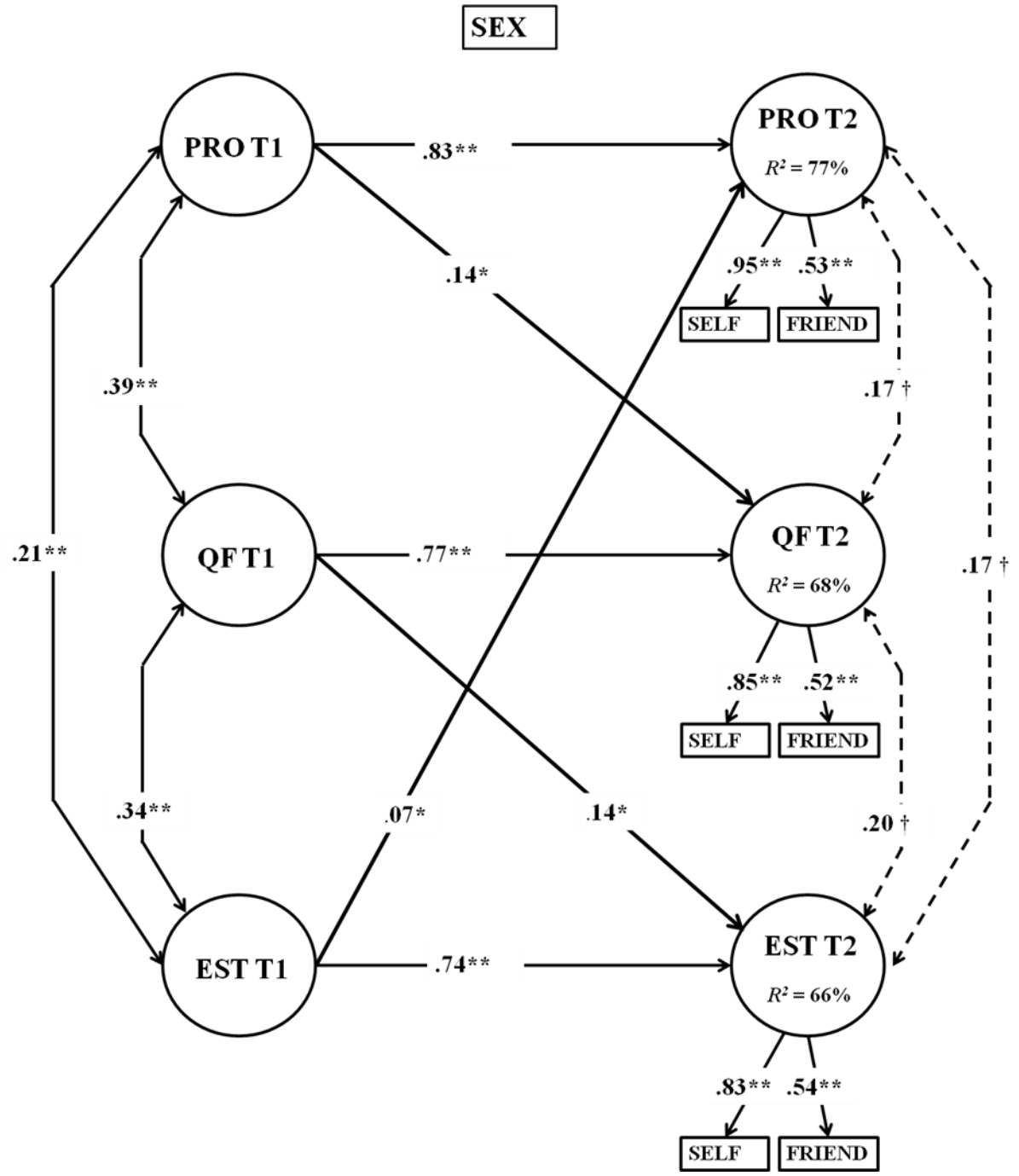
not significantly predict self-esteem at T1 (β = .00, p = .90) or at T2 (β = -.01, p = .90). In addition, the standardized factor loadings of the indicators at T2 (i.e., λs self-report > .80, and λs friend-report > .51) attest to the appropriate degree of convergence between the two evaluators.

Finally, further estimation of the remaining cross-lagged paths (i.e., from prosociality at T1 to self-esteem at T2; from quality of friendship at T1 to prosociality at T2; and from self-esteem at T1 to quality of friendship at T2) did not significantly improve the fit of the hypothesized model as indicated by the chi-square difference test for nested models $\Delta\chi^2(3)$ = 2.26, p = .52 (and the $\Delta\chi^2$ was not significant for any of these parameters when tested one at a time). None of these additional paths was statistically significant.

Alternative Models

In order to rule out different explanation for our data, three alternative models (*AM*) have been tested. Because the three *AMs* were not nested in the hypothesized model, Δ AIC was used to compare their fit. In *AM* 1, we considered self-esteem as the independent variable, quality of friendship as the mediator, and prosociality as the outcome. The fit of this model $\chi^2(24)$ = 88.83, p =.00, CFI = .95, TLI = .91, RMSEA = .08 (90% CI = .06 ─ .10), AIC = 4235.28, was less acceptable than that of the hypothesized model and the higher AIC indicated that it was a worst approximation to the data (Δ AIC = 17.20). In addition, in *AM* 1, none of the cross-lagged paths was statistically significant. In *AM* 2, we considered quality of friendship as the independent variable, prosociality as the mediator, and self-esteem as the outcome. The *AM* 2 also fit worst than the hypothesized model $\chi^2(24)$ = 85.85, p =.00, CFI = .96, TLI = .92, RMSEA = .08 (90% CI = .06 ─ .10), AIC = 4232.31, and resulted in a higher AIC (Δ AIC = 14.23). In this model, only the positive cross-lagged effect from prosociality at T1 to self-esteem at T2 was nearly significant (β = .10, p = .06).

Figure 2.2. Two Waves Mediational Model



Note. All the reported parameters are standardized. For simplicity we omitted the effects of sex. EST = Self-esteem; QF = Quality of friendship; PRO = Prosociality. † $p < .10$; * $p < .05$; ** $p < .01$. Fit indices: $\chi^2(23) = 69.63$, $p = .00$, CFI = .97, TLI = .94, RMSEA = .07 (90% CI = .05 ─ .09), AIC = 4218.08.

Finally, in *AM* 3, we considered prosociality as the independent variable, self-esteem as the mediator, and quality of friendship as the outcome. The fit of *AM* 3 was less acceptable than that of the hypothesized model $\chi^2(24) = 86.85$, $p = .00$, CFI = .96, TLI = .92, RMSEA = .08 (90% CI = .06 ─ .10), AIC = 4233.30, and had a higher AIC (Δ AIC = 15.22). As for the previous *AM*, in this model only the regression coefficient linking prosociality at T1 to self-esteem at T2 was marginally significant ($\beta = .10$, $p = .06$). For all the three *AM*s, the information deriving from the Δ AIC indicated that they were models with essentially no support (Δ AIC ≥ 10) compared to the hypothesized mediational model. Finally, in order to test for any possible bias arising from the different modeling of our constructs at T2 (self- and friend-report measures) versus T1 (only self-report measures), we repeated all the above SEMs by using only the self-report measures both at T1 and at T2. The results did not change.

Moderation by Gender

We investigated moderation by gender using a multi-group analysis. In particular, we tested if a model in which the unstandardized parameters were constrained to equality across sex (i.e., constrained model) was statistically different from a model in which the parameters were freely estimated (i.e., unconstrained model). In these analyses, we used maximum likelihood with standard errors robust to non-normality as method for estimating parameters (i.e., MLR in M*plus*) because self-report scores of self-esteem at T2 (for males) and quality of friendship at T2 (for females) reported moderate deviations from normal distributions (i.e., kurtosis > 4). The constrained model reported an acceptable fit to the data $\chi^2(57) = 125.16$, $p = .00$, CFI = .92, TLI = .90, RMSEA = .07 (90% CI = .06 ─ .09), and was not statistically different from the unconstrained model ($\Delta\chi^2(8) = 20.87$, $p = .11$). In sum, we found no evidence supporting the existence of gender differences in the relations among the constructs. Of note, the unstandardized mediated effect from prosociality to self-esteem via quality of

friendship was statistically different from zero for both groups ($\alpha\beta = .001$; 95% CI = .001 ─ .019; the unstandardized mediated effect was the same for both males and females since the unstandardized parameters have been fixed to equality across sex). Finally, the effect from self-esteem at T1 to prosociality at T2 was statistically significant both for males and females ($b = .10$, $p < .01$).

Discussion

The tendency to enact prosocial behaviors is widely recognized as one of the most important factors for human psychosocial well-being (Batson, 2011; Eisenberg et al., 2006; Midlarsky & Kahana, 2007). Notably, previous researchers occasionally have focused on the beneficial effects for helpers in regard to relevant indicators of psychological adjustment such as self-esteem (e.g., Laible et al., 2004; Le et al., 2012). Accordingly, in the present study we tested a conceptual model highlighting the potential mediational role of positive interpersonal relationships in the association between prosociality and self-esteem in an attempt to clarify the nature of that association.

Specifically, we proposed that prosociality can positively affect self-esteem by improving the positive and supportive social bonds that people have with their friends. Indeed, because prosocial individuals are generally more prone to help and to be sensitive with their friends, they are more likely to establish close and warm friendships which, in turn, affect their relational value (Leary & Baumeister, 2000). This hypothesis, drawn from sociometer theory of self-esteem (Leary, 2005; Leary & Baumeister, 2000), has at its core the idea that when significant others, such as our friends, evaluate us positively and make us feel accepted, they convey positive information pertinent to our self-concept and enhance our perception that we are worthy of value. To test this, we implemented a stringent longitudinal mediational model with two waves of data that allowed us to control for the stability of the constructs over time and to obtain more accurate estimates of the cross-lagged effects (Cole

& Maxwell, 2003; Maxwell & Cole, 2007). Consistent with our hypotheses, we found that above and beyond the high stability of self-esteem over time, a higher tendency to behave prosocially at T1 positively predicted participants' self-esteem four years later through the mediational role of quality of friendship.

From a theoretical perspective, this result has several implications. First of all, this study represents a useful contribution to the sociometer theory of self-esteem. Leary, Tambor, Terdal, and Downs (1995) conceptualized self-esteem as a social thermometer indicating the degree to which individuals feel included within social groups that are relevant for them. According to their perspective, individuals seem to have an evolutionarily-based motive to search signs of social regard and to strive to be valued and included in social groups because, in the past, the establishment of supportive social bonds was crucial for human survival. Of equal importance, similar arguments have been made about the role of prosociality as an evolutionary strategy for human adaptation (Batson et al., 2011). Indeed, the notion of *reciprocal altruism* has been usually invoked as the evolutionary mechanism that, in the past, has absolved the function of establishing mutually supportive social bonds among individuals (Batson, 2011). Therefore, the inclusion of prosociality within the sociometer hypothesis might increase the heuristic power of this theory by highlighting one of the possible mechanisms (i.e., behaving prosocially) by which individuals can enhance the probability of feeling accepted and valued by their social groups. Interestingly, these arguments are also in line with other previous studies pointing to the enhancement of relatedness (Weinstein & Ryan, 2010) and social connectedness (Brown et al., 2012) as mediators of the positive relation of the tendency to take care of others to helpers' self-regard and well-being. Finally, our data further confirm the relevance of friendships for individuals' well-being and the role of friends an invaluable source of information for the individuals' self-evaluation process (Hartup & Stevens, 1997). Consistent with the findings of Harter (1999), we found that the

more support and help people receive from their friends, the higher their feeling of being persons worthy of value will be.

We also found that self-esteem at T1 positively predicted prosocial tendencies at T2 while controlling for its strong autoregressive path. This effect is consistent with the notion that adequate motivational resources (likely conveyed by self-esteem) may be needed to behave prosocially (Eisenberg et al., 2006; Leary & MacDonald, 2003). In particular, the presence of both effects (i.e., from prosociality to self-esteem via quality of friendship, and from self-esteem to prosociality) are in line with arguments for a reciprocal flow of influence between prosociality and self-esteem (Eisenberg et al., 2006; Thoits & Hewitt, 2001). In this regard, one can further speculate that there are even more complex reciprocal relations among prosociality, quality of friendship, and self-esteem (see also Leary et al., 1995), such as a circle of positive effects. However, we acknowledge that the use of two waves of data was not adequate to verify complex reciprocal effects.

