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Perceived Neighborhood Social Resources as Determinants of Prosocial Behavior in Early Adolescence

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Abstract The present study aims to develop an integrative model that links neighborhood behavioral opportunities and social resources (neighborhood cohesion, neighborhood friendship and neighborhood attachment) to prosocial (sharing, helping, empathic) behavior in early adolescence, taking into account the potential mediating role of perceived support of friends. Path analysis was used to test the proposed theoretical model in a sample of 1,145 Italian early adolescents (6th through 8th graders). More perceived opportunities and social resources in the neighborhood are related to higher levels of adolescent prosocial behavior, and this relationship is partially mediated by perceived social support from friends. The results offer promising implications for future research and intervention programs that aim to modify social systems to improve child and adolescent social competencies.

Keywords Neighborhood · Place attachment · Early adolescence · Prosocial behavior · Positive youth development · Path analysis

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Introduction

There is increasing evidence that neighborhood characteristics play a role in young people's physical and psychosocial well-being (Almedon 2005; Leventhal and Brooks-Gunn 2000; Youngblade and Curry 2006), and may be a critical determinant particularly for economically disadvantaged youth (Chung and Steinberg 2006; Kohen et al. 2008; Schonberg and Shaw 2007). According to these studies, neighborhoods characterized by disadvantaged economic conditions, high ethnic diversity, and residential instability have a negative effect on a wide range of outcomes, such as school achievement and emotional and behavioral problems (Leventhal and Brooks-Gunn 2000). Moreover, previous research underlines the importance of social processes occurring within the neighborhood, showing how different levels of social capital can affect adolescents' physical and mental health (Almgren et al. 2009; Boyce et al. 2008; Drukker et al. 2005; Sampson et al. 2002; Vieno et al. 2010). The current research aims to extend our understanding of neighborhood effects, developing an integrative model that links neighborhood social resources and adolescents' adjustment in an Italian sample, taking into account the potential role of perceived support of friends as a mediating variable.

The extensive evidence on the role of neighborhood conditions on adjustment of adolescents derives mostly from North American studies of disadvantaged neighborhoods (e.g., Kohen et al. 2008), while less is known about contexts in other parts of the world, where the concentration of disadvantage is not so pronounced, and where neighborhoods are characterized by more social capital (Dallago et al. 2009; Putnam 1993). The concentration of this body of research on neighborhood disadvantage inhibits our understanding of the potential wellness-promotive effects

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of neighborhood resources. Only a few studies have evaluated the role of positive neighborhood characteristics, conceptualizing them as protective variables able to decrease risk behaviors and psychological problems (Caughy et al. 2008). Even less studied are associations between neighborhood social and structural resources and outcomes related to positive youth development, such as self-worth, self-efficacy, self-esteem and, in particular, prosocial behavior (Romano et al. 2005). We define prosocial behavior as sharing, helping, taking care of, consoling, and feeling empathic toward others. Interest in understanding the health and development-promotive effects of neighborhood characteristics is on the rise (e.g., Albanesi et al. 2007) but studies analyzing benefits of neighborhood resources are still scarce compared to the research analyzing effects of neighborhood disadvantage on behavioral and emotional problems (Chung and Steinberg 2006; Duncan et al. 2002; Jencks and Mayer 1990).

Moreover, while there is consistent agreement in the field concerning the association between neighborhood disadvantage and negative outcomes such as delinquency, drug use, child abuse, and other problem behaviors (Beyers et al. 2003; Brooks-Gunn et al. 1993; Colder et al. 2000; Duncan et al. 2002; Liu et al. 2009; Vieno et al. 2010), the assessment of the *multiple pathways* through which neighborhood characteristics can influence youth outcomes has been limited (Cantillon 2006; Kohen et al. 2008).

Helping and cooperative forms of behavior are central aspects of social competence in early adolescence, and they have been related theoretically and empirically to other forms of social competence such as social acceptance (e.g., Becker and Luthar 2007; Newcomb et al. 1993), and to cognitive competencies such as academic performance (e.g., Martin et al. 2007; Wentzel 2003). Research has identified a range of individual processes likely to predict prosocial behavior, including empathy, perspective taking, moral reasoning, and affective functioning (Eisenberg and Fabes 1998; Fabes et al. 1999), but the understanding of the social foundations of these forms of behavior is still limited (Wentzel et al. 2007). Adolescent prosocial behavior has received much less attention than has anti-social behavior (Fabes et al. 1999), and studies that link social influences to prosocial behavior are particularly rare (Eisenberg and Fabes 1998).

Neighborhood Social Resources and Positive Youth Development

Neighborhoods are an important context for adolescent development, because early adolescents are in a developmental stage characterized by increasing exploration of neighborhood settings and social interactions with neighbors (Allison et al. 1999). Since this exposure to the local community is often unsupervised (Allison et al. 1999), adolescents can come in contact with several risks; at the same time, in the neighborhood adolescents can find different opportunities for positive development, creating supportive networks with people and local organizations (Pretty 2002). Although most of the studies on neighborhood effects have been concentrated in evaluating the negative influence of structural and social disadvantage, there is also evidence that neighborhood resources can promote physical health and psychosocial development in adolescence (Brooks-Gunn et al. 1993; Romano et al. 2005).

