

## Research Article

### PROSOCIAL FOUNDATIONS OF CHILDREN'S ACADEMIC ACHIEVEMENT

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**Abstract**—*The present longitudinal research demonstrates robust contributions of early prosocial behavior to children's developmental trajectories in academic and social domains. Both prosocial and aggressive behaviors in early childhood were tested as predictors of academic achievement and peer relations in adolescence 5 years later. Prosocialness included cooperating, helping, sharing, and consoling, and the measure of antisocial aspects included proneness to verbal and physical aggression. Prosocialness had a strong positive impact on later academic achievement and social preferences, but early aggression had no significant effect on either outcome. The conceptual model accounted for 35% of variance in later academic achievement, and 37% of variance in social preferences. Additional analysis revealed that early academic achievement did not contribute to later academic achievement after controlling for effects of early prosocialness. Possible mediating processes by which prosocialness may affect academic achievement and other socially desirable developmental outcomes are proposed.*

A major interest of parents, teachers, and societal agencies centers on discovering early predictors of children's developmental trajectories, with the goal of guiding them in desirable directions (Hartup, 1985; Hays, 1994; Lewis, 1995). Such knowledge enables individuals who influence children's psychosocial development to promote socially valued life courses, and ideally to prevent detrimental or antisocial outcomes (Cairns & Cairns, 1995). Over the years, much research and theorizing have been devoted to the adverse effects of early proneness to aggression on subsequent academic development and interpersonal relationships (Fraçzek & Zumkley, 1992; Socolar, 1997). It is understandable that childhood aggression attracts considerable attention because of its disruptive and injurious effects, as well as fears that it will carry over to later years with even more dangerous consequences, as witnessed in recent lethal school shootings. Evidence that early aggression is relatively stable over time adds to this concern (Caprara, 1996; Olweus, 1979).

Engagement in aggressive patterns of behavior can detract from academic self-development by undermining academic pursuits and creating socially alienating conditions. The relationship between discordant behavior and academic deficiency has been well documented (Dishion, 1990; Hinshaw, 1992; Patterson, Capaldi, & Bank, 1991; Rutter, 1979).

Academic self-development not only is socially situated, but also relies heavily on the interpersonal supports and guidance of other people (Newman, 1991). There is an emerging conceptual shift in psychology from the prevailing focus on the impact of negative factors on developmental trajectories toward a focus on the influential role of positive factors in the directions children's lives take. Proso-

cialness, as reflected in cooperativeness, helpfulness, sharing, and being empathic, is one such factor that helps to promote social networks conducive to academic learning. Moreover, a prosocial orientation curbs aggression both directly and by engaging moral self-sanctions for harmful conduct (Bandura, 1999a; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996a, 1996b). A growing body of research attests to the multiple beneficial effects of prosocialness on children's developmental outcomes (Bandura et al., 1996a, 1996b; Eisenberg & Fabes, 1998; Patterson, Reid, & Dishion, 1992; Wentzel, 1991).

Using a longitudinal design and structural equation modeling, we tested the relative impact of early prosocial and aggressive behaviors on children's academic achievement and social ties to their peers 5 years later. In our conceptual model, early prosocialness is negatively associated with aggressiveness, and promotes both positive peer relations and academic achievement. In contrast, early aggressiveness adversely affects both peer relations and academic accomplishments.

## METHOD

### Participants

We studied 294 children (166 boys, 128 girls) using a longitudinal research design, with staggered annual starts for four separate cohorts, multimethod assessments, and multiple sources of evaluation. The children's third-grade social behavior was used to predict their eighth-grade peer preferences and academic achievement. The third graders averaged 8.5 years of age. Along with their teachers and peers, they were drawn from schools in a residential community near Rome, Italy. Although culturally homogeneous, the participants varied widely in socioeconomic background because the community represents a microcosm of the larger society, containing families of skilled workers, farmers, and professionals, as well as local merchants and their service staffs. This community adheres to a stringent consent procedure for the conduct of research in the schools. Our research proposal had to be approved by a school council. In addition, all parents gave consent, and children were free to decline participation if they chose. There was a very low attrition rate, with 89% of the sample retested over the 5-year period.