Finally, in the future, researches might also investigate which variables mediate the effect of self-esteem on prosociality. For instance, cognitive-motivational structures like self-efficacy beliefs may be possible mediators of this relation. In this regard, some researchers have found that social self-efficacy (i.e., the perceived capacity to deal effectively with one's own relationships) and, in particular, empathic self-efficacy (i.e., the perceived capacity to sense another person's feelings), were empirically related to prosociality (Caprara et al., 2012; Caprara & Steca, 2005). Thus, one may speculate that people with high self-esteem feel more motivated (because their own needs are likely satisfied) and more confident about their capacities to appropriately manage their social relationship and to understand others' perspectives, and, consequently, are relatively prone to behave prosocially.

There are multiple strengths of this study. In order to increase the strength of our conclusions, we used different evaluators of our constructs (although friend-report measures

were available uniquely at T2). In this regard, the use of friend-evaluators who knew well their target allowed us to have a good degree of convergence between the friend- and the self-report evaluations of prosociality, quality of friendship, and self-esteem. In addition, we tried to rule out alternative explanations models by testing three alternative SEMs including different mediated pathways, but none of them fitted better than posited mediational model. The results did not change even when identical measures of constructs were used at both assessments (i.e., the T2 peer-reports were not used as indicators of constructs). Finally, we controlled for the effects of gender in the models and we also tested gender invariance of the hypothesized mediated effect by conducting a multiple-group analysis.

Yet, in spite of a number of strengths, we acknowledge some limitations of the present study. First of all, we recognize that our data are correlational in nature and, although longitudinal, cannot allow definitive conclusions about causality (Cole & Maxwell, 2003). Second, we are aware that our findings are based on a single study, at a specific age (i.e., young adulthood), and in a specific culture. In particular, regarding the context, the high relevance of a sense of belonging and connectedness in relationships in Italy (Reher, 1998) might affect the degree to which friendship quality mediates the relation of prosociality to self-esteem. Thus, more research is needed to confirm these results in other cultural contexts and with participants of different ages. Third, although we identified an important mediational mechanism, we focused uniquely on the quality of friendship. It would be of interest to investigate the mediational role of other relevant interpersonal bonds like family (Telzer & Fuligni, 2009) and romantic relationships (e.g., Denissen et al., 2008; Le et al., 2012) in order to clarify and, presumably, differentiate their relevance during the human development. Future research should also consider the moderation role of motives (e.g., extrinsic vs. intrinsic) for behaving prosocially. For instance, Midlarsky and Kahana (1994) found that elder individuals who reported higher intrinsic motives for helping were most

likely to experience their prosocial actions as personally rewarding. Therefore, the mediational role of quality of friendship in linking prosociality to self-esteem could be moderated by the different motives underlying the prosocial action. Fourth, we focused only on an overall evaluation of quality of friendships. In the future studies, investigators might consider using psychological instruments better suited to capture specific sub-dimensions of quality of friendship (e.g., support, confidence, etc.; Keefe & Berndt, 1996). Fifth, although we used a rigorous statistical methodology and the availability of two waves of data allowed us to control for the stability of the constructs over time, three data points represent the optimal standard for longitudinal mediational model. Lastly, the sole use of self-report measures for prosociality at T1 can represent another limit given the supposed high social desirability of this construct. Although we are quite confident that our measure of prosociality at T1 is representative of prosocial behaviors effectively enacted by individuals (of importance, individuals' scores on this measure were moderately correlated with the other-report assessment at T2), we acknowledge that the lack of friend-report assessments at T1 weakened our design. Therefore, future studies replicating and extending these findings might include other methods of assessments such as observational measures of prosocial behaviors.

Despite these limitations, we believe that the present study provides information relevant for the comprehension of the psychological mechanisms linking prosociality to self-esteem and might have some practical implications for educators and psychologists working with intervention programs designed to promote a robust sense of self-worth among youths. Indeed, fostering prosociality through appropriate educational actions can allow individuals to have more positive friendships and to feel better about themselves (Baumeister et al., 2003).

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STUDY 3

THE EFFECTS OF THE CEPIDEA PROGRAM ON SELF-ESTEEM AND HEDONIC BALANCE IN YOUNG ADOLESCENTS

Abstract

In line with recent findings attesting to the effects of the CEPIDEA program in promoting prosocial behavior and academic achievement, and counteracting physical aggression (Caprara et al., 2013), the purpose of this study was to evaluate the impact of the CEPIDEA on two important outcomes for psychological well-being like self-esteem and hedonic balance. The intervention took place in two middle schools located in a small city near Rome. The intervention group included 151 students (72 females; Mage = 12.4), and the control group 140 students (78 females; Mage = 12.6). Both the intervention and the control groups were assessed sequentially at three different time points (i.e., pre-test; post-test at 6 months; and follow-up at 18 months). A multiple-group latent curve analysis (MG─LCM; Muthén & Curran, 1997) revealed that the intervention group, compared to the control group, showed an increase both in participants' hedonic balance and self-esteem. In detail, a moderation analysis revealed that those participants starting with lower level of self-esteem increased more at the end of the program. Overall, the intervention looks promising in favoring self-esteem and hedonic balance and pointed to the promotion of prosocial behavior and its related socio-emotional competencies as proper strategies to foster psychological well-being during adolescence.

Keywords: prosociality; intervention; self-esteem; hedonic balance; adolescence; multi-group latent curve models.

In the last decades there has been an increasing concern in children and adolescent mental-health and well-adjustment (Greenberg, Domitrovich, & Bumbarger, 2001). This concern has been translated into a series of reflections and practical interventions for the prevention of mental, emotional, and behavioral disorders that can be grouped into the specific field of *prevention science* (Greenberg et al., 2001). Prevention science is an interdisciplinary field of research in which converge contributes from "public health, epidemiology, sociology, and developmental psychopathology" (Greenberg et al., 2001, p. 4). In particular, prevention scientists stressed the relevance of considering multiple risk (e.g., family conflicts, peer rejection, school failure, emotional and cognitive delays, etc.) and protective factors (cognitive and social skills, positive peer interactions, secure attachment, etc.) that could affect youth development.

Based on these assumptions, several intervention programs have been developed in order to prevent conduct and mental disorders and to promote youth's well-adjustment. They can be classified into three different levels (Institute of Medicine, 1994; National Institute of Mental Health, 1998): (a) *universal preventive interventions* (the target is constituted by the entire population without specific indications of risk factors); (b) *selective preventive interventions* (the target is constituted by subgroups of the population that can present some risk factors); (c) *indicated preventive interventions* (the target is constituted by individuals identified as having early mental, emotional, or conduct problems). Moreover, it is helpful to consider the different contexts in which the programs operate (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002). In this sense, we can distinguish among programs that operate in the *family* domain (e.g., programs based on parent training), in the *school* domain (e.g., programs based on the promotion of social skills among the students), or in the *community* domain (e.g., programs that consider the role played by the one's own community and neighborhood factors). As noted by Catalano et al. (2002), many programs can operate at

different social domains simultaneously (e.g., the Fast Track program, Conduct Problem Prevention Research Group, 2000).

Importantly, among the programs aimed at improving youth's well-adjustment, many of them have considered the relevance of promoting *prosocial behavior* (i.e., those actions aimed at benefiting others without immediate rewards, Eisenberg, Fabes, & Spinrad, 2006) as protective factor (Catalano et al., 2002). In the last years, lots of studies have shown the countless benefits of behaving prosocially. For instance, prosocial children perform better at school (Caprara, Barbaranelli, Pastorelli, Bandura & Zimbardo, 2000; Wentzel, McNamara-Barry & Caldwell, 2004), are at less risk for problem behaviors (e.g., Bandura, Pastorelli, Barbaranelli & Caprara, 1999), and, in general, have a better healthy development (Eisenberg et al., 2006). Although prosocial programs have been implemented in several contexts (e.g., juvenile prisons, centers for rehabilitation of antisocial youths, etc.), the *school* represents their *ideal social context*. Indeed, the school is the place where students learn notions, transmit and create knowledge, experiment their academic skills, etc. At the same time, the school is also a powerful agent of socialization which is capable of transmitting values, norms, and behavioral rules essential for living together in the society.

Recently, a new *universal school-based intervention program* (Promoting Prosocial and Emotional Skills to Contrast Externalizing Problems in Adolescence; CEPIDEA) has been developed in Italy in order to promote *prosocial behavior* and its related *socio-emotional skills* among early adolescents (Caprara et al., 2013). Whereas its effectiveness in terms of promotion of prosocial behaviors (and contrast of aggressive behaviors) has been previously ascertained (Caprara et al., 2013), other outcomes important for youths' well-being and mental health that could be affected by the CEPIDEA deserve further investigation. According to these premises, the main aim of the present study is to evaluate the effectiveness of the CEPIDEA on two relevant outcomes of positive adjustment like *self-*

esteem (i.e., individuals' evaluation of their own value; Harter, 2003) and *hedonic balance* (i.e., the overall equilibrium between positive and negative affect; Steel, Schimdt, & Shultz, 2008). In the following sections, we first conceptualized the theoretical bases of the CEPIDEA program and then we discussed and detailed our hypotheses regarding the effects of the CEPIDEA on self-esteem and hedonic balance.

Positive Youth Development and Socio Emotional Learning

In the field of interventions aimed at improving positive relationships and well-adjustment in young students (usually from elementary to junior high school), there was, mainly in the past three decades, a strong focalization on the reduction of risk factors conducive to detrimental behaviors (i.e., aggressive and antisocial behaviors, bullying, etc.) rather than the promotion of positive skills and abilities (Catalano et al., 2002; Greenberg, Domitrovich, & Bumbarger, 2001). Only in the 90's, the Positive Youth Development (PYD) movement (Catalano et al., 2002) stressed the relevance of fostering in youths those abilities and skills fundamental for their positive development. The main idea of the PYD is that favoring these abilities can operate at the same time both as a protective factor against the onset of antisocial behaviors and as a promotion factor for the youth's well-being and well-adjustment (Catalano et al., 2002). Currently, in line with the ideas of PYD movement, the most salient theoretical framework undergirding effective *school-based interventions* is Socio and Emotional Learning (SEL; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011), which emphasizes the importance of building emotional and interpersonal capacities, and of developing prosocial behavior. On the whole, SEL interventions focus on elementary school (e.g., *Incredible Years*, Hutchings et al., 2012; Webster-Stratton, Reid, & Hammond, 2004), or cover ages ranging from 6 to 12 (e.g., *Second Step*; Holsen, Smith, & Frey, 2008). Evidence of effectiveness in increasing prosocial behavior has been found mainly for elementary children (Webster-Stratton et al., 2004), but not for adolescents, who report

improvement in their prosocial *attitudes* (e.g., concern for others, desire to help; Battistich, Schaps, Watson, Solomon, & Lewis, 2000) rather than their behaviors.

Based on a thorough review of these programs and their underpinnings, we designed a school-based intervention called CEPIDEA directed to adolescents in middle-school. While many programs include social skills or prosocial behaviors as one specific component of their curriculum, the CEPIDEA program is unique in that it is entirely designed to promote prosocial behaviors. That is, we connected the development of key skills (including perspective taking and emotional regulation, for example) anchored specifically on the promotion of prosocial actions. The enhancement of these skills are content targets of the CEPIDEA curriculum because of their being determinants of prosocial behaviors. Indeed, another uniqueness of this approach stems from its alignment with a social cognitive view of the personal determinants of the prosocial responding (Caprara et al., 2012). An additional characteristic of the CEPIDEA program is the focus on early adolescence. Given longitudinal findings suggesting that prosocial behavior declines or remains stable across early adolescence (i.e., approximately from 10 to 14 years of age; e.g., Luengo Kanacri, Pastorelli, Eisenberg, Zuffianò, & Caprara, 2013; Nantel-Vivier et al., 2009) middle-school is a worthwhile setting for the intervention. Moreover, a recent meta-analysis (January, Casey, & Paulson, 2011) indicates that across the span of these years, early adolescents are more sensitive to interventions focused on positive peer relations. This susceptibility may stem from the value they place on relationships with their classmates and their need to become aware of the complex rules of relationships. Therefore, early adolescence appears to be a crucial developmental period for implementing prosocial intervention programs.