Responding to the theoretical model developed by Jencks and Mayer (1990), many researchers have underscored the role played by neighborhood "social organization." In particular, relations with people in the local area provide opportunities for various social activities which underlie collective socialization, an important aspect of adolescent social development (Fagg et al. 2008; Quane and Rankin 2006). The communities in which adolescents live may contribute various kinds of resources for healthy development: from personal support and mentoring from peers, older teens, and adults in the community, to opportunities to participate in organized service activities to help others (Buchanan and Bowen 2008; Dworkin et al. 2003; Glanville et al. 2008).

Considering such influences, Leffert et al. (1998) included neighborhood context in the developmental assets framework; studies carried out with this theoretical foundation showed the role of a caring neighborhood and engagement with non-family adults for adolescent thriving (Lerner et al. 2003; Scales et al. 2000). Similarly, several studies based on ecological systems theory (Bronfenbrenner 1979) that evaluated the association between multiple contexts and adolescents' psychosocial adjustment found that neighborhood social resources contribute to the development of a positive self-concept (Cook et al. 2002; Quane and Rankin 2006), self-efficacy (Coley and Hoffman 1996), civic engagement (Albanesi et al. 2007), and prosocial behavior (Romano et al. 2005).

Other evidence in support of the role of neighborhood resources in promoting physical and psychological well-being derives from literature linking neighborhood social capital to a variety of health outcomes (Yip et al. 2007; Ziersch et al. 2005). In these studies, carried out mostly with adult population, social capital indicators, such as membership in organizations, social trust, and reciprocity, have been associated with better self-reported physical health and better mental health status (Kawachi et al. 1999).

Neighborhood social resources have been defined and measured in several ways including sociological or psychological constructs, such as social capital (Putnam 1993), sense of community (Albanesi et al. 2007), social cohesion

(Chung and Steinberg 2006), and community support (Herrero and Gracia 2007). As a consequence, there is no agreement in the literature concerning the key aspects of neighborhood social organization or the best measures to evaluate them, and so measures are often developed ad hoc for each study. During adolescence, the aspects of community life important for young people could be quite different than those considered salient during adulthood. When adolescents are asked to speak about their neighborhood, they name aspects such as places to socialize and have fun, having friends in the neighborhood, perceived social support, and safety (Chipuer et al. 1999).

In the present study we included those neighborhood social organization variables found to be most salient for adolescents in the qualitative study by Chipuer et al. (1999): opportunities for activities in the local area (the availability of places to socialize and have fun); neighborhood social cohesion (the willingness of the residents to help and support each other and their tendency to be sociable); the number of friends the adolescent has in the neighborhood. Moreover, for considering the emotional dimension of adolescents' relationship with their neighborhood, we included neighborhood place attachment: the emotional bond that people develop toward a specific place over time. While these variables are inter-related (Manzo and Perkins 2006), rather than treat them as dimensions of the same general construct (e.g., sense of community), we view them as separate constructs and prefer to evaluate the relationships among these neighborhood resources. This choice was based on the lack of agreement on a general construct describing the key aspects of neighborhood social organization and the fact that different aspects of adolescent-neighborhood relations are generally studied as separated concepts (e.g., Bramston et al. 2002).

In particular, based on studies showing the mediating effect of neighborhood social characteristics on the relationship between neighborhood structural disadvantage and adolescents' well-being (Chung and Steinberg 2006; Sampson et al. 1997), we hypothesized that neighborhood opportunities for activities would determine, in part, other neighborhood social characteristics, such as neighborhood cohesion, neighborhood attachment and neighborhood friendship. The availability of organized activities and places for informal gatherings in the neighborhood, in fact, may be the basis upon which relations and emotional attachment to the neighborhood can be developed (see Fig. 1).

Social Support of Friends Mediates Neighborhood Resource Effects on Adolescent Well-Being

Networks of friends may be important for the socialization of prosocial behavior because of the nature of the relationship; unlike family relationships, friendships mark the first time children themselves select and define their social ties and those relationships involve frequent and positive interactions, strong emotional bonds, and prosocial behaviors, such as sharing and cooperating (Barry and Wentzel 2006; Berndt 1981).

Some scholars have argued that friends can have a positive influence on adolescents' development by modeling forms of prosocial behavior (Berndt et al. 1999; Cook et al. 2002; Hartup and Stevens 1997). There are many aspects of friend relationships that have the potential to influence adolescents' social competence and behavior. Studies examining the positive influence of friends on social development are rare, especially regarding prosocial behavior in adolescence (Barry and Wentzel 2006). More is known about the negative influence peers can have in modeling various forms of risk-taking behaviors (Bowman et al. 2007; Dishion et al. 2004), although recent research did not find strong support for this association (Wiesner et al. 2008). Also in studies where multiple contexts are taken into account, and peer relations are conceptualized as mediators between more distal contexts (e.g. the neighborhood) and adolescents' well-being, the mechanism studied more in depth is related to peer deviance (Haynie et al. 2006). The premise that neighborhood influences are likely to be indirect, operating through more proximal contexts, is common both in the ecological and sociological theories (Leventhal and Brooks-Gunn 2000): several studies suggest that the more proximal levels of influence act as mediators of more distal influences (Bronfenbrenner 1979; Quane and Rankin 2006). There are two mechanisms that Leventhal and Brooks-Gunn used to explain the indirect effects of neighborhood on child and adolescent well-being, based on previous models developed by Jencks and Mayer (1990): *relationships*, or the effects of neighborhood characteristics on parenting behaviors (responsivity/warmth and supervision/monitoring), and *norms/collective efficacy*, or the ability of neighborhood formal and informal institutions to supervise the behavior of residents (particularly youths' activities, such as deviant and antisocial peer-group behaviors). The first mechanism is generally adopted to study how neighborhoods can influence the capacity of parents to give support to children and adolescents and supervise their behavior while the second is the theoretical basis for explaining how neighborhood characteristics can influence peer-group behaviors (through anti-social or prosocial pathways).

