

Impact of a Prevention Program on Aggressive Children's Friendships and Social Adjustment

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A group of 46 aggressive boys aged 8 to 9 years participated in a prevention program aimed at reducing their externalizing problems in the short term and at preventing delinquency in the long term. Outcome measures were collected during the 3-year period following the prevention program. At that time, the boys were 10, 11, and 12 years old. Outcome measures included teacher ratings of aggressiveness and self-reports of delinquent behaviors. The boys' friends were rated on disruptive behaviors by their classmates. The experimental boys' outcome measures were compared to the measures obtained from 58 aggressive boys in a control group. The disruptive ratings of the experimental and control subjects' best friends were also compared. Differences in teacher-rated aggressiveness between the two groups increased from one year to the next for the 3-year followup period. Similarly, the friends' disruptive scores differed increasingly between the two groups over the 3-year period. The effect of the prevention program on the subjects' friendships and the mediating impact of friends with regard to social adjustment were stressed.

Several researchers have shown that aggressive behaviors in boys are predictive of similar behaviors over time. In his review of aggression studies, Olweus (1979) underlined the considerable continuity of aggression over time, reporting an average corrected correlation coefficient of .60 for an

Manuscript received in final form November 23, 1993.

This study was funded by the following agencies: National Welfare Grants Program of the Canadian Ministry of Health and Welfare, Conseil Québécois de la Recherche Sociale, Conseil de la Santé et des Services Sociaux Régional du Montréal Métropolitain, Fondation Cité des Prairies, Fonds FCAR-Centre et Equipes, Institut de la Recherche en Psycho-Education de Montréal, Centre d'Accueil le Mainbourg. Lucie Bertrand, Rita Béland, Michel Bouillon, Raymond Labelle, Hélène O'Reilly, and Daniel Reclus-Prince supervised or administered the intervention.

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interval of 10 years. Early aggressivity is also predictive of concurrent and later adjustment problems such as peer rejection (Coie, Dodge, & Kupersmidt, 1989) and delinquency (Loeber, 1986; Loeber & Dishion, 1983; Parker & Asher, 1987; Tremblay, LeBlanc, & Schwartzman, 1988). It has been suggested that the link between aggressive behaviors and delinquency is mediated by the association of aggressive children with other behaviorally disordered peers (Coie, 1989; Dishion, 1989; Patterson, Capaldi, & Bank, 1991; Patterson, De Baryshe, & Ramsey, 1989).

There is evidence indicating that many aggressive children are not totally isolated from their peer group and that they typically are part of a peer network, even though they might be rejected by a substantial proportion of children (Boivin & Côté, 1991; Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988). Moreover, members of their peer network are more aggressive than members of nonaggressive children's peer network (Boivin & Vitaro, in press). This finding is consistent with other studies indicating that aggressive children tend to affiliate with others who share similar aggressive behavior (Cairns et al., 1988). Mutual attraction based on behavioral similarity (Cairns & Cairns, 1990; Cairns et al., 1988) or nonavailability of nondeviant peers because of peer rejection (Coie et al., 1989) may be responsible for the grouping of aggressive children in these cliques. Despite punishment and rejection from members outside of the peer network, this kind of affiliation would likely support the use of aggression and provide increased opportunities for delinquent and antisocial acts as the children grow older.

If the link between aggressivity, association with deviant peers and delinquent behavior is actually causal, altering the first factor (i.e., aggressivity) would hold promise for producing changes in selection of friends and, subsequently, in delinquent behaviors. The results showing that aggressive children's choice of friends is based on behavioral similarity (Cairns et al., 1988; Drewry & Clark, 1984,) support the hypothesis that treatment aimed at reducing aggressive behaviors in children should foster selection of friends with more positive characteristics compared to children not in treatment. In turn, friendship with better adjusted peers should maintain and even increase posttreatment differences compared to children not in treatment, given that friendship tends to increase behavioral similarity (Bukowski & Newcomb, 1990; Cohen, 1983; Epstein, 1983; Ross, Cheyne, & Lollks, 1988; Vitaro, Boivin, Tremblay, & Gagnon, 1994). A case in point is seen in Bierman and colleagues' studies (Bierman, 1986; Bierman & Furman, 1984) whereby group composition was manipulated in their intervention programs to provide opportunities for maladjusted children to interact positively with well-adjusted peers. In addition, Brown and his colleagues (Brown, Lohr, & McClenahan, 1986; Clasen & Brown, 1985) reported evidence of adolescents exerting pressure on their peers not to engage in an-