The CEPIDEA Program: Theoretical Underpinnings and Components

Within the wider framework of PYD, the specific theoretical rationale underlying our intervention stems from the integration of various research traditions, such as personality, developmental, and social psychology, which addresses the personal roots of prosocial behaviors. In social psychology for instance, values related to self-transcendence, which emphasizes accepting others as equals and displaying concern for their welfare, are important motives for prosocial behaviors (e.g., Schwartz, 2010). Trait psychologists who examine the basic attributes (detailed in the Big Five Model, McCrae & Costa, 1990) that predispose people to respond consistently to environmental demands, suggest that agreeableness (i.e., the tendency to be likeable and harmonious in relations with others), is considered a major determinant of prosocial behavior (Caprara, Alessandri, & Eisenberg, 2012; Graziano & Eisenberg, 1997). Developmental psychologists point to empathic and emotion regulation capacities as critical ingredients for prosocial behavior (Eisenberg et al., 2006). Indeed, being empathic and able to manage one's own emotions is indicative of not only the capacity to be sensitive to the needs of others, but also the active use of resources that prevent contagion from the negative emotions of others (which may lead to emotional over-arousal; Eisenberg et al., 2006). Additionally, certain perspectives from Social Cognitive Theory (Bandura, 1997; Caprara et al., 2012) has proven useful, particularly the idea of confidence in one's own capability to manage emotions and empathize as determinants of prosocial behavior.

According to the above research traditions, the CEPIDEA curriculum included four components that reflect the personal determinants of prosocial behavior (Caprara et al., 2012). These components were implemented in the following order: (1) sensitization to prosocial values; (2) development of emotion regulation skills (management of negative emotions, and expression and reinforcement of positive emotions); (3) development of perspective-taking skills; and (4) improvement of interpersonal-communication skills. The program adopted persuasion, modeling, and mastery experience (Bandura, 1997) as relevant

strategies in developing adolescents' self-efficacy beliefs that are conducive to prosocial behaviors.

Given the support needed by the school's administration, the entire school was involved in the CEPIDEA program. Indeed, the program included two kinds of intervention strategies: (1) prosocial sessions and (2) prosocial lessons. Prosocial sessions (14 in total) were delivered once a week during school hours by the CEPIDEA research staff and in collaboration with teachers. Sessions included role playing, modeling, case analysis, interviews and group discussions aimed at setting the conditions for experiencing and reflecting upon each component of the intervention. In addition to these workshops, teachers integrated the concepts of the curriculum through prosocial lessons (21 in total; 3 per classroom) that were delivered by teachers in various academic disciplines (e.g., Science, History, etc.). In these lessons, teachers emphasize the functions of behaving prosocially and the value this may provide in various contexts of life. On the whole, while prosocial sessions were crucial to promoting mastery experiences and encouraging students to apply their new skills in their daily life at school, prosocial lessons were important in engaging student reflection regarding how prosocial values can be applied in their social contexts (e.g., family, neighborhood, etc.) and the benefits of prosocial behaviors across these and other situations. Table 3.1. reports a summary of the sessions of the intervention. Given the central role teachers play in their student's lives, an important strategy of CEPIDEA has targeted teacher training before the intervention was implemented (Smith, 2011). Thus, teachers participating in the intervention attended 7 training sessions (2 hours per session) that were geared toward: (a) providing the theoretical background and goals of the intervention; (b) learning to recognize and reinforce students' prosocial behaviors; (c) acquiring intervention procedures; and (d) promoting a collaborative climate. Subsequently, all members of the research staff participated in monthly school council meetings in order to ensure both program

implementation and fidelity. Research staff also met with teachers individually and in small groups when necessary to provide support and address potential concerns. The school principal was involved in each phase of the program implementation.

Table 3.1. Summary Table of Intervention

Components	**Prosocial Sessions**
Sensitization to prosocial values	• The benefits of prosociality • Monitoring the enactment of prosocial behaviors within the classroom • Prosocial values, dilemmas and choices
Emotion regulation skills	• Acknowledging feelings and emotions • Awareness of negative emotions and its regulation • Recognizing others' emotions • Positive emotions and its expression
Perspective-taking skills	• Recognizing others' perspectives • Recognizing others' needs • Helping others in trouble
Interpersonal-communication skills	• Dealing with peer group demands • Communication skills and assertiveness • Communications skills and positive emotions
Precursors of Civic Engagement	• From benevolence to universalism • Strategic planning for helping • Goal setting for helping our school/neighborhood

CEPIDEA: Self-esteem and Hedonic Balance

As detailed in the previous paragraphs, the CEPIDEA program has been entirely developed to promote prosocial behavior and its related socio-emotional skills among early adolescence. First evaluations of the CEPIDEA have been mainly focused on the analyses of its main outcomes like (a) prosocial and (b) aggressive behavior, (c) emphatic self-efficacy beliefs, and (d) academic achievement (Caprara et al., 2013). Interestingly, the results supported a small increase in prosocial behavior (peer-report) and in academic achievement (teacher-report) as well as a small decrease in aggressive behavior (peer-report) in the intervention group relative to the control group (instead, no significant effects on emphatic self-efficacy beliefs have been detected; see Caprara et al., 2013 for a deeper discussion of these results).

However, one should not underestimate the impact of the CEPIDEA program on other indicators of adolescents' well-being like participants' evaluation of their own value (i.e., self-esteem) and their tendency to experience positive emotional states rather than the negative ones (i.e., hedonic balance). Referring to self-esteem, the promotion of prosocial behavior and the development of appropriate social skills (e.g., perspective taking, positive communication, etc.) may have helped adolescents to stay better at school by favoring peer acceptance and, in general, a more positive climate within the classroom. In this regard, it is important to consider that, during adolescence, individuals are particularly sensitive to social inclusion (Harter, 1999, 2003), and that perception of exclusion may hurt adolescents' feelings of self-worth (Harter, 2003; Leary & Baumeister, 2000). Therefore, it is plausible to hypothesize that the CEPIDEA program may have improved participants' self-esteem (Eisenberg & Morris, 2004; Harter, 2003; Leary & Baumeister, 2000; see also Study 2 of the present thesis). In addition, interventions like *Big Brothers and Big Sisters* (Rhodes et al., 2000) and *Early Adolescent Helper Program* (Switzer, Simmons, Dew, Regalski, & Wang,

1995) have already reported how volunteer mentoring can increase adolescents' perception of their value.

Moreover, since one component of the CEPIDEA was specifically developed to help participants to increase their emotion regulation skills, one may hypothesize that the CEPIDEA could have contributed to promote among participants an overall emotional equilibrium (i.e., hedonic balance) characterized by the presence of greater positive affect (e.g., feeling enthusiastic, happy, etc.) rather than negative affect (e.g., feeling sad, afraid, etc.). In addition, one should not discount that, more broadly, the enhancement of hedonic balance may be also related to the improvement of prosocial behavior which has occurred in the intervention group (see Caprara et al., 2013). Indeed, behaving prosocially has been usually associated with a greater tendency to experience positive affect (as a source of reward and gratification for the "good action"; Eisenberg et al., 2006; Le, Impett, Kogan, Webster, & Cheng, 2012; see also Yates & Youniss, 1996). In sum, participants in the intervention group may have received benefits in terms of their hedonic balance both from the acquired skills in emotion regulation and from the experience of greater positive affect (as a personal reward) related to the their enhancement of prosocial behaviors.

Finally, we did not also exclude that the increase in hedonic balance in the intervention group may have operated as a mediator of the effect of the CEPIDEA on self-esteem. In this regard, previous studies have already highlighted how the positive emotions stemming from caring for others can have positive effects on individuals' level of self-esteem (e.g., Le et al., 2012). Therefore, we also tested if the experience of greater positive affect can have led participants in the intervention group to experience greater self-esteem at the end of the intervention.

Method

Design

Thirteenth seventh grade classrooms (2009-2010 school year) from two middle schools participated in the present study. In particular, one school was assigned to intervention condition, whereas the other one to control condition. The assignment to treatment condition has been conducted at the school-level (instead of the classroom-level) in order to avoid undesirable "diffusion of treatment" effects (Cook & Campbell, 1979). Both the intervention and the control groups were assessed sequentially at three different time points (i.e., pre-test; post-test at 6 months; and follow-up at 18 months).

Participants

Two hundred-ninety-one seventh graders enrolled in the two middle schools in Genzano, a small city near Rome, participated at the study. The intervention group included 151 students (72 females) belonging to 7 classrooms, and the control group included 140 students (78 females) belonging to 6 classrooms. The mean age for students in the intervention group at pre-test was 12.4 (*SD*=.49) and 12.6 (*SD*=.53) in the control group. The majority of the students of our sample were from intact families (91%) and only 7.6% were from single-parent homes (i.e., parents were separated or divorced) or parents unmarried (1.4%).

Procedure

The study was conducted over a 25 month period (from February 2009 to April 2011) and included assessments, teacher training, and classroom activities. The first seven months (February -September 2009) were primarily devoted to set the basis for the implementation of the intervention. First CEPIDEA was presented to the School Council and to the assembly of teachers to gain their approval. Parents were informed via both letters and an informational meeting, and asked to consent to their child's study participation. Parental informed consent for assessment was obtained for almost all the students in each assessment time point (98.5% on average). Forty teachers (60% females) have been invited and most of them attended 7

training sessions (2-hours per session), to make them aware of the theoretical premises, goals and procedures of the intervention, Almost 95% of teachers participated to these sessions, attesting the teachers' engagement in the program. After identifying treatment classrooms, the members of the research staff worked with teachers at the curriculum materials and set the schedule of the intervention. A CEPIDEA coordinator teacher was appointed for each classroom participating to the intervention.

Questionnaires have been administered in each classroom by two members of the research staff during school hours. The purpose and response choices of the questionnaires were explained to students, who were subsequently asked to complete the questionnaires independently of others. Procedure of assessment remained the same across the whole study. In October 2009 students from the intervention and control group were assessed for the first time (pre-test). Then, the prosocial curriculum was implemented in the participants classrooms from the end of October 2009 to April 2010. At the end of the intervention, students were evaluated at 6-months post-test (April 2010) and at 18-months follow-up (April 2011). Finally, intervention fidelity was controlled by: (a) manualization of prosocial sessions; (b) regular communication with teachers and their ongoing supervision; (c) weekly staff meetings; (d) *ad hoc* checklist filled out by the staff at the end of each prosocial session aimed to evaluate the adherence to the programmed specifications.

Measures

Self-esteem. Self-esteem was assessed with the 10-item Rosenberg (1965) self-esteem scale which measures the extent to which participants feel they possess good qualities and have achieved personal success (e.g., "I feel that I have a number of good qualities," "On the whole, I am satisfied with myself"). Each item was rated on a 4-point scale (from 1= *strongly disagree* to 4= *strongly agree*). Alpha coefficients were .77 at pre-test, .79 at post-test, and .83 at follow-up.

Hedonic Balance. Participants' hedonic balance was assessed by using the PANAS scale (Watson, Clark, & Tellegen, 1988), an instrument developed to measure the extent to which individuals experienced a range of positive and negative emotions throughout the last weeks by using a 5-point scale (from 1 = *very slightly* or *not at all* to 5 = *extremely*). In the present study we used a reduced version of the scale comprised by 12 items. The "Positive Affect" section of the PANAS includes terms such as "enthusiastic", and "happy", whereas the "Negative Affect" section of the PANAS includes terms such as "afraid", "hostile", and "irritable". Alpha coefficients for the positive affect sub-scale were .63 (pre-test), .67 (post-test), and .68 (follow-up). Alpha coefficients for the negative affect sub-scale were .67 (pre-test), .77 (post-test), and .75 (follow-up). According to standard procedures (Caprara, Steca, Gerbino, Paciello, & Vecchio, 2005) hedonic balance was computed by subtracting the negative affect score from the positive affect score (i.e., hedonic balance = positive affect ─ negative affect).