### Procedures

Data on children's prosocial behavior were obtained from different sources using diverse methods of assessment. Children rated their prosocialness on a 10-item scale that assessed their degree of helpfulness, sharing, kindness, and cooperativeness (Caprara & Pastorelli, 1993). We also assessed prosocial behavior sociometrically by asking children to select peers who cooperated, shared, consoled, and helped others. Teachers also rated the children's prosocial behavior on the

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same 10-item scale, but with items phrased in third-person response format. *Prosocial behavior* was defined as a latent variable encompassing these three types of assessments.

Children rated their physical and verbal aggression on a 15-item scale that assessed the frequency with which they fought with others, hurt them, and verbally disparaged them (Caprara & Pastorelli, 1993). Teachers also rated their students on the same 15-item scale using the third-person response format. In the sociometric assessment of aggression, peers identified classmates who fought a lot, insulted other children, and often hurt them. Teachers had full-day contacts with these children, so they knew them well. These assessments constituted a latent variable of *physical and verbal aggression*.

*Peer social preference* was measured sociometrically in the eighth grade. The children, who then averaged 13.5 years of age, were enrolled in different schools and assessed by new sets of peers, who selected those with whom they did and did not want to study or play. Both positive and negative peer status were measured to distinguish between children who were disliked by their peers and those who were simply ignored or regarded with indifference by their classmates (Coie, Dodge, & Coppotelli, 1982; Coie, Dodge, & Kupersmidt, 1990).

At midyear and the end of the academic term, six different teachers separately graded all the children for academic achievement in each of their six academic courses using five levels of gradation of performance attainment. The separate multiple grading of academic performances across a variety of subjects reduces the likelihood of any systematic teacher bias. The grades were averaged as a composite measure of *academic achievement*. This measure of academic achievement corresponds to the National Education Evaluation format used throughout Italy.

The assessment procedure involved both multiple assessments (self-report, teacher, peer) and staggered multiple cohorts, with four third-grader cohorts that started on successive years.

In addition, 100 children for whom a third-grade measure of academic performance was available were selected for an analysis to determine the impact, if any, of early prosocial and antisocial behaviors on later academic achievement, after controlling for early academic achievement. This subsample included children of both sexes from two cohorts within the total sample of 294 students. Their mean age was 8.3 at first measurement and 13.3 at the second measurement. The third-grade measure of academic performance was teachers' ratings using the Achenbach and Edelbrock (1986) Teacher Report Form.

## RESULTS

### Reliability of Measures

Our three initial predictors and the two later outcomes were highly reliable, as shown by the following alpha coefficients—prosocial behavior: .78 for self ratings, .78 for peer ratings, and .89 for teacher ratings; aggression: .89 for self ratings, .94 for peer ratings, and .89 for teacher ratings; and eighth-grade academic achievement: .93. Social preference was represented by two variables (popularity and rejection), so an alpha reliability coefficient could not be computed. Because the two variables were negatively correlated ( $r[292] = -.35$ ,  $p < .0001$ ), they were combined after rejection scores were reversed to be in the same direction as popularity scores.

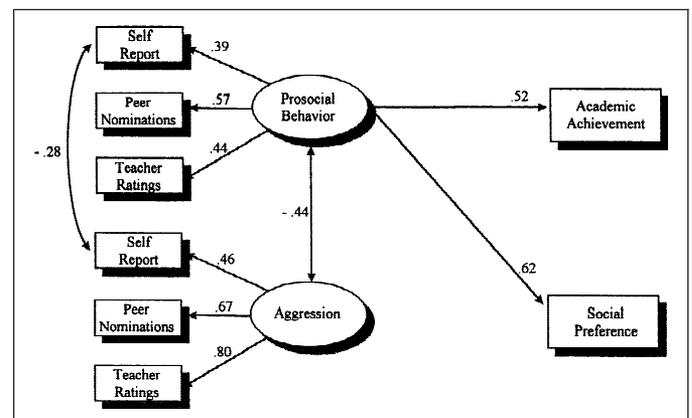
### Structural Equation Model Relating Predictive Factors to Outcomes

To verify the structure of the longitudinal paths of influence, we examined the network of relationships among the variables with structural equation modeling (Bollen, 1989). We used the EQS program (Bentler, 1995) to test our conceptual model on the covariance matrix among the observed variables. Data from the separate cohorts and genders were combined because they did not differ significantly on any of the outcome variables. In this model, prosocial behavior and physical and verbal aggression were defined as latent variables, both measured by self-report, peer nominations, and teacher ratings.