tisocial behaviors, a finding which suggests that peer influence may not always be toward socially undesirable behavior. This possible positive influence, provided peers possess positive characteristics, can be even stronger if peers are friends since friends exert stronger influence on attitudes and behaviors than nonfriends (Nelson & Aboud, 1985).

If reduction of aggressivity is associated with choosing less aggressive peers and subsequent reduction of delinquent acts, then a successful program may shed light on the mechanisms underlying the link between aggressivity and antisocial behaviors. It may also help clarify the role that deviant peers play in the etiology of delinquency. Deviant peers have been recognized by some authors as sometimes a necessary, sometimes a sufficient factor in the development of delinquency (Elliott, Huizinga, & Ageton, 1985; Kandel, 1978). According to these authors, reduction of delinquency through a prevention program should follow substantial changes in the peer network, especially with respect to the behavioral characteristics of the members of the network.

The first objective of this study was to determine if boys who participated in a prevention program became less aggressive and reported fewer delinquent acts than boys who did not participate in the prevention program. The second aim was to compare the best friends' behavioral characteristics of aggressive boys who participated in the prevention program to the best friends' behavioral characteristics of aggressive boys who did not participate in the prevention program. Given that subject selection was based on teacher ratings, it was posited that followup assessments should also use teacher ratings. However, since teacher ratings were not available for all children in the classroom, peers' ratings of friends' behaviors were employed. The advantage of this methodology is that it eliminates a possible halo effect (i.e., teachers may rate subjects and their friends in a similar way due to their close relationship). In addition, Pekarik, Prinz, Liebert, Weintraub, and Neale (1976) reported correlation coefficients around .60 between peer ratings on the aggressivity-disturbance scale of the Pupil Evaluation Inventory and teacher ratings of aggressiveness. Hence, although not totally equivalent, one measure can nevertheless be substituted for the other.

The prevention program employed in this study was a multicomponent intervention administered over a 2-year period. It included parent training, social skills training, and cognitive problem-solving skills training with the children. Social skills training, cognitive problem-solving skills training, and parent training have generally proven effective in reducing concurrent behavior problems and mildly effective in preventing delinquent behaviors (Bank, Patterson, & Reid, 1987; Kazdin, Esveldt-Dawson, French, & Unis, 1987; Kazdin, Siegel, & Bass, 1992; Lochman, 1992; Patterson, 1982; Tremblay et al., 1991). While these three approaches, when administered separately, in-

duce positive albeit limited outcomes in terms of maintenance or generalization of changes (Hugues & Sullivan, 1988; Kazdin, 1987; Webster-Stratton, 1985), Kazdin et al. (1992) have shown that a combination of these treatments can lead to marked changes in child and parent functioning with children referred for severe antisocial behavior even after a 1-year followup.