Attrition Analyses

The retention rate was very high in our study at the end of the intervention (intervention group 97%; control group 88%). Moreover, the lack of selective attrition in our data is supported by the Little's test (1988) for missing completely at random (MCAR), which was nonsignificant (i.e., $\chi^2(37) = 47.06$, $p = .12$), indicating that the missingness on one variable was unrelated to the other measured or unmeasured variables (Enders, 2010).

Data Analytic Approach and Model Evaluation

To examine the potential effects of the CEPIDEA intervention we used a multiple-group latent curve model approach (MG─LCM) as detailed by Muthén and Curran (1997; Curran & Muthén, 1999). In general, LCM models allow to identify two growth latent factors (i.e., the intercept and the slope) by using the means of the observed variables at each time-point (in our case: Pre-test, post-test at 6 months, follow-up at 18 months from the pre-test).

In our study, the intercept was based at the first time point in order to represent the initial status of the growth by fixing all the intercept factor loadings at 1 and the first slope factor loading at 0. The slope factor, instead, represents the mean-level changes over-time of the examined variables (Bollen & Curran, 2006).

Since the goal of any intervention program is to alter the normative development of a specific behavior or pattern of behaviors (Curran & Muthén, 1999), the MG─LCM approach is particular useful as it allows to capture the treatment effects within the intervention group *above and beyond the normative developmental trajectory* of the targeted behavior. Due to the complexity of the evaluation approach used, the following steps were required in order to appropriately estimate the intervention effects. [2]

Step 1: Estimation of the normative development in the control group. In this first step, a LCM was estimated only within the control group in order to identify the normative developmental trajectory of the targeted behavior. In particular, for each of our constructs of interest we tested two different models of change: (a) a *no change model* that includes only the intercept latent factor (i.e., the mean and the variance of the slope are fixed to be zero) and assumes no change in the construct considered; (b) a *linear change model* in which the mean and the variance of the slope are freely estimated and a constant mean rate of change is supposed to occur among the participants (the slope factor loadings were fixed to be 0, 1, and

[2] The original model building process indicated by Muthén and Curran (1997) included five steps in which the last one is the *sensitivity analysis* (i.e., the evaluation of the comparability between intervention and control group). In our evaluation approach, we performed the sensitivity analysis in Step 3.

3 respectively for the pre-test, post-test, and follow-up) [3]. Then, we identified the best fitting model through the chi-square difference test for nested models ($\Delta\chi^2$).

Step 2: Estimation of the development in the intervention group. In this second step, the LCM models previously estimated for each construct in the control group (i.e., *no change* and *linear change*) were repeated within just the intervention group in order to assess if a similar pattern of change could be appropriate for both groups.

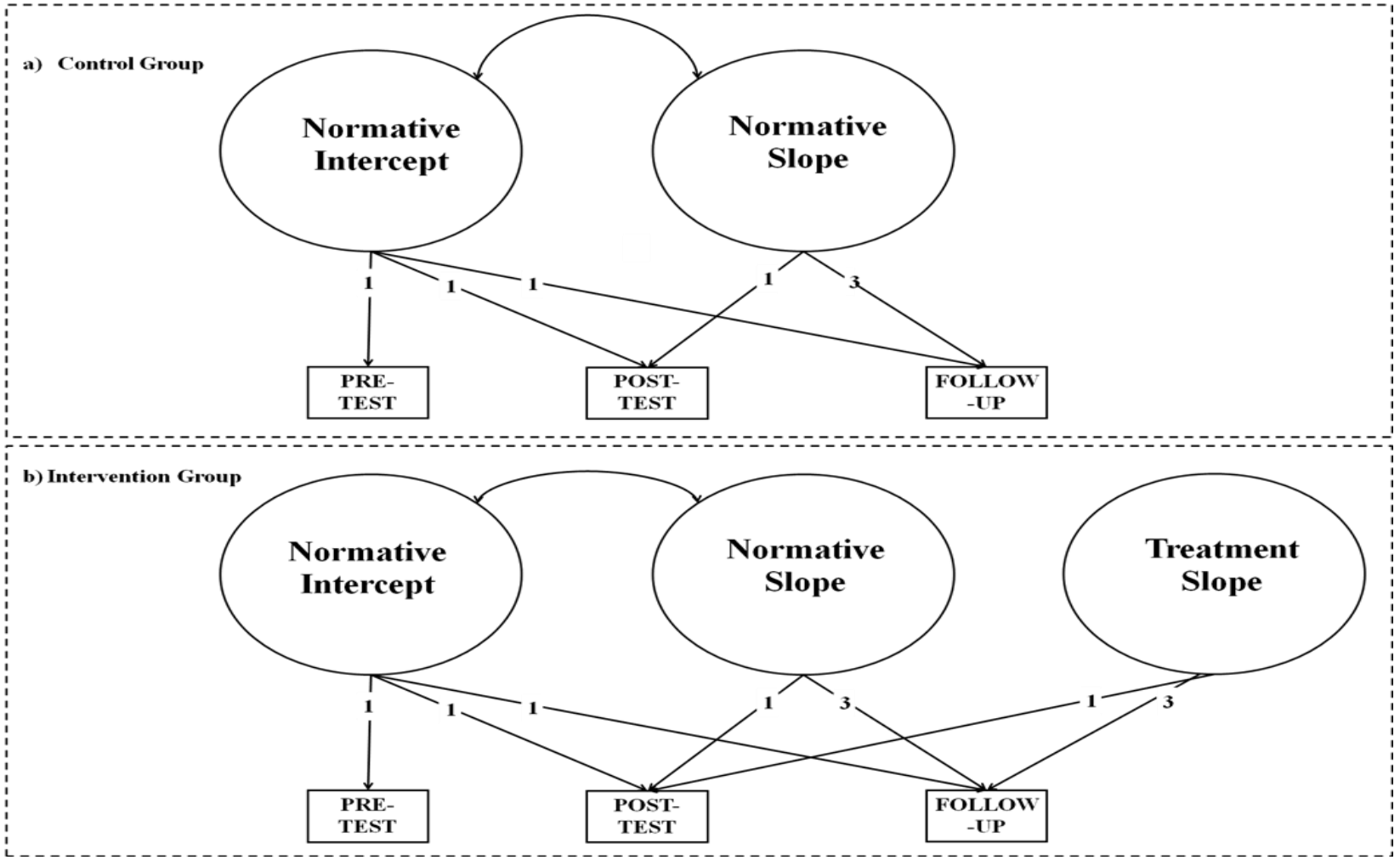
Step 3: Multiple-group analysis. In this step, the LCM was estimated simultaneously both in the control and intervention group. In detail, the normative growth factors previously estimated in the control group for a specific outcome were also estimated in the intervention group. The parameters of the growth factors (means, variances, and co-variances) were equated across the two groups and the plausibility of these constraints has been assessed by the chi-square difference test ($\Delta\chi^2$) for nested models (i.e., *constrained model* vs. *unconstrained model*). This comparison has been defined as *sensitivity analysis* by Muthén and Curran (1997) and is particularly relevant since it allows to ascertain if both group were equal in their initial level and normative development over time. In addition, these equality constraints specified the amount of change in the intervention group that was attributable to the normative development (Curran & Muthén, 1999). Of most importance, in our evaluation approach a *new linear growth factor* has been added only in the intervention group. This new linear growth factor represents any change occurred in the intervention group that is not attributable to the normative development observed in the control group (see Figure 3.1.). Thus, this procedure allows to separate the effect of the intervention condition from the normative developmental trajectory that existed without exposure to the intervention.

[3] The one-unit increment of the first two loadings represented the 6-month interval between the pre-test and the post-test, whereas the two-unit increment of the last factor loading represented the 12-month interval between the post-test and the follow-up.

Step 4: Moderation effects. In this last step, we regressed the second linear change factor on the intercept only within the intervention group in order to assess if the responsiveness to the intervention was affected by the initial status of the participants (i.e., *treatment-initial status interaction*).

All the MG─LCM analyses were implemented in M*plus* 7 (Muthén & Muthén, 2012) with maximum likelihood estimation of the parameters. Non-significant χ^2 likelihood ratio statistic, Comparative-fit-index (CFI) and Tucker-Lewis-fit-index (TLI) greater than .90, and root mean square of approximation (RMSEA) value lesser than .08 were considered as indicators of good model's fit (Kline, 2010). Full information maximum likelihood has been used as method of estimation of missing data. This method offers unbiased parameters under the assumption of MCAR or missingness at random (MAR) by taking information from the observed data (Baraldi & Enders, 2010).

Figure 3.1. MG-LCM Approach



Results

Descriptive Statistics

In Table 3.2. the descriptive statistics of the variables of interest were presented. The observed means of hedonic balance showed a growth over time both in the intervention and control group. The observed means of self-esteem, instead, seemed decreasing in the control group, whereas appeared to remaining stable in the intervention group. We also checked the distribution of the variables and none of them presented a problematic deviation from normal distributions (i.e., skewness > 2 and kurtosis > 7, Curran, West, & Finch, 1996).

Table 3.2. Descriptive Statistics

	Pre-test	Post-test	Follow-up
	M (SD)	*M (SD)*	*M (SD)*
Self-esteem			
Intervention	3.23 (0.49)	3.23 (0.49)	3.29 (0.52)
Control	3.17 (0.44)	3.20 (0.48)	3.10 (0.55)
Hedonic Balance			
Intervention	1.82 (1.13)	1.88 (1.29)	2.04 (1.20)
Control	1.70 (1.00)	1.87 (1.16)	1.84 (0.91)

Note. Observed means and standard deviations (in parentheses).
Stability self-esteem PRE-POST (r = .60, p <.001), PRE-FU (r = .40, p <.001), POST-FU (r = .45, p <.001); Stability hedonic balance PRE-POST (r = .53, p <.001), PRE-FU (r = .44, p <.001), POST-FU (r = .46, p <.001);
Within time correlations self-esteem - hedonic balance: PRE (r = .48, p <.001); POST (r = .44, p <.001), FU (r = .30, p <.001).
Across time correlations self-esteem - hedonic balance ranged from r = .21 p <.01 (self-esteem pre-test with hedonic balance follow-up) to r = .35, p <.001 (hedonic balance pre-test with self-esteem post-test).

Baseline Comparisons

The comparability of the two groups in terms of gender composition and socio-economic status (SES) has been evaluated through chi-square analyses. The intervention and control groups were found to be equivalent in terms of gender composition χ^2 (N = 291, df = 1) = 1.877, p = .171, and SES by using father's and mother's educational level as a proxy indicator of SES (respectively, χ^2 (N = 259, df = 5) = 4.867, p = .432, and χ^2 (N = 262, df = 5) = 7.109, p = .213). Referring to our main outcomes, as we worked with latent variables, we assessed initial differences between the intervention and control group by imposing equality constraints on the mean and the variance of the intercept factor across groups (see Step 3). As discussed in detail in the next section, the sensitivity analysis revealed that intervention and control group did not differ on their initial level of self-esteem and hedonic balance.

Latent Curve Analysis

The intervention effect for each construct are reported according to the steps detailed in the previous section. Because we used latent variables, we computed an analogous of Cohen's *d* measure of effect size (1988) by using the difference in model-implied estimated mean for control and intervention groups divided by the standard deviation for the outcome at the last time point (Muthén & Curran, 1997). According to standard criteria (Cohen, 1988), we considered *d*s = .20, .50, and .80 as cut-off for small, medium, and large effect, respectively.

Self-esteem. According to the results reported in Table 4.3. for Step1 and Step 2, the *no change model* resulted the best fitting models respectively for the control and the intervention group when they were analyzed separately. Thus, the two groups appeared to be characterized by a similar development of self-esteem. Yet, it is noteworthy that the *linear change model* in the intervention group presented a significant variance of the slope factor (s^2 = .02, p <.05) as well as a covariance between the intercept and the linear trajectory that is

close to be statistically significant ($cov_{I–S}$ = -.02, p <. 10). Therefore a certain kind of heterogeneity in the development of self-esteem seemed existing in the intervention group.