Figure 1 summarizes the results of the structural equation modeling. As expected, all observed measures of both prosocial behavior and aggression showed high loadings on their respective factors, and the two latent constructs were negatively correlated. The factor loadings linking latent to observed variables confirm that self-report, peer nominations, and teacher ratings are good measures of the two latent variables of prosocial behavior and aggression.

The important finding emerging from this research is the pair of counterintuitive relationships uncovered: The path to academic achievement and social preference among adolescents is robustly predicted by the extent of their earlier prosocial behavior, with impact coefficients of .52 for academic achievement and .62 for social preference. Early aggression, however, has no predictive value for either academic achievement or social preference, with nonsignificant impact coefficients of  $-.06$  and  $-.14$ , respectively. Young prosocial children develop into adolescents who are more socially preferred and, in addition, perform with greater academic distinction than classmates who are lower in prosocialness. Thus, prosocial behavior is the only variable that significantly influenced academic achievement and social preference. The model explains 35% of the variance in academic achievement and 37% of the variance in social preference.

The goodness of fit of the model to the data was corroborated by all the fit indices considered. They yielded a chi-square/degrees-of-freedom ratio ( $\chi^2/df$ ) of 1.50, a nonnormed fit index (NNFI) of .96, a comparative fit index (CFI) of .98, a root mean square error of approximation (RMSEA) of .042 (lower and upper limits of the 90% confidence interval were .0 and .07, respectively), and a  $\chi^2(16, N = 294)$  of 24.05 ( $p = .09$ ).



**Fig. 1.** Paths of influence of early prosocial and aggressive behavior on later peer preference and academic achievement. The path diagram includes only the path coefficients that are significant beyond the  $p < .05$  level.

Prosocial Foundations of Academic Achievement

A question might be raised as to whether extreme aggression and extreme prosocial behavior may be qualitatively different from the rest of the responses, thus creating nonlinearity in the data. To determine whether the relationships between our independent and dependent variables are linear, we performed two sets of hierarchical regression analyses. The dependent variables were academic achievement and social preference, and the independent variables were the linear, squared, and cubic components of prosocial behavior and aggression (Cohen & Cohen, 1983). The results confirmed that all the relationships between the independent and dependent variables are linear; the nonlinear components, either squared or cubed, add nothing to these relationships. The linear component for achievement is always significant, explaining 5 to 13% of variance; for social preference, the significant linear component explains 5 to 15% of variance.

**Predictiveness of Early Prosocialness Controlling for Early Academic Achievement**

Figure 2 presents the results of structural equation modeling for the subsample of 100 children whose third-grade academic achievement was assessed. The goodness of fit of this structural equation modeling to the data was substantially corroborated by the various fit indices considered. They yielded a chi-square/degrees-of-freedom ratio of 1.59, NNFI of .88, CFI of .93, RMSEA of .078 (lower and upper limits of the 90% confidence interval were .014 and .124, respectively), and  $\chi^2(21, N = 100)$  of 33.29 ( $p = .04$ ).

The findings emerging from this second model replicate those obtained with the first model: The paths from earlier prosocial behavior to academic achievement and social preference had high and significant coefficients of .57 and .55, respectively. Early aggression had no predictive value for either academic achievement or social preference, showing nonsignificant impact coefficients of  $-.10$  and  $-.04$ , respectively. When the predictors were entered for simultaneous statistical control, the strong, significant impact of early prosocial behavior on later academic achievement was independent of early

academic achievement, which was unrelated to later achievement ( $\beta = .09$ ). Remarkably, early prosocialness was the prime predictor of later achievement. Partial regression coefficients (beta weights) revealed that neither early aggression nor early achievement made a significant contribution to the variance in later academic achievement after the effects of early prosocialness were statistically controlled. The model explains 32% of the variance in academic achievement and 47% of the variance in social preference.