Informal control, supervision and negative modeling are not the only ways neighborhoods influence youth behaviors, however. In neighborhoods with high levels of social support and cohesion, the norms of reciprocity that are shared and diffused and the close relations among neighbors can increase opportunities for youth to meet and observe supportive others in the local community. Social

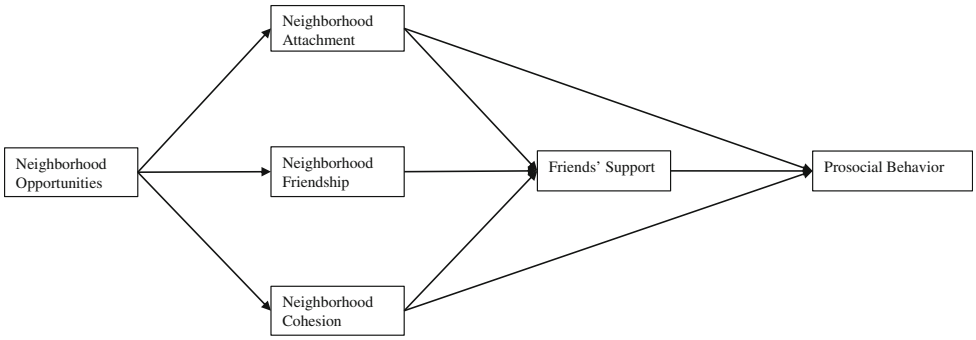

Fig. 1 Theoretical model predicting adolescent prosocial behavior from neighborhood social resources and friends support

capital theory (Giddens 2000; Putnam 1993) suggests that neighborhood social cohesion and norms of reciprocity, trust, and interaction opportunities promote the development of a supportive network of friends in the community.

Moreover, a strong emotional attachment to one's neighborhood, and the creation of a great number of friendships inside the neighborhood, can be additional factors that contribute to this process: as pointed out by Brown, Perkins, and Brown (2003), those who are more attached to their neighborhoods are more likely to invest their time in the neighborhood and interact more with neighbors, increasing the likelihood of developing supportive relationships. Finally, a higher number of friends living in the same neighborhood can increase the levels of perceived support because of the proximity and availability of these relationships (Unger and Wandersman 1985).

Based on this evidence, and on previous studies showing that adolescents with positive perceptions of neighborhood environments also report high levels of social support (Pretty et al. 1996), in the present study we focus on the potential mediating effect of perceived social support of friends, an aspect of friendship that has been associated with adolescent prosocial behavior (DuBois et al. 1992; Wentzel 1994).

The Proposed Theoretical Model

The principal aim of the present study is the development of an integrative model that links neighborhood social resources and the development of adolescents' social competence, in particular with respect to prosocial behavior, taking into account the role of perceived support of friends as a mediating variable (see Fig. 1).

In particular, we hypothesize that, among the characteristics we identified as neighborhood social resources, the availability of nearby places that provide opportunities for prosocial activities are more stable and thus would be exogenous to the emotional bonding that adolescents develop to the neighborhood (neighborhood attachment), the friendships created in the neighborhood context (neighborhood friendship), and the availability of residents to help each other (neighborhood cohesion). This path is in line with studies showing that neighborhood structural features (e.g., availability of organizations) can be the determinants of neighborhood social characteristics (e.g., Chung and Steinberg 2006).

The model also posits that higher levels of neighborhood attachment and cohesion are associated directly with higher levels of prosocial behavior through a process in which a strong emotional bond motivates people to act in a prosocial way (Brown et al. 2003) and helping behaviors are learned from people who adolescents meet daily in the local community ("collective socialization"; Jencks and Mayer 1990).

Finally, we hypothesize a path in which the availability of neighborhood social resources can indirectly increase prosocial behaviors by improving social support from friends. We started from studies that found a mediation effect of peers in the relation between neighborhood characteristics and adolescents' well-being, extending previous research findings (Romano et al. 2005) through the evaluation of the promotive effect that neighborhood social resources can have in terms of friends' support.

Some studies suggest that girls tend to have a worse perception of their neighborhood than do boys, and emphasize social relationships developed in the local community, while activities and facilities are more relevant for boys (e.g., Pretty et al. 2003). This result is not consistent in the literature, however; other studies found no difference between adolescent males and females in neighborhood perceptions (e.g., Albanesi et al. 2007). Considering the central role of gender differences in the study of prosocial behavior (e.g., Roberts and Strayer 1996), we use a multiple group model to test, without any specific hypotheses, the extent to which the proposed theoretical model is consistent across gender.