Despite suggestions made by Strain and Fox (1981) that the maintenance of an intervention program effect could be enhanced by altering friendship networks within the classroom setting, no investigator (to our knowledge) has assessed the effect of parent training or social skills training on the participants' selection of friends (i.e., friends' behavioral characteristics). Several investigators (Bierman, 1989; Ladd & Asher, 1985; Price & Dodge, 1989; Zaragoza, Vaughn, & McIntosh, 1991) reported that changes in the behavior of aggressive and/or rejected children through intervention is often insufficient to change their peers' negative perceptions of them. These results suggest that peer reputation may be resistant to change and that aggressive and/or rejected children may have little control over their peer reputations once they are established. However, since peer acceptance at the group level and friendship have been recognized as distinct processes (Asher & Hymel, 1981; Bukowski & Hoza, 1989; Furman & Robbins, 1985; Parker & Asher, 1989), these negative results do not imply that an intervention will not influence children's selection of friends. Friendship selection occurs through a process of mutual selection based partly on behavioral similarity which children can control more directly (Cairns et al., 1988). In addition, a nonnegligible proportion of aggressive and/or rejected children have at least one friend in the classroom (Boivin & Vitaro, in press; Vitaro et al., 1994; Williams & Asher, 1987) although they may not be well accepted at the group level. Thus, friends' characteristics may vary depending on the impact of an intervention on the subjects' behavioral repertoire, even though their negative reputations at the group level remain unaffected.

The prevention program in this study was administered over a 2-year period when the subjects were 8 and 9 years old. Outcomes (i.e., aggressivity and delinquency) and friends' behavioral characteristics were assessed over a 3-year period following treatment when subjects were 10 to 12 years old. Friends' behavioral characteristics were also assessed during this 3-year followup.

METHOD

Subjects

The boys who participated in this study originated from a sample of 1,034 kindergarten boys whose aggressivity was assessed by their teachers

in May 1984. In kindergarten, the boys in the sample were in 53 schools located in low socioeconomic areas of Montréal, Canada. Their mean age was 6.1 years ($SD = .32$). All the boys' parents were French-speaking, Caucasian, and had less than 15 years of schooling. These selection criteria ensured a relatively homogeneous socially disadvantaged sample.

Selection Instrument

In kindergarten, the behavior of the 1,034 boys was assessed using the Preschool Behavior Questionnaire (PBQ; Behar & Stringfield, 1974; Fowler & Park, 1979). A factor analysis of the data obtained from large samples of kindergarten and grade 1 French-speaking children, with the PBQ, revealed the two original aggressivity-hyperactivity and anxiety-withdrawal factors (13 and 6 items, respectively) (Tremblay, Desmarais-Gervais, Gagnon, & Charlebois, 1987). Each item was scored by the teacher on a 0 to 2 scale depending on how applicable it was to the child. Several groups of researchers have established the psychometric properties of the PBQ in terms of reliability and validity with kindergarten, first-, and second-grade children (Behar & Stringfield, 1974; Campbell & Cluss, 1982; Hoge, Meginbir, Khan, & Weatherall, 1985; Rubin, Moller, & Emptage, 1986; Rutter, 1967; Tremblay et al., 1987).

The French translation of the English version of the PBQ has been verified by backtranslating the French items into English and having English-speaking teachers judge the semantic similarity between the original items and their back translation counterparts. All items obtained high mean scores (> 4) on a 5-point scale.

Group Composition

From the original sample of 1,034 boys, those who received a score above the 70th percentile on the PBQ aggressiveness-hyperactivity scale in kindergarten ($n = 319$) were classified as aggressive-hyperactive and at risk for delinquency (Parker & Asher, 1987; Stattin & Magnusson, 1989). The 70th percentile, although not particularly stringent, proved to be a predictive cutoff point for serious maladjustment (including delinquency) with this sample of low socioeconomic status boys (Tremblay, Charlebois, & Larivée, 1989).

Of the 319 aggressive-hyperactive children, 142 were randomly selected to participate in the present study.³ Before random assignment of

³The other part of the children comprised an intensive observation group and were not included in the present study. These children were observed regularly at school, at home, and at the laboratory.