Early academic achievement correlated strongly,  $r = .75$ , with prosocial behavior and negatively,  $r = -.31$ , with aggression; aggression and prosocial behavior were also negatively related,  $r = -.39$ . Although prosocial behavior and early academic achievement were highly correlated, when a 99% confidence interval was specified around the standardized point estimate of their correlation, the value of 1 did not fall within the interval, so these two variables can be considered different (Widaman, 1985).

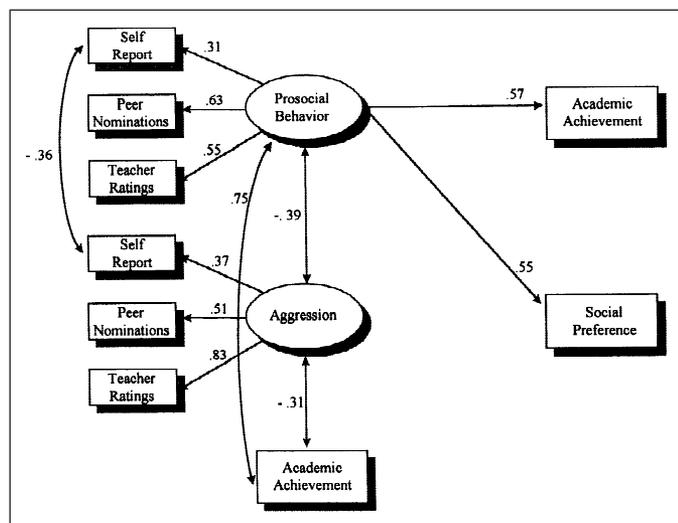
**DISCUSSION**

The findings of this study show that early prosocial behavior strongly predicts subsequent level of academic achievement, even after controlling for variation in early academic achievement. Indeed, the relation of third-grade academic achievement to eighth-grade achievement disappears after controlling for the effects of early prosocialness. A further impact of early prosocialness is found in the strong preference adolescents show for peers who are prone to share, console, and help others.

A second major finding of this research is the null effect of early aggression on later academic achievement and on adolescents' social preference. Early childhood aggressiveness has no utility in predicting how well children will perform academically or socially 5 years later. Physical and verbal aggression did have a concurrent negative association with both prosocialness and academic achievement, yet there was no carryover of this early relationship 5 years later when these children were in new schools with new teachers and many new peers.

Several noteworthy features of this prospective study add to the reliability of the obtained relationships. Data for the variables were obtained by various methods (self-report, sociometric ratings, behavior ratings, academic grades) and from different sources (the participants themselves, peers, and teachers). These methodological variations reduce common method and source biases that can inflate relationships. The staggered design included four cohorts to provide diversity of the sample, which was assessed at different years to vary educational contextual conditions. Moreover, the relationships were tested longitudinally over a lengthy interval involving a major socio-educational transition, from elementary school to junior high school, that presents many adaptational stressors (Eccles & Midgley, 1989).

Prosocialness is a multifaceted construct, so its various components need to be considered in further analyses of its determinants and psychosocial effects. The importance of the construct is seen when we note the many attributes to which it has been related: being sociable and assertive, not shy, and socially competent or skilled; knowing and practicing socially appropriate behaviors; and having social problem-solving skills, close friends, status with peers, high self-esteem, perspective-taking skills, internalized moral values (especially altruism), and dispositionally positive emotionality (see Eisenberg & Fabes, 1998). Social competence is linked to sympathy and empathy, and thereby to prosocial behavior.



**Fig. 2.** Paths of influence of early academic achievement and prosocial and aggressive behavior on later peer preference and academic achievement. The path diagram includes only the path coefficients that are significant beyond the  $p < .05$  level.

Our current research has begun to delineate some of the mediating processes through which prosocial attitudes and behaviors may contribute to academic achievement. Studies using causal modeling reveal that prosocialness not only fosters mutually supportive social and intellectual relationships with peers, but also reduces vulnerability to depression and curbs engagement in transgressive conduct and other problem behaviors (Bandura et al., 1996a, 1996b; Bandura, Pastorelli, Barbaranelli, & Caprara, 1999). Depression and transgressive conduct, in turn, undermine pursuit of academic activities.