Methods

Participants

The present data came from a study conducted in Padua, a midsized city in the northeast of Italy. Participants were

1,145 early adolescents (587 boys and 558 girls) from five public middle schools (6th through 8th grades), which are located in five different neighborhoods of the city.[1] Italian middle-school students generally live in the same neighborhoods where their school is located; in the study, students also indicated the street where they reside, so that it was possible to control the correspondence between the neighborhood of residence and the neighborhood where schools are located. The children's ages ranged from 11–15 years old, with a mean of 12.58 ($SD = .97$); 421 (36.8%) students were in the 6th grade, 340 (29.7%) in the 7th grade, and 384 (33.5%) in the 8th grade. Almost all participants were born in Italy (94.8%), with small percentages from Eastern Europe (3.5%), and other countries (1.7%). With regard to family structure, 89.5% of the students came from a two-parent family (with parents married and living together). Finally, the socio-economic status of participants, as estimated by their father's level of education, was quite diverse: 3.3% completed only elementary school, 25.1% completed middle school, 17.4% completed vocational studies, 28.8% obtained a high school diploma and 26.2% had at least a bachelor's degree.[2]

Because some of the adolescents (n = 50) had missing values in the variables of interest, the theoretical model was tested on a final sample of 1,095 pupils (50.7% males).[3] The sub-sample excluded from the analysis does not differ significantly from the final sample in terms of gender distribution ($\chi^2_{(1)} = 3.39$, n.s.). Due to problems in administering the survey to some 6th-graders, there is a difference in age distribution, with a greater number of 11-year-olds in the excluded sample (62.0%), compared to the final sample (35.6%; $\chi^2_{(2)} = 14.43$, $p < .05$).[4]

[1] The neighborhoods included in the study are quite homogeneous in terms of structural characteristics, with percentages of immigrants ranging from 3.7 to 8.3%, and there was no difference in the mean levels of perceived neighborhood opportunities across neighborhoods ($F(4,1101) = 2.03$, n.s.).

[2] We thank an anonymous reviewer who suggested we check the possible overlap between family SES and neighborhood opportunities. Consistent with the homogeneity of structural characteristics across neighborhoods, there was no difference in the mean levels of perceived neighborhood opportunities across participants with different SES levels ($F(2,747) = 0.73$, n.s.).

[3] We used the *k-nearest neighbour* method for imputation of missing values (Hron et al. 2010) using the robComposition (Templ et al. 2010) package of R (R Development Core Team 2009). Since there was no difference between the two datasets, the analyses presented use the original, non-imputed data.

[4] We also compared mean levels of every variable included in the study between 11-year-olds included in the sample and 11-year-olds excluded from the sample. There was only a slight difference in the mean levels of perceived social support, which were lower among excluded students ($F(1,420) = 4.36$, $p < .05$).

Procedure

Parents of all sixth, seventh, and eighth-grade students from selected schools were asked for active consent to allow their children to participate in the study; the total consent rate was 98%. Data were collected during a 4-week period. The self-administered questionnaire was filled out by students during school hours in the classroom. Data collection was proctored by research assistants (instead of teachers). The survey took approximately 50 min to complete.

Measures

Neighborhoods were operationally defined in an introduction to the survey scales measuring neighborhood characteristics, as follows: "This section is about the neighborhood where you live, that is, the area around your house, including the places that you could easily reach by bicycle."

Neighborhood Opportunities

Instead of using objective measures of neighborhood structural resources (such as the number of organizations or green spaces), we included adolescents' subjective perception of opportunities for activities in the neighborhood, which better captures all the different places youths may congregate and is less likely to coincide with structural census-based variables (Coulton et al. 2001; Nicotera 2007). Thus, Neighborhood Opportunities for activities were measured with the average of four items of the Italian version of the Perceived Residential Environment Quality (PREQ) scale (Bonaiuto et al. 2002). As this scale was developed and validated with an adult population, for the present study we selected the items best able to measure the most salient aspects of neighborhood opportunities during adolescence. The four items were: "In this place I can do only a few things", "It's fun to spend time in this place", "Everyday there is something interesting in this place", "This place is very boring" (reverse). Participants responded on a Likert scale ranging from (1) "completely disagree" to (7) "completely agree." The Cronbach's alpha for the scale was .76 (95% CI = .73–.79).

Neighborhood Cohesion

A short version of the PREQ Social Relation sub-scale (Bonaiuto et al. 2002) was used to measure social cohesion among people living in the respondent's neighborhood, referring in particular to the availability to help each other and the tendency to be sociable (e.g., "People here are available to help each other"; "It's very hard to find friends in this place"). Participants responded on a Likert scale

ranging from (1) "completely disagree" to (7) "completely agree". The Cronbach's alpha for the 9-item scale was .81 (95% CI = .79–.83). A single measure of neighborhood cohesion was created by averaging participants' responses.

Neighborhood Friendship

Neighborhood-based friendship was measured with a single item asking participants how many of their friends live in their neighborhood, derived from the *friendships* subscale of the Neighborhood Youth Inventory (Chipuer et al. 1999). The item is rated on a scale from (1) "nobody" to (5) "almost all".