these 142 boys to the prevention group (PV group) or to the no treatment control group (CO group), parents were given the opportunity to participate in the program (if the random assignment so designated them). Out of the 142 boys' parents who were offered the prevention program, 104 (73.2%) accepted. Finally, 46 boys were randomly assigned to the PV group and 58 boys were included in the CO group at the beginning of the study. However, not all children remained in their age-appropriate classrooms at ages 10, 11, and 12 years. Subjects in special classrooms or special remedial programs were excluded from data analysis since they did not have access to normal peers: 2 CO and 4 PV boys at age 10, 4 CO and 6 PV boys at age 11, 6 CO and 7 PV boys at age 12. Subjects who had failed a year, but remained in a regular classroom, were included in the analyses: 15 CO and 7 PV boys at age 10, 17 CO and 12 PV boys at age 11, 17 CO and 12 PV boys at age 12. For each year, the proportion of PV and CO boys who had repeated a year, but were in a regular classroom, did not differ significantly (for all chi squares, $p > .05$). Due to the exclusion criteria and subsequent attrition, 79 (40 PV, 39 CO) subjects were assessed at age 10; 76 (38 PV, 38 CO) at age 11; and 75 (39 PV, 36 CO) at age 12. At ages 10, 11, and 12, PV subjects lost due to attrition did not differ on their kindergarten ratings from CO counterparts.

Prevention Program

The prevention program was implemented over a 2-year period when the subjects in the PV group were 8 and 9 years old (typically during grades 2 and 3). Considerable time was required to run a pilot study of the training program and to adjust the logistics of the intervention; therefore the prevention program did not begin before the children were in grade 2, even though initial screening took place at the end of kindergarten. Results in grade 1 showed that 73% of the CO and PV children were still rated above the 70th percentile on the PBQ aggressiveness-hyperactivity scale by their grade 1 teachers. There was no difference between the proportions of CO and PV subjects scoring above the 70th percentile. In addition, aggressiveness-hyperactivity ratings in kindergarten and grade 1 were significantly correlated ($r = .49, p < .01$). For the majority of targeted children, aggressive status was confirmed prior to the administration of the intervention.

The prevention program is described in detail elsewhere (Tremblay et al., 1992) and will only be outlined here. There were three components: parent training, social skills training, and cognitive problem-solving skills training. Parent training was adapted from the program developed by the Oregon Social Learning Center (Patterson, Reid, Jones, & Conger, 1975).

Briefly, parents were first taught how to recognize, observe, and record problem behaviors in their children. Next, parents were taught to define appropriate behaviors and to set clear objectives for their children. Third, parents learned how to use verbal and material reinforcers in a systematic and contingent manner with the children's appropriate behaviors. Parents also learned to systematically and moderately punish inappropriate behavior through the use of time-out for short periods of time. Response cost involving the use of naturally occurring consequences for inappropriate behavior (i.e., if the child breaks something that does not belong to him, then he has to replace it) also were used. Parents were encouraged to closely monitor their children's behavior outside the home. Finally, parents were taught how to manage family crises through problem solving, and how to use negotiation strategies in everyday situations. The skills were taught through the use of a descriptive booklet, modeling, and coaching by the trainers. Role playing and verbal reinforcement were also employed.

The number of parent training sessions varied depending on the parent mastery of the aforementioned procedures. The maximum number of sessions was 46 with an average of 17.4 sessions ($SD = 13.2$). Four trained therapists (i.e., two child care workers, one social worker, and one psychologist; three females and one male) conducted the parent training sessions in the subjects' homes.

Social skills training with the subjects was provided at school in a small group format. An equal number of teacher-nominated prosocial peers and target boys comprised groups of 4 to 6 children. Inclusion of prosocial peers in the training sessions served a dual purpose. First, prosocial peers served as positive models and reinforcement agents. Second, presence of prosocial peers avoided stigmatization of the target children by their classmates. Training sessions were held for 45 min, once a week during classtime for about half of PV boys. Training sessions were held during lunchtime or after school for the other half, depending on the arrangement made with the teacher.