In Step 3, a MG─LCM has been implemented in both group simultaneously (see Table 3.3.). The sensitivity analysis in the MG─LCM framework revealed that intervention and control group did not differ in their initial self-esteem status (i.e., the mean and the variance of the intercept can be equated across group) as attested by the non-significant value of the chi-square difference test between the constrained and the unconstrained model (see Table 3.4.). The treatment latent factor in the intervention group revealed a positive mean (M = .02, p = .10; see column T_i *M*) which was very close to be statistically significant. However, the magnitude of this effect (d = .13) revealed a very small impact of the intervention on self-esteem. Interestingly, the variance of the treatment factor resulted statistically significant (s^2 = .01, p <.05; see column T_i *Var*), indicating heterogeneity among individuals in the self-esteem trajectory within the intervention group. In order to clarify the meaning of this variability, in Step 4 we investigated the possibility of a *treatment-initial status interaction* by regressing the treatment factor on the latent intercept. This model reported an excellent fit to the data $\chi^2(9) = 11.93$, p =.22, CFI = .99, TLI = .99, RMSEA = .05 (90% CI = .00 ─ .11) and revealed a significant negative effect of the initial status on the treatment factor (β = -.29, p <.01). As depicted in Figure 3.2., the participants in the intervention group who increased steeper in their mean-level of self-esteem over time were only those who started with lower initial levels (d = .63). The final MG─LCM for self-esteem is depicted in Figure 3.3. and the estimated means are reported in Figure 3.4.

Table 3.3. Fit Indices and Unstandardized Parameter Estimates (Step 1 and Step 2)

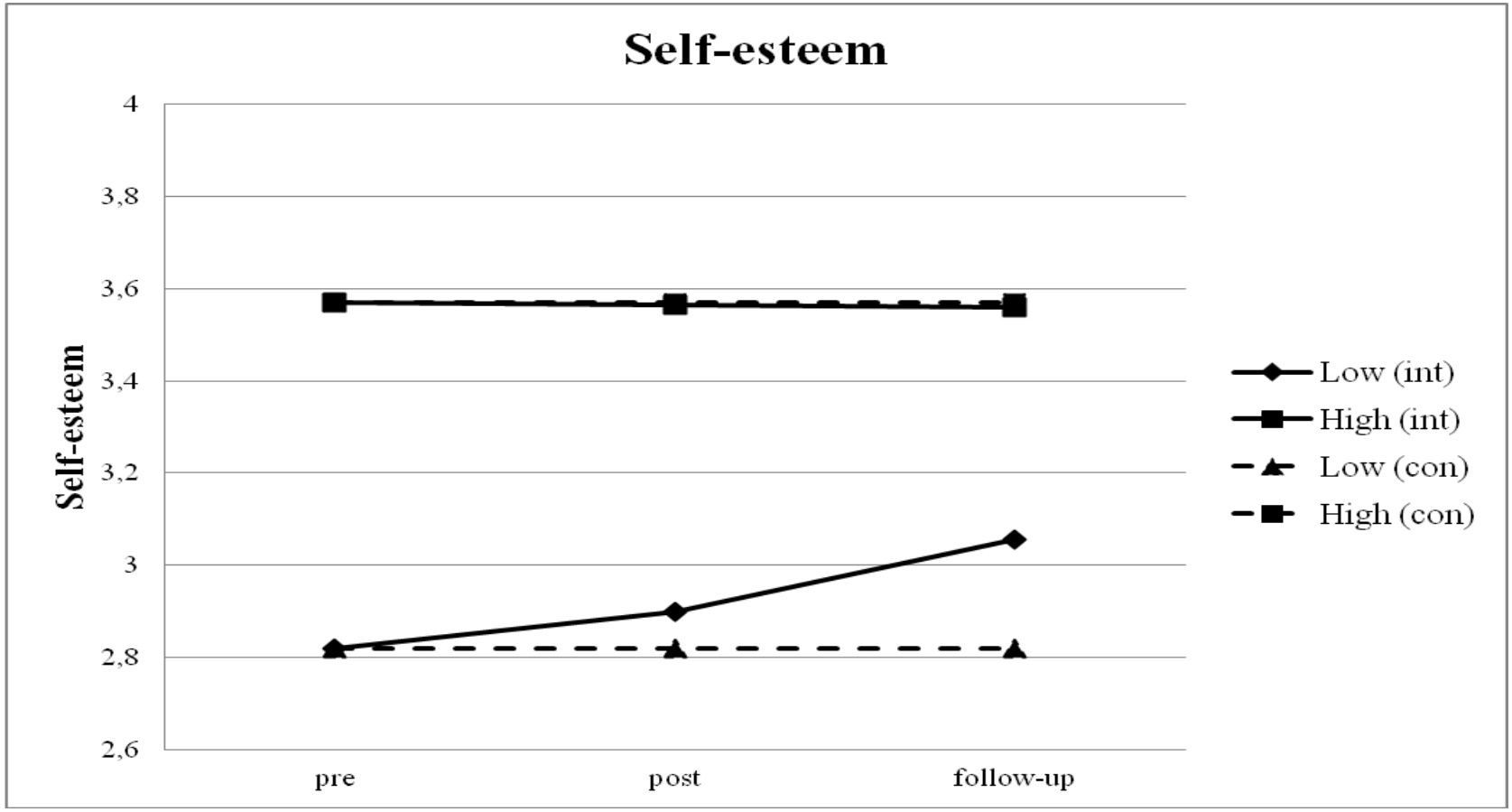
			Fit Indices							*LCM Parameters*				
	Step	*Model*	χ^2	*df*	*CFI*	*TLI*	*RMSEA*	*MC*	$\Delta\chi^2$	*Δ df*	*I Mean*	*I Var*	*S Mean*	*S Var*	*I-S Cov*
EST	*Step-1 (control)*	**1. no change**	**6.31**	**4**	**.97**	**.98**	**.07**	—	—	—	**3.16****	**.12****	—	—	—
		2. linear change [a]	4.20	3	.99	.99	.05	1 Vs. 2	2.11	1	3.18**	.12**	-.02	—	—
	Step -2 (interv.)	**3. no change**	**7.14**	**4**	**.97**	**.98**	**.07**	—	—	—	**3.24****	**.14****	—	—	—
		4. linear change	0.70	1	1.00	1.00	.00	3 Vs. 4	6.44†	3	3.23**	.17**	.02	.02*	-.02†
HB	*Step -1 (control*	**5. no change** [b]	**8.07**	**5**	**.95**	**.97**	**.07**	—	—	—	**1.78****	**.44****	—	—	—
		6. linear change [b]	3.17	2	.98	.97	.07	5 Vs. 6	4.90	3	1.72**	.64**	.04	.04	-.08
	Step -2 (interv.)	7. no change	11.24*	4	.94	.95	.11	—	—	—	1.91**	.74**	—	—	—
		8. linear change	**0.02**	**1**	**1.00**	**1.00**	**.00**	7 Vs. 8	11.22*	3	**1.82****	**.94****	**.07***	**.12***	**-12***

Note. Best fitting models are in bold. EST=Self-esteem; HB=Hedonic Balance; *MC*=Model comparison; *I Mean*=Intercept mean; *I Var* = Intercept variance; *S Mean* = Slope mean; *S Var* = Slope variance; *I—S Cov* = Covariance between intercept and slope. **p* <.05; ***p*<.01.

[a] In order to reach model identification we set to zero the slope variance and the covariance between intercept and slope.

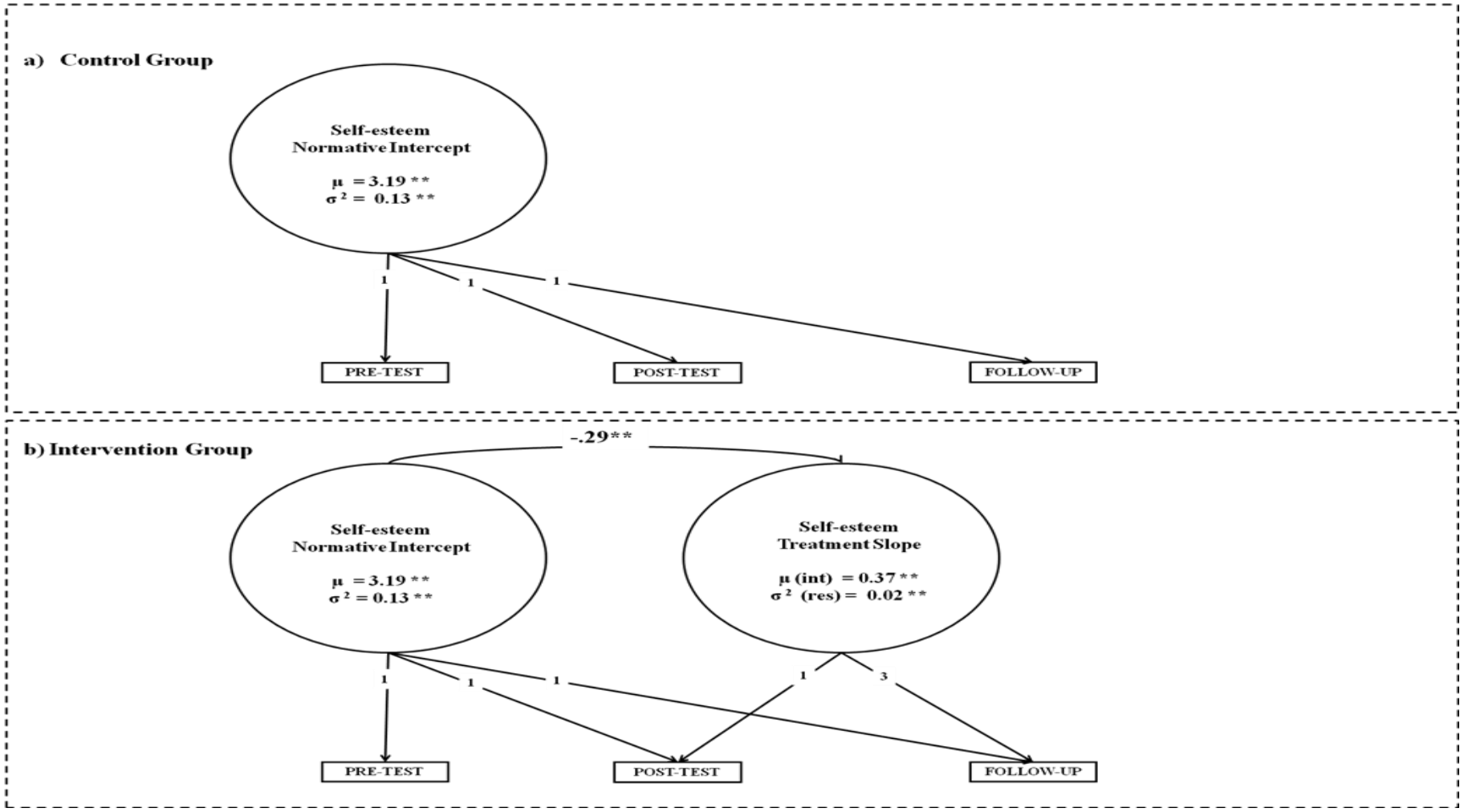
[b] In order to reach model identification we constrained to equality the residual variances of observed indicators at pre-test and at the follow-up.