Neighborhood Attachment

The PREQ Neighborhood Attachment sub-scale (Bonaiuto et al. 2002) was used to evaluate the emotional bond felt by adolescents to the neighborhood; the scale is composed of five items, such as: "It would be difficult for me to move from this place", "I feel part of this place". Items are responded to on a 7-point scale ranging from (1) "completely disagree" to (7) "completely agree." The Cronbach's alpha for the scale was .77 (95% CI = .74–.79), and a single measure of neighborhood attachment was created by averaging participants' responses to the items.

Perceived Support of Friends

The level of perceived social support was measured using the Italian version of the Multidimensional Scale of Perceived Social Support (MSPSS; Prezza and Principato 2002), with selected items referring to emotional and global support perceived from friends (e.g. "My friends really try to help me", "I have friends with whom to share my happiness and pain"). Internal consistency of the 4-item scale was good (alpha = .81, 95% CI = .79–.83); responses, that ranged from (1) "completely disagree" to (7) "completely agree", were averaged for the measure of perceived support of friends.

Prosocial Behavior

The dependent variable was measured by an adapted version of the Prosocial Behavior Scale (Caprara et al. 2005) reflecting behaviors and feelings related to different kinds of actions: sharing, helping, taking care of, and feeling empathic with other people. "I try to console people who are sad" and "I try to help others," are sample items. Participants indicated on a 3-point scale the frequency ("never", "sometimes", "often") of each prosocial behavior. In this study, the Cronbach reliability coefficient for the 11-item scale was .63 (95% CI = .59–.66).

Path Analysis

The pattern of relationships specified by the conceptual model proposed was examined using path analysis, in the program LISREL (8.50), utilizing a single observed score for each construct tested in the model. In Fig. 1 is depicted the path analysis diagram. Path coefficients were estimated using the maximum likelihood method. Next, we performed a bootstrap analysis (based on 1,000 replications) in order to calculate confidence intervals for path coefficients.

To evaluate the goodness of fit of the model we considered the R^2 of each endogenous variable and the total coefficient of determination (CD; Bollen 1989; Jöreskog and Sörbom 1996), defined as:

$$-\frac{|\hat{\Psi}|}{|\hat{\Sigma}_{yy}|}$$

where $|\hat{\Psi}|$ is the determinant of the estimate of the covariance matrix for the equation errors and $|\hat{\Sigma}_{yy}|$ is the determinant of the covariance matrix of endogenous variables. CD shows the joint effect of the model variables on the endogenous variables; confidence intervals for R^2 of each endogenous variable and for the total coefficient of determination were also calculated.

Furthermore, the same model was tested employing a multiple group model approach, which simultaneously estimated the same pattern of relations between the variables in male and female subsamples. In this approach, equivalence among different samples is evaluated by constraints that impose identical estimates for the model's parameters (Byrne 1989).

Results

Descriptive Statistics

Bivariate correlations among study variables and descriptive statistics, for the total sample and separated by child gender, are shown in Table 1. Girls scored higher on perceived social support from friends and reported engaging more frequently in prosocial behaviors, although the difference of the latter was modest.

All bivariate correlations among study variables were in the expected direction. In particular, there was a strong positive correlation between the neighborhood variables: opportunities, cohesion and attachment (with r ranging from .45 to .63). There was also a positive correlation, although more modest in magnitude, between the number of friends in the neighborhood and the other measures of neighborhood social resources. Perceived support of friends was significantly associated with higher levels of

Table 1 Means, standard deviations, and correlations (with 95% CI) among study variables and *t* tests for adolescent gender (N = 1,095)

	1	2	3	4	5	6	M (SD)
1. Neighborhood opportunities[a]	–	.43 (.37–.49)**	.20 (.14–.26)**	.60 (.54–.66)**	.22 (.17–.28)**	.20 (.14–.26)**	4.66 (1.46)
2. Neighborhood cohesion	.49 (.43–.55)**	–	.10 (.04–.16)*	.42 (.36–.47)**	.21 (.15–.27)**	.21 (.16–.27)**	4.75 (1.22)
3. Neighborhood friendship	.23 (.17–.29)**	.08 (.02–.14)	–	.22 (.16–.28)**	.21 (.15–.27)**	.11 (.05–.17)**	3.22 (1.16)
4. Neighborhood attachment	.65 (.59–.71)**	.48 (.42–.54)**	.25 (.19–.31)**	–	.27 (.21–.33)**	.19 (.13–.25)**	5.33 (1.35)
5. Friends' support	.30 (.24–.36)**	.22 (.16–.28)**	.17 (.11–.23)**	.31 (.25–.37)**	–	.52 (.46–.58)**	5.18 (1.27)
6. Prosocial behavior	.23 (.17–.29)**	.17 (.11–.23)**	.16 (.10–.22)**	.19 (.13–.24)**	.44 (.38–.50)**	–	2.44 (.26)
Females	4.60 (1.46)	4.73 (1.21)	3.23 (1.16)	5.30 (1.34)	5.49 (1.26)	2.49 (.24)	
Males	4.73 (1.46)	4.78 (1.22)	3.22 (1.15)	5.38 (1.35)	4.90 (1.30)	2.39 (.26)	
t test (df)	1.37 (1,093)	.69 (1,093)	−.06 (1,093)	1.05 (1,093)	−7.82 (1,093)**	−6.58 (1,093)**	

* $p < .05$; ** $p < .001$

[a] Correlations presented above the diagonal refer to boys, correlations below the diagonal to girls

neighborhood opportunities, cohesion, attachment, and with the number of friendships developed inside the neighborhood (with r ranging from .19 to .27). Additionally, there was a strong positive correlation between perceived social support from friends and prosocial behavior (r = .51), which was also positively related to the neighborhood variables.