During the first year of the prevention program, nine prosocial skills were trained (e.g., how to invite a bystander; how to ask "why"; how to give a compliment; how to help; etc.). The prosocial skills sessions were inspired from programs devised by Michelson, Sugai, Wood, and Kazdin (1983) and by Schneider and Byrne (1987). The 10 second-year training sessions were devoted to problem-solving and self-control skills (Kettlewell & Kausch, 1983; Meichenbaum, 1977). Examples of stimulus situations for training problem-solving and self-control skills are as follows: how to react to teasing, how to react when angry, what to do if other children refuse to play. For each situation, the children reviewed ways to define the problem, identified the intentions of the instigator, analyzed their feelings if they were in the role of the victim, suggested different action plans to solve the

problem, anticipated their consequences, selected one action plan and, finally, reinforced themselves for their cognitive work. Verbal instructions, coaching, modeling, behavior rehearsal, and positive (verbal and material) reinforcement were used to attain the objectives of the prosocial and problem-solving skills training sessions with the subjects in the PV group. Children were encouraged to use their newly learned skills before the next training session. At the following meeting, the children were reinforced for having performed their new skills in the interim. Teachers and parents were informed through a one-page letter of the new skills learned by each child during each session. They were invited to solicit and praise each child for using these new skills as often as possible. The same four professionals who were responsible of the parent training program were responsible of the social and problem-solving skills training sessions.

Followup Measures

Social Behavior Questionnaire. Each spring of the 3 years following the prevention program when the subjects were 10, 11, and 12 years old (i.e., typically during grades 4 through 6), teachers completed the Social Behavior Questionnaire (SBQ; Loeber, Tremblay, Gagnon, & Charlebois, 1989; Tremblay, et al., 1991) for the boys in their classrooms who were part of the study. The SBQ has a factor structure similar to the PBQ but is more appropriate than the latter for 10- to 12-year old age range. Given that the prevention program was aimed at reducing aggressiveness, the entire disruptive scale of the SBQ was not used since most items do not assess aggressiveness. Instead, following Tremblay's et al. (1991) recommendation, an aggressiveness subscale was constructed using the following three items of the disruptive scale of the SBQ: fights with other children; bullies other children; kicks, bites, hits other children (Cronbach's alphas varied from .86 at age 10 to .78 at age 12). Each item was scored on a 0 to 2 scale, depending on how descriptive it was of the child; a subscale score was computed by adding the scores on the three aggressiveness items.

Pupil Evaluation Inventory. Each spring of the 3 years following the prevention program, the subjects' classmates completed the Pupil Evaluation Inventory (PEI; Pekarik et al., 1976). The PEI contains 34 short behavior descriptions. The subjects' classmates (boys and girls) were asked to nominate up to four boys in their classroom who best fit each behavior descriptor. A code number was assigned to each boy in the classroom and these were presented in a roster format to the children. Children were requested to write down the code numbers of four individual boys whom they felt best fit the descriptor.

The PEI yields three factors: aggressivity–disturbance (i.e., disruptive-ness; 20 items), social withdrawal (nine items), and likability (five items). An individual score can be computed by adding the number of nominations received from classmates on all items contained for each scale. Scores were standardized within each classroom.

A best-friend nomination item was added to the PEI. Children, including the subjects, were asked to nominate up to four best friends in their classrooms. In line with suggestions by several authors, friendship dyads were later defined on the basis of reciprocated best-friend nominations (Bukowski & Hoza, 1989; Masters & Furman, 1981; Newcomb & Brady, 1982; Price & Ladd, 1986). If more than one reciprocated best-friend nomination occurred, the first one nominated by each subject was retained. Because only boys could be nominated best friends were necessarily only boys.

Self-Reported Delinquency Questionnaire. At age 10, the subjects in the two groups answered a 27-item Self-Report Delinquency Questionnaire (SRDQ; LeBlanc & Fréchette, 1989) asking them to report if they had ever been involved in a variety of delinquent behaviors. At age 11 and 12 years, the children answered the same 27-item questionnaire but with reference to the last 12-month period only. The questions addressed misbehaviors in the home (e.g., fighting, theft, vandalism) and outside the home (e.g., fighting, theft, vandalism, trespassing). The children answered whether they had never (scored 1), rarely (scored 2), sometimes (scored 3), or often (scored 4) engaged in each described act. A total scale score was computed by adding the scores on the individual items. The total delinquency score could range from 27 (no delinquency) to 108 (high delinquency). The items of the SRDQ were embedded in various other items pertaining to school, hobbies, social relations, and parent relations (including parental supervision).