Figure 3.2. Treatment ─ Initial Status Interaction



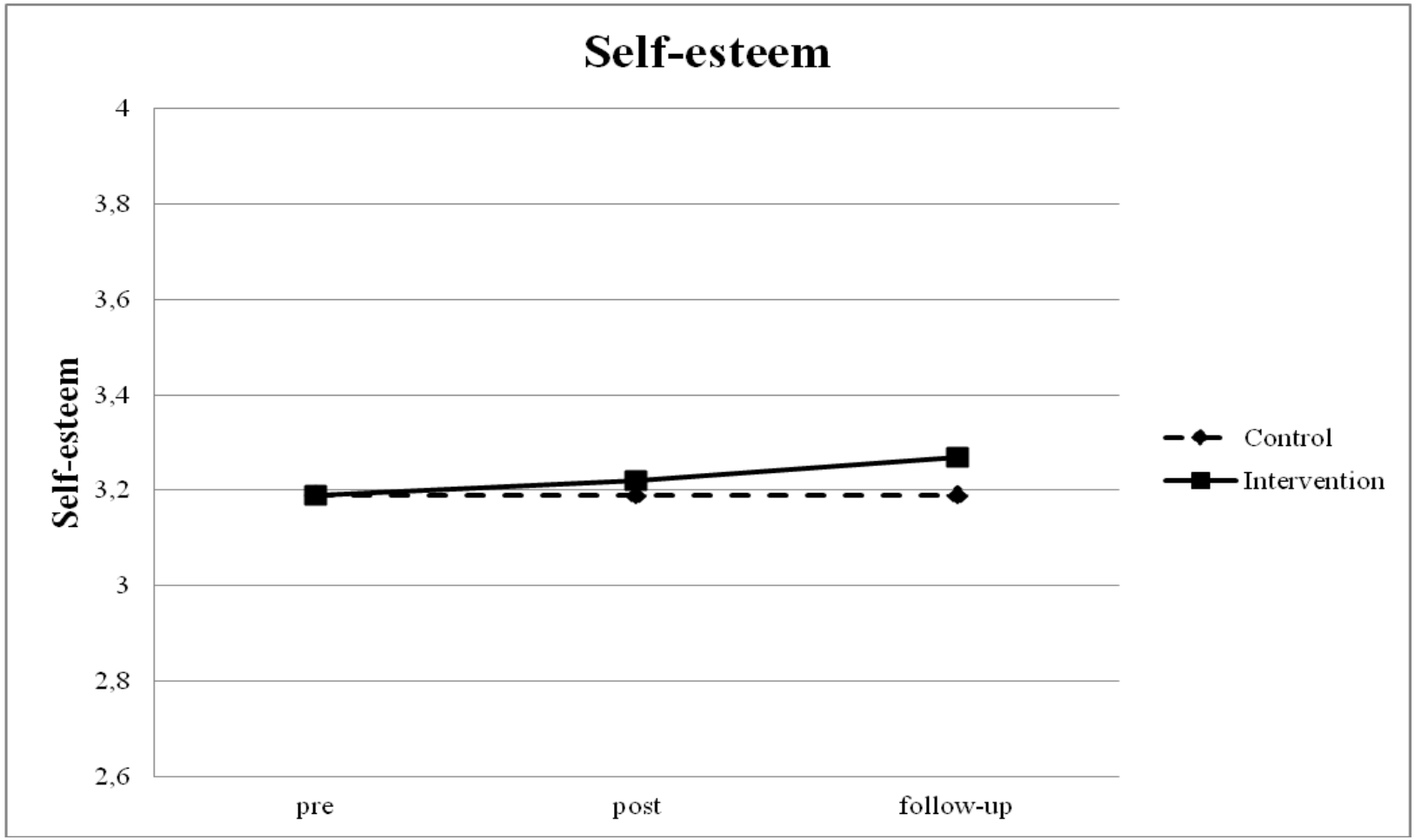
Note. Low and High initial levels of self-esteem have been identified, respectively, as 1 standard deviation below/above the mean. Intervention group (int); Control group (con).

Figure 3.3. Final MG─LCM for Self-esteem



Note. μ = Mean; σ^2 = Variance; μ (int) = Intercept of Treatment Slope; σ^2 (res) = Residual Variance. **p* <.05; ***p* <.01

Figure 3.4. Estimated Means of Self-esteem



Hedonic Balance. As reported in Table 3.3., the normative developmental trajectory in the control group was characterized by a *stability* over time of hedonic balance (Step 1). Differently from the control group, a *linear increase* was identified in the intervention group (Step 2). Therefore, control and intervention condition were characterized by a different trajectory of hedonic balance across the pre-test assessment and the follow-up assessment. In order to evaluate if the intervention condition has really altered the normative stability of hedonic balance, in Step 3 we estimated a MG─LCM in which we reproduced the same developmental stability of the control group, and then we added a linear treatment factor only within the intervention group. The sensitivity analysis indicated that the intervention and the control group were equal both in their initial status of hedonic balance (Table 3.4.). Importantly, in this model the significant mean of the treatment factor (M = .08, p <.05) revealed that the intervention group reported a significant small linear increase in hedonic balance (d = .21) above and beyond the normative stability occurring in the control group (Table 3.4.). The variance of the treatment factor did not result statistically significant (see column T_i *Var*), indicating that the participants in the intervention group were affected by the intervention in the same fashion. Finally, Step 4 did not highlight statistically significant *treatment-initial status* interaction.[4] The final MG─LCM for hedonic balance is depicted in Figure 3.5. and the estimated means are reported in Figure 3.6.

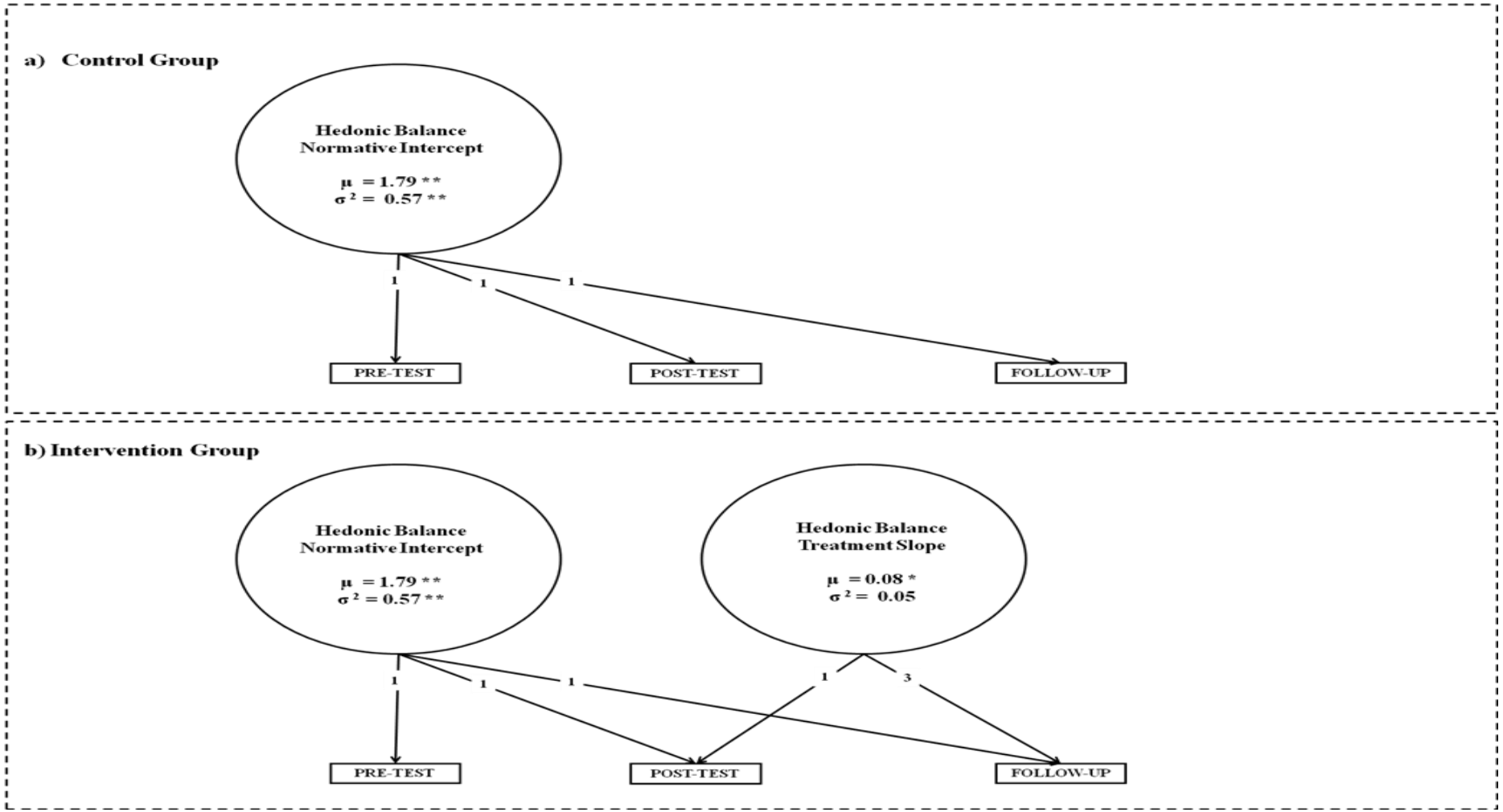
[4] We also assessed the possible presence of sex difference in reacting to the CEPIDEA program. The regression of the treatment slope factors onto the covariate sex was not statistically significant both for self-esteem and hedonic balance. Therefore we concluded that males and females did not differ on these two variables.

Table 3.4. Fit Indices and Unstandardized Parameters Estimates (Step 3)

		Fit Indices						
		χ^2	*Df*	*CFI*	*TLI*	*RMSEA*	$\Delta\chi^2$	Δdf
	Constrained	**16.46**	**10**	**.97**	**.98**	**.07**	—	—
	Unconstrained	10.70†	6	.98	.98	.07	5.76	4
EST		*MG-LCM Parameters*						
		I_n *M*	I_n *Var*	S_n *M*	S_n *Var*	I_n—S_n	T_i *M*	T_i *Var*
	Control	3.19**	.13**	—	—	—	—	—
	Intervention	3.19**	.13**	—	—	—	.02†	.01*
		Fit Indices						
		χ^2	*Df*	*CFI*	*TLI*	*RMSEA*	$\Delta\chi^2$	Δdf
	Constrained	**16.49***	**8**	**.95**	**.96**	**.08**	—	—
	Unconstrained	12.57*	6	.96	.96	.09	3.92	2
HB		*MG-LCM Parameters*						
		I_n *M*	I_n *Var*	S_n *M*	S_n *Var*	I_n—S_n	T_i *M*	T_i *Var*
	Control	1.79**	.57**	—	—	—	—	—
	Intervention	1.79**	.57**	—	—	—	.08*	.05