Testing the Theoretical Model

Multivariate analyses began with testing the proposed model (Fig. 1). Figure 2 represents the tested model with estimated standardized parameters. Fit indices were as follow: $\chi^2_{(6)} = 90.07$ ($p < .01$), CFI = .94, RMSEA = .11, NNFI = .85, SRMR = .05.[5]

The squared multiple correlations for the endogenous variables indicate that the model accounts for a significant portion of the variance in study variables, that is: 39% (95% CI = 34–45%) of the variance in neighborhood attachment, 5% (95% CI = 2–8%) in neighborhood friendship, 21% (95% CI = 16–26%) in neighborhood cohesion, 9% (95% CI = 6–12%) in friends' support and 26% (95% CI = 21–31%) in prosocial behavior. The total coefficient of determination (CD) was 0.49 (95% CI = .44–.54).

In the model tested, the only predicted coefficient that was non-significant was the direct link between neighborhood attachment and prosocial behavior. Along with the direct paths shown in Fig. 2, there are some modest indirect relationships: neighborhood opportunities has an indirect effect on friends' support through neighborhood attachment, friendship and cohesion (.17, 95% CI = .13–.21), and on adolescents' prosocial behavior through the effect on the other neighborhood characteristics and friends' support (.02, 95% CI = .02–.03). Moreover, neighborhood attachment, friendship and cohesion indirectly affect prosocial behavior (.02, 95% CI = .01–.02; .01, 95% CI = .01–.02; .01, 95% CI = .01–.02), through their effect on friends' support.[6]

[5] According to several studies (e.g., Abraido-Lanza 1997; Rosario et al. 2005; Morris et al. 1999), however, it is not always the norm, in models without latent variables, to report classical SEM fit indices; indeed, in these kinds of models, standard fit indices are not particularly useful because they are often not sensitive to errors in model equations that are expressed from the Ψ matrix. To demonstrate this we performed a simple Monte Carlo simulation based on parameters of our model, which can be seen in the Appendix. We therefore decided not to rely on SEM fit indices due to their unreliability with analyses similar to those presented here.

[6] A model in which prosocial behavior mediated the effect of neighborhood variables on friends' support was also tested. Although there was no difference between the general fit of the models, and the indirect paths were still significant, in the alternative model predicting support path coefficients linking neighborhood variables and prosocial behavior were weaker. Analyses are available from the corresponding author.

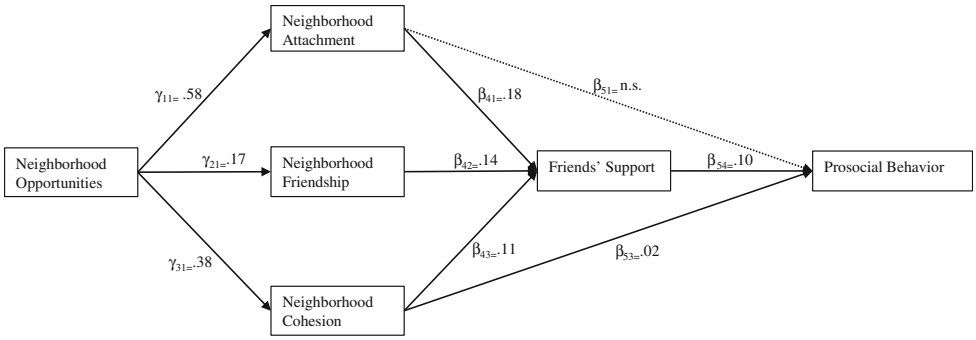

Fig. 2 Path coefficients for the proposed model predicting adolescent prosocial behavior

Table 2 Estimated parameters and R^2, standard errors, biases and confidence intervals based on 1,000 bootstrap replications

	Estimated	SE	Bias	CI 95%
γ_{11}	.58	.02	−.000	.53–.62
γ_{21}	.17	.02	−.000	.12–.22
γ_{31}	.38	.02	.000	.33–.42
β_{11}	.18	.03	.000	.12–.24
β_{42}	.14	.04	−.000	.06–.22
β_{43}	.11	.03	−.000	.04–.18
β_{51}	.00	.01	.000	−.01–.01
β_{53}	.02	.01	−.000	.01–.03
β_{54}	.10	.01	.000	.08–.11
R^2_{y1}	.39	.03	.000	.34–.45
R^2_{y2}	.05	.01	.001	.02–.08
R^2_{y3}	.21	.02	.001	.16–.26
R^2_{y4}	.09	.02	.003	.06–.12
R^2_{y5}	.26	.02	.002	.21–.31
CD	.49	.02	.001	.44–.54

In Table 2 are presented the results of the bootstrap analysis. In the first column of the tables are shown the estimated values, in the second one the standard errors, in third one the biases, computed as the deviation between the bootstrap mean values and the estimated values. In the fourth column, the 95% confidence intervals based on the "simple bias-corrected" method (Campbell and Torgerson 1999) are presented.