Perceived academic, social, and self-regulatory efficacy and academic aspirations foster children's academic achievement and shape their occupational trajectories (Bandura et al., 1996b; Bandura, Barbaranelli, Caprara, & Pastorelli, in press; Schunk, 1989; Zimmerman, Bandura, & Martinez-Pons, 1992). Further research into the structural relations among prosocialness, perceived self-efficacy, and aspirations should help to clarify the long-term social and academic impact of early prosocialness. A fuller profile of the ways that early prosocialness paves the path to later social and academic success will provide essential guidelines for programs to promote children's socio-educational development.

This research was conducted in an Italian context, with families from a wide range of occupations and spanning the full range of socioeconomic status. Cross-cultural generalizability of our basic findings is supported by research with American children by Wentzel (1993). In Wentzel's cross-sectional, rather than longitudinal, study, prosocial behavior also correlated positively with academic success through its link with academic behaviors and greater teacher preference. Evidence of the role of prosocial educational practices in Japanese elementary schools is found in studies by Lewis (1995), Lewis and Tsuchida (1998), and Stevenson and Stigler (1994).

Evidence that prosocialness is a prime predictor of later academic achievement is in accord with the ecological perspective of sociocognitive theories (Bandura, 1997; Vygotsky, 1962). Children's intellectual development is strongly influenced by the social relations in which it is embedded and its interpersonal effects. Peers bond to prosocial children around social and scholastic activities (Bandura et al., 1996b). Prosocialness also fosters cognitive self-development by enlisting academic support and guidance from knowledgeable adults and classmates (Bandura, 1997; Newman, 1991). Through these and other social means, prosocial children create enduring school environments that are conducive to academic learning.

The possible role of general intelligence in the pattern of relationships also warrants comment. Recent years have witnessed major changes in the conception of intellectual ability (Bandura, 1990; Dweck & Elliott, 1983; Sternberg & Kolligian, 1990). Ability is not a fixed property, but rather a generative capability in which self-referent, motivational, affective, and self-regulatory factors operate as influential factors. For example, individuals with the same intellectual ability may perform poorly, adequately, or skillfully depending on preexisting or experimentally instilled beliefs of intellectual efficacy (Bandura, 1997; Bouffard-Bouchard, 1990; Collins, 1982). Indices of intelligence leave unexplained a substantial amount of the variance in how well children perform academically. Given that motivational and other self-regulatory factors account for a good share of the variance in academic achievement, early achievement might provide a more stringent control in the prediction of later achievement than would general intelligence.

In their review of the literature, Eisenberg and Fabes (1998) re-

ported mixed findings concerning the relationship between prosocialness and general intelligence. Some studies reported low to moderate correlations, but many others found no significant relationship. Even in the case of the highest reported correlate, intelligence accounted for only 16% of the variance in prosocialness. Clearly, prosocialness is not a surrogate for general intelligence.

Changes in our discipline toward the positive aspects of child development requires designing and implementing new strategies for promoting young children's social and cognitive functioning (Bandura, 1997, 1999b). Our findings underscore the value of investing resources to develop and promote children's prosocialness (Eisenberg, Carlo, Murphy, & Van Court, 1995). Doing so enhances the learning atmosphere, facilitates subsequent academic success, and can generate additional gains in self-regulation, competence, and enabling social-support networks (Bandura et al., 1996b; Pajares, 1997; Schunk, 1989; Zimmerman, 1990). Such an orientation, in turn, can contribute to more positive communal norms and promote beneficial modeling and social practices that together can help reduce aggression in our communities.

The finding that early prosocialness may pave the path to later social and academic success has implications for the development of educational programs (Battistich, Watson, Solomon, Schaps, & Solomon, 1991; Levin, 1996). Children's scholastic development may be promoted by creating academically supportive communities that foster mutual caring and social engagement of students in academic pursuits. The growing public concern about the lack of social and civic commitment adds further import to the cultivation of prosocialness. Prosocial attitudes and behavior have a positive impact on a broad range of developmental outcomes, including outcomes in the social, affective, moral, and cognitive domains. There is much work to be done, however, to sort out the components of prosocialness that underlie enhanced sociocognitive functioning and to specify the mediating processes that link the sources and diverse effects of prosocialness.

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