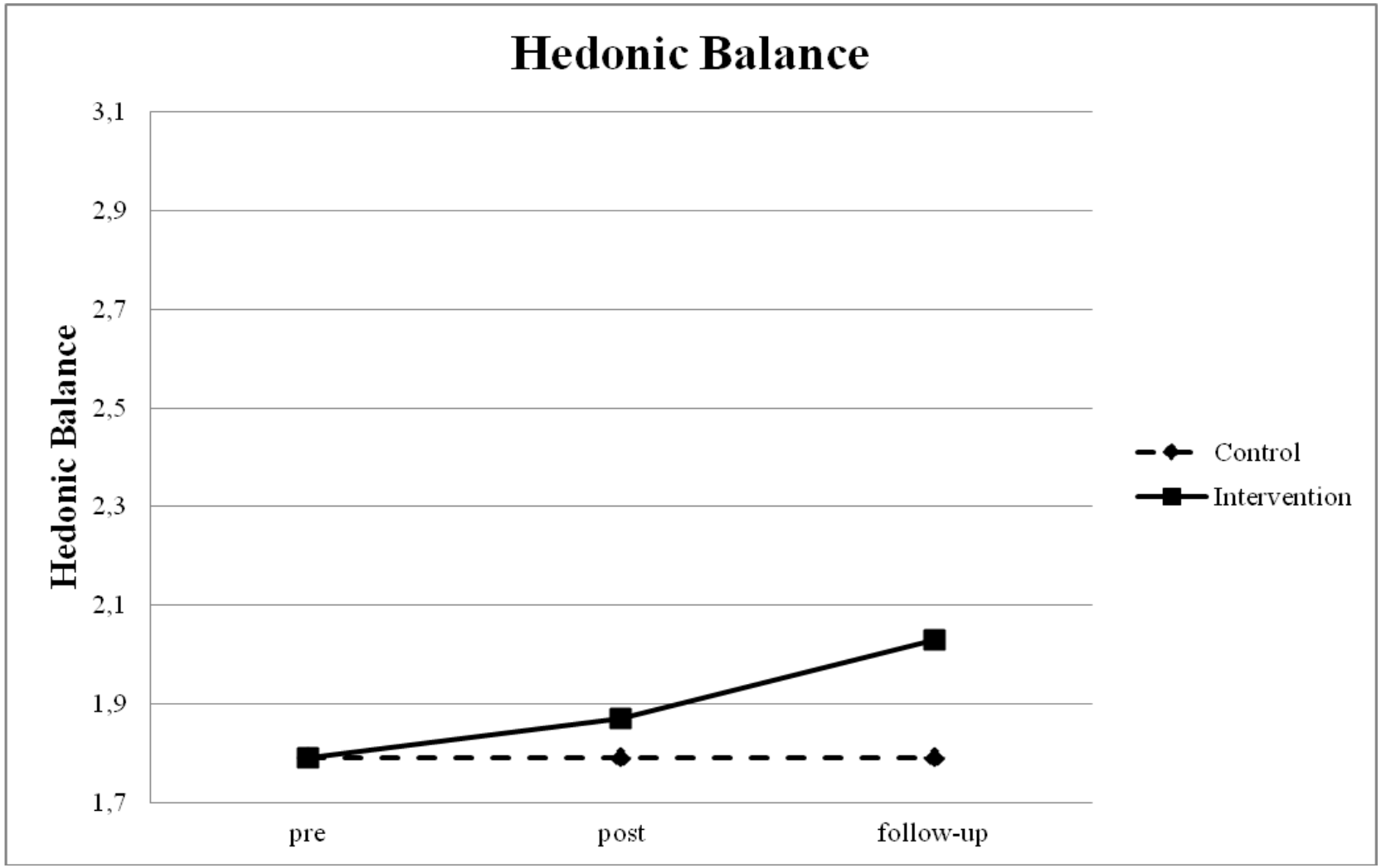
Note. Only parameters (unstandardized) of the best fitting models are reported. Best fitting models are highlighted in bold. EST = Self-esteem; HB = Hedonic balance; *df* = Degrees of freedom; I_n *M* = Normative intercept mean; I_n *Var* = Normative intercept variance; S_n *M* = Normative slope mean; S_n *Var* = Normative slope variance; I_n—S_n = Covariance between normative intercept and normative slope; T_i *M* = Intervention slope mean; T_i *Var* = Intervention slope variance. *p <.05; **p <.01.

Figure 3.5. Final MG─LCM for Hedonic Balance



Note. μ = Mean; σ^2 = Variance. *p <.05; **p <.01

Figure 3.6. Estimated Means of Hedonic Balance



MG─LCM Mediational Model

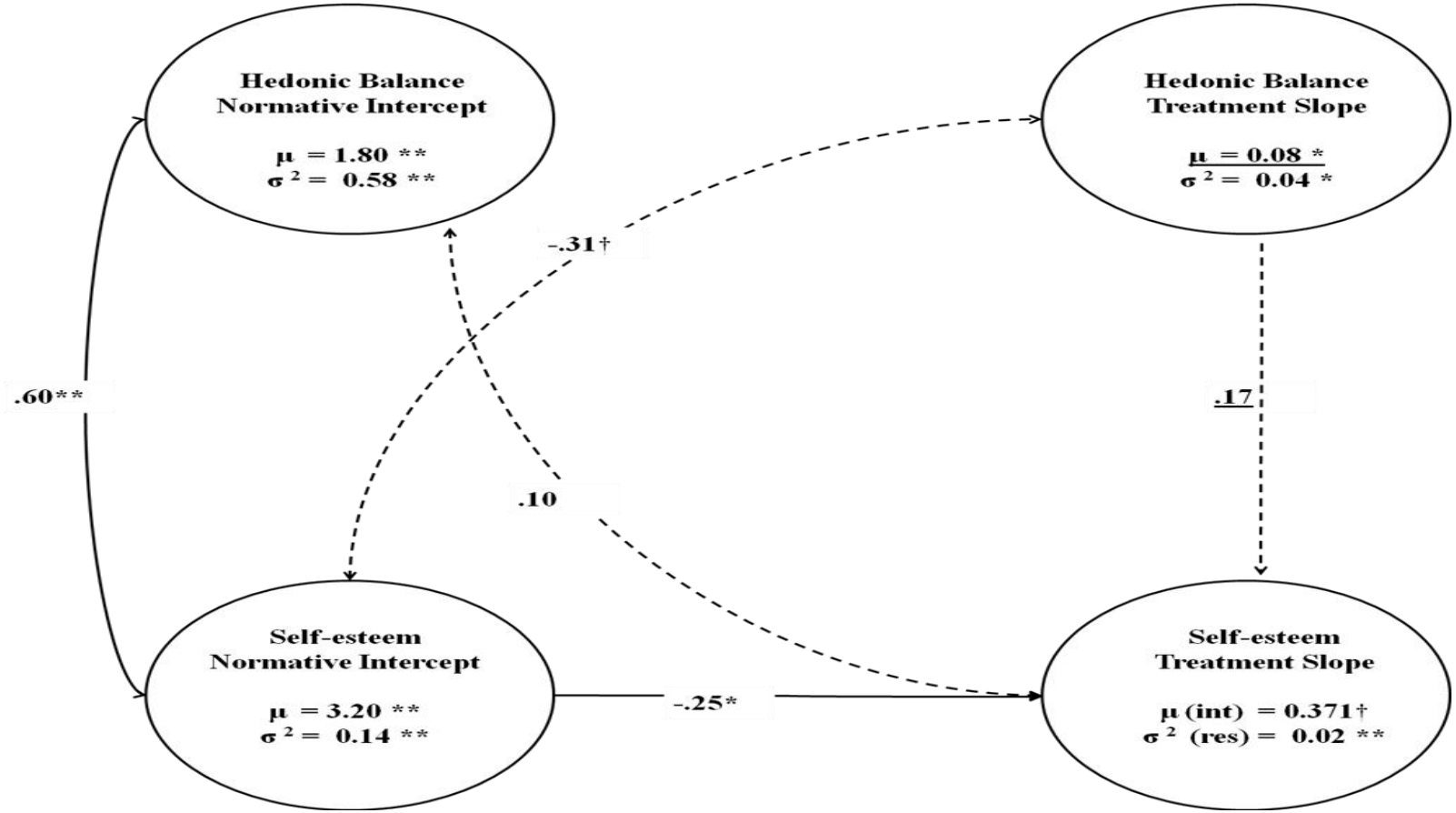
We tested the hypothesized mediational model by using the approach of parallel process growth curve model with the slope as the putative mediator (Cheong, MacKinnon, & Khoo, 2003; von Soest & Hagtvet, 2011). However, in order to preserve the distinction between the normative trajectory and the change uniquely due to the intervention condition, we tested the mediational models within the MG─LCM framework. This revised version of the parallel process growth curve approach allowed us to use the specific treatment slopes in the mediational analysis rather than an overall undifferentiated change process. In this way, we analyzed the mediational effects of the CEPIDEA program in the intervention group while estimating at the same time the normative development which there would have been without exposure to the treatment. According to MacKinnon (2008), the mediated effect is given by the effect of intervention on mediator (α) multiplied by the effect of mediator on outcome (β). In our approach, the coefficient α is given by the *mean of the treatment slope* of the mediator (i.e., hedonic balance) whereas path β is given by the *regression coefficient of the treatment slope* of the mediator on the treatment slope of the outcome (i.e., self-esteem). Then, the distribution of the product coefficients ($\alpha\beta$) method is used for calculating the 95% asymmetric confidence intervals (95% CI) for mediated effects in the PRODCLIN program (Tofighi & MacKinnon, 2011). If the confidence interval did not include zero we concluded that the mediated was statistically significant.

The mediational model with the two growth processes of hedonic balance and self-esteem yielded a good fit $\chi^2(33) = 34.41$, $p = .40$, CFI = 1.00, TLI = 1.00, RMSEA = .02 (90% CI: .00 ─ .07). This model (see Figure 3.7.) reported the significant mean of the hedonic balance treatment factor ($\alpha = .08$, $p < .01$). Instead, the prediction of hedonic balance to self-esteem resulted was not statistically significant ($\beta = .17$, $p = .45$). Importantly, this model did not report a statistically significant unstandardized mediated effect $\alpha\beta = .01$, (95%

CI = -.067 ─.091) because the 95% CI included zero. [5] Finally, in this model, the treatment slope of hedonic balance was negatively associated with the initial status of self-esteem (r = -.31, p = .08). Although the correlation was only marginally significant, participants in the intervention group starting with lower initial level of self-esteem tended to increase steeper in the treatment linear slope of hedonic balance.

[5] Since we detected a treatment-initial status interaction on self-esteem, we also tested a *moderated mediation model* (MacKinnon, 2008) in which we considered the mediational role of the slope of hedonic balance on the slope of self-esteem at low (-1SD), medium (0), and high level (+1SD) of self-esteem at the pre-test. Even in this case, the mediational effect did not result statistically significant.

Figure 3.7. MG─LCM Mediational Model



Note. For simplicity we reported only the intervention group. μ = Mean; σ^2 = Variance; μ (int) = Intercept of Treatment Slope; σ^2 (res) = Residual Variance. † $p < .10$; *$p < .05$; **$p < .01$

Discussion

Over the past 20 years, PYD researchers have identified several protective factors that decrease the likelihood of problem behaviors and promote youths' positive adjustment (Catalano et al., 2012). In particular, PYD pointed out to the role of prosocial behavior as one of the most relevant protective factor during adolescence (Eisenberg et al., 2006, Catalano et al., 2002). Therefore, the promotion of prosociality at school has been considered as a key component of many intervention programs aimed at enhance youth's positive adjustment (Durlak et al., 2011).

In agreement with the indications of PYD movement and with many research findings attesting to the importance of behaving prosocially for human well-being during adolescence (see Eisenberg et al., 2006 for a review), the CEPIDEA program has been entirely developed to promote prosocial behavior among early adolescents and to foster its main individual determinants (Caprara et al., 2013). Accordingly, the scope of the present study was to evaluate the effects of the CEPIDEA program on two important indicators of well-being like self-esteem and hedonic balance. In order to assess the CEPIDEA effects on these two outcomes, we employed a latent curve perspective (Bollen & Curran, 2006). This approach is an important strength of the present work for several reasons. First of all, it allowed us to model change over time as a continuous latent variable rather than as categorical variable like in repeated-measures analyses of variance. In addition, the use of a multiple-group framework (MG─LCM) permitted (a) to model the change in both groups (i.e., intervention and control group) simultaneously, (b) to establish the normative developmental trajectory in the control group, and (c) to assess the effects of the program above and beyond the normative development. In this way we captured any possible acceleration or downturn produced by the CEPIDEA program while taking into account the normative trajectory of our

outcomes of interest (i.e., a *strict stability* trajectory both for self-esteem and hedonic balance).

Referring to self-esteem, our analyses indicated that participants in the intervention group, relative to their counterparts, reported a very slight main increase (d = .13) in their mean level of self-esteem. However, this overall effect in the intervention group was only marginally significant. Of most importance, instead, we found that the effect of the CEPIDEA program on self-esteem was moderated by the participants' initial level of self-worth (i.e., the *treatment-initial status interaction*). As plotted in Figure 4.2., the participants in the intervention group who received more benefits from the CEPIDEA were those initially scoring lower on self-esteem. In terms of effect size, this effect was medium (d = .63). This result is quite interesting for several reasons. First of all, this finding seems to confirm how promoting prosocial competencies can be a plausible way to foster youths' evaluations of their own value (see study 1 and 2 of this thesis). In addition, in this way, one can avoid undesirable educational consequences stemming from intervention strategies that ─ mainly in the past ─ were directly aimed to boost self-esteem. Indeed, the direct focus on oneself, without the enhancement of important capacities or skills (e.g., academic competence, social and prosocial skills, emotion regulation competence, etc.), may only lead to an overestimation of one's own value with negative effects for the mental health of the adolescent (see Baumeister, Campbell, Kruegger, & Vohs, 2003, for a deeper discussion). The fact that only adolescents with initial lower scores of self-esteem were affected by the CEPIDEA program opens interesting hypotheses about CEPIDEA effectiveness. In this sense, according to the intuitions of sociometer theory (Leary & Baumeister, 2000), one may hypothesize that these adolescents were those initially less integrated within the classroom and that the promotion of prosocial skills may have helped them to feel more accepted and valued by their classmates thereby increasing their self-esteem (see Study 2). This hypothesis

is in line with the recommendations of Harter (1999), who highly encouraged actions that foster social support and acceptance as an important strategy to prevent the development of negative self-esteem and to enhance self-worth among children and adolescents. Alternatively, one could also speculate that these students were those characterized by a higher level of *self-esteem instability* (Kernis, 2005) which may have led them to be more sensitive to the CEPIDEA strategies. Indeed, since stability and high levels of self-esteem are positively related (Kernis, 2005; Rosenberg, 1965), it is very unlikely that adolescents who already reported positive (and stable) evaluations of their self could increase even more in their self-esteem. However, future studies are needed to better clarify this result.