After evaluating the model in the total sample, a multiple group model tested the extent to which this model is consistent across gender, in terms of covariance matrices and forms (dimensions, and patterns of fixed, free, and constrained values). There were no statistically significant differences in the covariance matrices between males and females ($\chi^2_{(21)} = 21.89$, n.s.).

Discussion

The theoretical model proposed in the current study, in which neighborhood resources are associated with adolescents' prosocial behavior, was partially validated, as attested by the total coefficient of determination (CD) of the model, comprised in the interval ranging from .44 to .54. Our primary purpose was to examine concurrent relationships among perceived neighborhood opportunities and social resources, perception of social support from friends, and prosocial behavior in a sample of Italian early adolescents. In developing an integrative model that links neighborhood characteristics and adolescents' well-being, we focused on the promotive effect that neighborhood context can have for the development of prosocial competence, taking into account the potential role of perceived support of friends as a mediating variable. To date, the study of contexts where the concentration of disadvantage is not so pronounced (Dallago et al. 2009), the pathways through which neighborhood affects personal well-being (Kohen et al. 2008), and the associations between neighborhood resources and outcomes of positive youth development (Romano et al. 2005) have received little empirical attention, compared to the evidence accumulated on the relation between neighborhood disadvantage and emotional and behavioral problems.

Based on these results, it is possible to draw some conclusions that are consistent with previous studies of neighborhood influences on adolescents' psychosocial well-being. First, as hypothesized in our model, adolescents' perception that they live in a neighborhood that offers many opportunities, in terms of things to do and places to go, is related to the emotional bond developed to the neighborhood, friendships created in the local community, and youths' perception of social cohesion among people living in the neighborhood (Chung and Steinberg 2006; Sampson et al. 1997). The availability of meeting places and the opportunity to have fun in one's neighborhood appears to be a basis from which social and emotional processes inside the neighborhood are shaped: the more youths perceive opportunities to spend time in their local community doing interesting and fun activities, the more they feel a sense of attachment to their neighborhood and create social ties with peers in that context. Moreover, neighborhood opportunities for activities increase local

social cohesion in the form of residents getting to know one another and helping each other in various ways (neighboring behavior). The association found between neighborhood opportunities and neighborhood social processes is in line with studies showing how neighborhood structural factors can affect community-focused cognitions and social processes (e.g., Chung and Steinberg 2006; Sampson et al. 1997; Shaw and McKay 1942). In the present study, we found that this association holds even when structural characteristics are measured using early adolescents' perceptions of their neighborhood. The variability of perceived neighborhood opportunities and the strong relationships found between neighborhood opportunities and neighborhood social processes suggests that measuring adolescents' perceptions of structural characteristics may serve as a useful proxy for neighborhood disadvantage or an additional variable to consider, particularly as objective measures of neighborhood disadvantage are often limited, e.g., in differentiating among areas of similar income levels. Census data may fail to capture neighborhood features most salient for youths, whereas taking into account subjective evaluations of neighborhood opportunities can be important for understanding what shapes neighborhood social processes.

Another important conclusion we can derive from the theoretical model tested is about the role of neighborhood social resources as developmental assets (Leffert et al. 1998). According to our results, higher levels of perceived social cohesion and, indirectly, a higher number of friends in the local community and a stronger attachment to the neighborhood, are related to higher levels of prosocial behavior. Although most of the significant correlations between neighborhood social cohesion and adolescents' prosocial behavior are mediated through the support of friends, there is also a small but significant direct link between neighborhood cohesion and adolescent behavior. This effect can be explained by a process of "collective socialization" (Jencks and Mayer 1990) in which community norms and values of respect and solidarity are transmitted to individuals. Our data suggest that there is a slight but significant tendency for adolescents to adopt the same prosocial norms and behaviors common in their neighborhood; if the availability to help each other and the tendency to be sociable in the neighborhood is a common norm, the frequency of adolescent prosocial behavior is higher. This association is consistent with past findings in which neighborhood effects account for a small, but statistically significant, portion of the overall variance in individual-level adolescent outcomes (Leventhal and Brooks-Gunn 2000), and with ecological models of youth development (Bronfenbrenner 1979) focusing on the influence of "distal" systems (e.g., the neighborhood) on "proximal" systems (e.g., peer context).

Contrary to our hypothesis, we did not find a significant direct path from neighborhood attachment to prosocial behavior. Place attachment does positively influence adolescents' behavior, but only through its relationship with support from friends. It is not surprising that the social bonds of neighborhood cohesion and friends' support would be a greater factor in prosocial behavior than would neighborhood attachment; after all, even anti-social youths may be very attached to, and protective of, their neighborhood territory. Yet it is possible that a strong emotional bond to the neighborhood might motivate adolescents to engage in prosocial behaviors that are directly focused on improving the neighborhood in some way, for example organized voluntary civic participation or even more informal activities, which again raises the importance of neighborhood opportunities for youth (Albanesi et al. 2007).