Referring to hedonic balance, the CEPIDEA program has altered the normative developmental stability identified in the control group. Participants in the intervention group, indeed, reported a small linear increase (d = .21) in their overall emotional equilibrium between positive and negative affect over and above the normative stability of the control group. This result is in line with the theoretical bases of the CEPIDEA and, in particular, with the specific emotion regulation component of the program. It is likely that the participants have reached this result through their increased ability both in managing their negative and positive emotions and in expressing them appropriately. Moreover, the experience of greater positive affect could be also related to the enhancement of prosocial behavior occurred in the intervention group (see Caprara et al., 2013). Indeed, one may hypothesize that participants who increased their prosocial behavior can have experienced greater positive emotions stemming from helping and taking care of others as sources of personal rewards (Le et al., 2012; Yates & Youniss, 1996). Importantly, differently from self-esteem, we did not find a treatment-initial status interaction on hedonic balance. However, the parallel growth processes with both self-esteem and hedonic balance highlighted that students with lower initial levels of self-esteem tended to increase steeper in their hedonic balance at the end of

the intervention. As previously discussed, it is likely these adolescents may have gained from participating to the CEPIDEA program because they were initially lesser "equipped", and, therefore, more sensitive to acquire new social and emotional skills helpful for their life at school.

We also speculated that the CEPIDEA may have helped participants to feel better about themselves through the higher positive emotion promoted by the prosocial activities and the emotion regulation component of the program (Le et al., 2012). Although the paths involved in the mediational process were in the hypothesized direction, we failed to identify the mediational effect. Therefore, the enhancement of self-esteem cannot be related to the improvement of hedonic balance among participants in the intervention group. Probably, mediational variables more related to social mechanisms are responsible for this effect (e.g., variables related to peer relations and peer acceptance within the classroom; Harter, 1999; Leary & Baumeister, 2000). However, it would be of interest testing the same mediational model in future implementations of the CEPIDEA in which a greater number of participants is involved (in order to increase the power to detect the mediational effect; MacKinnon, 2008).

Although these results are encouraging about the effectiveness of CEPIDEA for youths' well-being, several limitations must be acknowledged. First of all, the lack of randomized design is an important weakness that can undermine the validity of our results. Although, as noted by baseline comparisons, the intervention and control group resulted comparable on the initial level of the variables of interest and on socio-economic indicators, future implementations of the CEPIDEA should randomize the participants between intervention and control groups in order to obtain more reliable results. Moreover, we are aware that we did not controlled for the effect of "nesting" (i.e., students nested within the classrooms) that can inflate Type 1 error (i.e., standard errors biased downwards; Hox, 1998).

However, the number of classrooms (13) involved in this pilot implementation was too small to proper assess between groups variations with multilevel modeling (usually 50 groups are recommended; Hox, 1998). Finally, our results have been obtained in a pilot implementation of the CEPIDEA in a specific socio-cultural context (i.e., one school of a small town in Italy). Therefore implementations in different cultural contexts and with more participants are needed before establishing the real effectiveness of the program.

Despite these limits, this study expands previous findings about the positive impact of the CEPIDEA on youths' well-being (Caprara et al., 2013) by providing evidence of this new school-based intervention in enhancing participants' self-esteem and hedonic balance. From a practical perspective, we believe that the present findings may be helpful for administrators and school counselors as they highlight the relevance of promoting prosocial competencies in school settings as a strategy to help adolescents both to develop a positive concept of their self and to experience more positive affect. Moreover, since the activities (especially prosocial lessons) were incorporated into routine educational practices, school psychologists and teachers interested in promoting positive developmental outcomes in students may find the CEPIDEA program as a useful tool to successfully build positive learning environments.

Helping adolescents to have a positive sense of being valuable is an important goal for their positive development and it can be reached through appropriate educational actions. The school, in this regard, should be considered by politicians as the optimal socio-educational context in which implementing public educational programs aimed at sustaining students' psychological well-being.

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CONCLUSION AND PRACTICAL IMPLICATIONS

General Discussion

The present dissertation has tried to offer some empirical evidence of the positive relation between prosociality and self-esteem in three different empirical studies. In study 1, we found that the development of prosociality and development of self-esteem from middle adolescence to early adulthood were two correlated phenomena, with higher increase in prosociality related to steeper increase in self-esteem. In line with Harter's arguments (1999, 2003) and with the sociometer theory of self-esteem (Leary, 2005), we presumed that the two variables were related because prosociality helps people to establish supportive social bonds that nourish the *relational value* of individuals. This hypothesis has been deepen in study 2, in which we tested a conceptual model that highlighted the potential mediational role of positive interpersonal relationships with one's own friends in the association between prosociality and self-esteem. Individuals' perception of being worthy of value was related to the support received from significant others like friends. Indeed, if our friends support and care for us, they convey the message that we are people who have deserved their attention. According to the notion of reciprocal altruism, we presumed that we have merited their attention and support because we are (prosocial) people prone to reciprocate the help received (see Batson, 2011).

Moreover, in both study 1 and 2 we also investigated the likely flow of influence between the constructs. In this regard, we used the "state of the art" in longitudinal designs with structural equation modeling to verify the direction of the effects between prosociality and self-esteem (i.e., ARC models; Cole & Maxwell, 2003). Significantly, both studies confirmed the role of prosociality in predicting later self-esteem above and beyond its impressive stability. In study 1 the impact was direct, whereas in study 2 the effect was

mediated by quality of friendships. Of importance, the presence in study 2 of a friend-report evaluation of prosociality increased the robustness of this effect. In study 2 (but not in study 1), we also found the predictive effect of self-esteem on prosociality. This inconsistence between the studies may be due to several methodological considerations like the different operationalization of the constructs (i.e., in study 2 we also included friend-report measures of prosociality and self-esteem), the inclusion of another correlated variable in study 2 (i.e., quality of friendships), the different status of self-esteem at age 21 in study 1 (i.e., residual latent variable at T4 predicted by its prior level) and study 2 (i.e., residual latent variable at T1 only predicted by sex), etc. Moreover, one should also consider the possibility that self-esteem might predict prosociality mainly during adulthood, when the perceptions of oneself are better integrated within a coherent self-portrait (in which moral standards are crucial), and therefore, are more likely to sustain the prosocial action by offering adequate motivational resources (Harter, 2003). Indeed, Thotis and Hewitt (2001) found the reciprocal effect between volunteering and self-esteem in a sample of adults. Future researches are needed to better clarify this issue.

Study 3 (CEPIDEA program) offered us evidence of the promotion of prosociality as a proper educational strategy to increase adolescents' psychological well-being and, in particular, self-esteem. Indeed, young adolescents in the intervention group who started with lower level of self-esteem increased in their perception of being valuable at the end of the CEPIDEA program (18-months later). Although the limit of the lack of randomization implies of being very cautious in our conclusions, one may hypothesize that the promotion of prosocial behavior might have produced a better climate within the classrooms that, in turn, can have helped participants (in particular those with initial low level of self-esteem) to feel more included and accepted by their classmates. Future studies might deepen this hypothesis, for example, by using measure of peer acceptance/refusal. Moreover, the CEPIDEA program

has been also found to be effective in promoting hedonic balance. This effect confirmed the focus of the CEPIDEA program on helping adolescents to manage effectively their negative emotions as well as to express appropriately their positive emotions. In addition, although the role of positive emotions in increasing self-esteem (e.g., Fredrickson, 2001; see also Post, 2005) was not the main focus of this dissertation, we also tried to test if the parallel enhancement in participants' hedonic balance was a plausible mediator of the increase in self-esteem. The results did not confirm this hypothesis. However, since the paths in the mediational process were in the hypothesized direction, future implementations of the CEPIDEA should still investigate this mediational effect in their analyses and/or more complex mediational mechanisms (e.g., intervention → peer acceptance → hedonic balance → self-esteem).

Moreover, these findings also contribute to partially cover some gaps in the prosocial literature in which some topics (i.e., volunteering; see Eisenberg, Fabes, & Spinrad, 2006 and Weinstein & Ryan, 2010, for similar consideration) and specific periods of life (i.e., childhood, Eisenberg et al., 2006, and elderhood, Midlarsky & Kahana, 2007) have received more attention. Indeed, the three studies agreed to indicate that the individuals' general tendency to behave prosocially can sustain self-esteem in two different developmental phases like young adulthood and adolescence. Probably, since both phases are characterized by important challenges that could easily undermine a positive sense of self-worth (e.g., academic and physical issues during adolescence, and labor entrance in early adulthood), behaving prosocially can facilitate the development and the maintenance of supportive interpersonal ties that protect one's own relational value. However, once again, we recognize that future works are needed to confirm these results in other samples and with more objective measures of prosocial behavior. Finally, we acknowledge that all these results have been obtained in a specific country (i.e., Italy) in which feeling of belongingness can be

stronger than other countries (e.g., United States). Although we are convinced that there is a universal "need to belong" (Baumeister & Leary, 1995) that prosociality can satisfy, future studies should consider if cultural factors may moderate the hypothesized mediational mechanism.

Practical Implications

The general aim of the present work was to corroborate the idea that doing good is not only positive for the person who received the help, but also for the helper. In front of a dramatic increase of mental problems in many Western societies (Post, 2005), including Italy (Agenzia Italiana del Farmaco, 2009), there is a pressing need to develop appropriate public actions aimed at dealing with this issue. To our opinion, this is even more urgent if one considers that many suicides in recent years have been committed by youths who presented interpersonal problems at school (e.g., bullying, peer isolation, etc.). In this scenario, it is not surprising that two very highly respected scientific journals like *Natur*e (Beddington et al., 2008) and *Lancet* (Catalano et al., 2012) recently published two articles in which the authors affirmed that *early educational intervention programs* are the key to help mental capital and well-being to flourish among individuals. In this regard, the promotion of prosocial behavior and the boosting of an adequate self-esteem are clearly recognized as protective factors against the onset of mental problems (e.g., Catalano Berglund, Ryan, Lonczak, & Hawkins, 2002; Orth, Robins, & Roberts, 2008).

Interestingly, some psychologists recently suggested to reinforce adolescents' self-esteem through mindfulness-based interventions in order to help participants to let go off negative self-concepts (Marshall, Parker, Ciarrocchi, & Heaven, 2013). Whereas we generally agree that can be useful to help people to be more conscious of their thoughts and actions, as stated in the introduction of the present dissertation, we are more inclined to a conception of self-esteem as mostly indicating the degree to which individuals feel valued by

significant others. Accordingly, we believe that future intervention programs aimed at sustaining youths' mental health (like CEPIDEA program), in planning their educational actions, should always consider the interpersonal nature of human beings and the relevance of promoting adequate prosocial capacities. Probably, the simultaneous presence of both mindfulness components and prosocial activities might allow to obtain more beneficial effects on self-esteem and psychological well-being in general.

We are "social animals" and our well-being cannot be properly reached without the relations with the other people. We believe that teaching children and adolescents to recognize others' feelings and to provide appropriate help when they are in need can increase the probability of their feeling socially accepted and establishing mutually supportive social ties that, in the long run, could be the basis of a positive sense of self-worth. After all, coming back to the novel of Dickens, Scrooge left his soul's misery through his renewed desire to *take care of* and of *being cared for* by his loved ones and the other human beings.

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