Looking at the indirect effects, perceived support of friends mediated the association between neighborhood social resources and adolescent prosocial behavior. Friends' characteristics can thus be conceptualized as a mediator in the relationship between neighborhood characteristics and, not only adolescents' personal well-being, self-destructive and anti-social behaviors, which have been widely reported, but also their more positive behaviors toward others. When people in a neighborhood are sociable and willing to help each other, and adolescents develop strong ties with people and places in the local community, the level of social support perceived from friends is higher; higher levels of friends' support, in turn, increases adolescents' prosocial behavior, which is consistent with studies showing the positive influence of friends on adolescents' social development by modeling prosocial behavior (e.g., Cook et al. 2002).

Overall, the theoretical model explains 26% of the variance in adolescents' prosocial behavior, suggesting that neighborhood and friends can be important factors to consider in understanding positive youth development, along with the effects of disadvantage on aggression and problem behavior. In line with Romano et al. (2005), who found that variation between neighborhoods in prosocial behavior (though modest) was twice as large as the variation in physical aggression, our results suggest that future research should also examine how neighborhoods promote adolescents' prosocial behavior, in order to theorize additional mechanisms that might encourage positive outcomes.

Finally, from the results of the present study, we can draw some conclusions regarding the role of gender in the development of prosocial competence. Past research has found substantial evidence that girls are more prosocial than boys, even as early as 14 months of age (Zahn-Waxler et al. 2001). The present study similarly found that girls reported engaging more frequently in prosocial behaviors

(e.g., Roberts and Strayer 1996), and scored higher on perceived social support from friends (see, for example, Colarossi and Eccles 2003). The pattern of relationships among variables was the same in male and female subsamples, however. Our results showed that neighborhood social resources seem to be equally important for boys and girls in promoting prosocial behavior, underlying the need to study more precisely what neighborhood characteristics foster positive development in both groups and how. More specific information about the characteristics of the neighborhood that promote prosocial behavior in girls and boys would be useful to develop effective positive youth development interventions.

Limitations

A major limitation of the current study is that the cross-sectional nature of our data does not permit an interpretation of the direction of effects and the mediated relations in a causal sense. The proposed model was based on theories and empirical evidence found in the research literature, but it is quite reasonable to assume that engaging in prosocial behavior leads adolescents to receive more support from their friends (as suggested by the alternative model we tested), form more neighborhood friendships, perceive more cohesion among neighbors, feel more attached to their neighborhood and become more aware of neighborhood opportunities. Research that follows adolescents over the course of middle and high school is needed to determine the extent to which the effects of contextual factors have a significant impact on later prosocial actions.

Another limitation is that the present measures rely on a unique source of information, an adolescent self-report questionnaire. This approach is vulnerable to same-source bias or the possibility that self-reported data for both the outcome and the neighborhood characteristics may generate a spurious association between the two. This can happen because the measurement error in both variables is correlated or because the outcome affects the perception or report of the neighborhood characteristics (Diez-Roux 2007). For example, people who are more prosocial may be more likely than those who rarely behave prosocially to report social resources in their neighborhood, irrespective of the actual condition of the latter. Another limitation related to the measures employed regards the internal consistency of the Prosocial Behavior Scale, which in the current study is lower than what generally is reported in the literature (Caprara et al. 2005); this may limit the strength of the model in predicting early adolescents' prosocial behavior.

A final limitation is the possibility that the geographic area from which our sample was drawn (a city in northeast Italy) may not generalize to adolescents and schools in other parts of the world, where neighborhood social resources and even the concept of neighborhood, and expectations for adolescent behavior and other cultural norms may be very different. The problems in generalizing our results are also related to the composition of our sample, which is composed mainly of native-born youth and those from two-parent families. These factors, which can promote bonding to the neighborhood and family, could in turn influence the development of prosocial behavior, and represent important aspects to analyze in future studies. Future research would also benefit from considering who may not attend neighborhood schools (e.g., slightly older youth), another factor that can strongly influence the opportunities to bond with neighborhood peers.

Conclusions

Despite these limitations, the results of the present study offer promising suggestions for future research and intervention. As shown in the review by Durlak et al. (2007), positive youth development is a field where psychological theory, empirical evidence and practice begin to work in synergy: 64% of the reviewed positive youth development interventions attempted to change schools, families, or communities in order to develop personal and social competencies in children and adolescents (following Bronfenbrenner's ecological systems theory and the positive youth development framework). The proportion and absolute volume of interventions adopting this approach is impressive, especially given the past preponderance of prevention programs aimed to reduce risk factors, in which efforts to change social systems are seen as irrelevant, if they are considered at all. Moreover, programs that have tried to modify social systems in order to improve child and adolescent social competencies have achieved positive results, both in the magnitude of change obtained at the systemic level and in the promotion of competencies at the individual level. For example, systemic interventions in community settings included in the review underlined the importance of forging connections with prosocial adults: in mentoring programs, but also in some after-school programs, and other community settings where adult staff led small groups of youth in various activities. Moreover, Communities That Care interventions point to young people's need for opportunities to be involved in their communities in meaningful ways (in youth organizations and in creating places and occasions for the development of informal social ties), making it possible to feel valued in one's own community and thus reinforcing commitment to positive social values (Hawkins and Catalano 2002). The current study, along with the findings of Durlak et al.

(2007), attest to the need for further ecologically-based investigations, with a focus on community opportunities and cognitions, social support, and promotion of individual and group competencies, not only to understand psychological mechanisms through which social contexts operate, but also to develop more effective promotion programs based on empirical evidence.

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