LeBlanc and McDuff (1991) have verified the temporal stability, concurrent validity, and scale consistency of the SRDQ with preadolescent boys. Other investigators also documented the validity of self-reported measures of delinquency (Hindelang, Hirschi, & Weiss, 1981; Klein, 1989).

RESULTS

Teacher aggressiveness ratings were compared first, followed by the SRDQ scores. Given that teachers rated only boys in their classrooms who were part of the study, teacher ratings could not be standardized within the classrooms. Number of subjects may vary from one dependent measure to another because of occasional missing values. Friends' PEI disruptiveness scores were compared next. These scores were standardized within

the classrooms. Analyses were performed separately for each of the 3 outcome years because the number of subjects in each group varied from one year to the next.

Subjects' SBQ Ratings

Preliminary *t* tests showed no significant difference between PV and CO groups with respect to kindergarten fighting scores. Means and standard deviations are presented in Table I. Similar *t* tests were performed on various family characteristics: number of children in each family, mothers' and fathers' years of schooling, socioeconomic status based on last occupation [transformed in percentage score using the Blishen and McRoberts' (1976) occupational prestige scale]. No significant effect was noted between PV and CO subjects (Table I). Finally, a chi-square analysis revealed no differences between the groups on family structure (intact, single mother, other).

A series of *t* tests were conducted for the three-item aggressivity scores obtained from the teachers at ages 10, 11, and 12 years.⁴ Means and standard deviations are presented in Table II. The difference in aggressivity ratings between the CO group and the PV group at age 10 was not significant, $t(77) = 1.35, p < .10$. At age 11, the difference between the two groups was marginally significant, $t(73) = 1.64, p = .06$, one-tailed. Boys in the PV group tended to receive lower scores than the boys in the CO group. Finally, at age 12, the boys in the PV groups received significantly lower scores than the boys in the CO group, $t(73) = 1.99, p < .05$. As shown in Table II the effect sizes for the intervention varied from .22 at age 10 to .39 at age 12. According to suggestions by Cohen (1977), an effect size of .22 is small whereas an effect size of .39 is moderate.

A series of *t* tests (one-tailed) showed no differences at age 10 between PV and CO subjects on the total delinquency score. At age 11 and 12 years, the differences were in the expected direction but did not attain significance [age 11: $t(74) = 1.33, p < .10$; age 12: $t(71) = 1.42, p < .08$]. Although the *t* tests for total delinquency scores were not significant, the proportion of PV boys who reported at age 12 having ever been involved at least once in three specific delinquent acts was significantly lower than the proportion of CO subjects. The three delinquent acts were: vandalism (14.3% PV subjects vs. 31.7% CO subjects; $\chi^2 = 3.63, p < .05$), stealing

⁴A 2 (Group) \times 3 (Year of assessment) repeated-measures analysis of covariance was applied to the fighting scores assessed at ages 10, 11, and 12. Aggressiveness-hyperactivity ratings in kindergarten served as covariate. This analysis yielded a marginal group effect, $F(1, 76) = 3.05, p = .08$. However, to avoid losing subjects due to occasional missing data at ages 10, 11, or 12, separate *t* tests were used to compare CO and PV groups with all available subjects each year of assessment.

Table I. Behavioral and Family Measures in Kindergarten Depending on Group Membership^a

Measures	Groups		<i>t</i> ^b
	PV	CO	
Behavioral			
Mean fighting score	3.76 ^c (1.42) ^d	3.69 (1.35)	.24
Family			
Mean family socioeconomic status ^e	33.26 (7.46)	35.86 (7.90)	1.56
Mean mothers' education years	9.79 (2.23)	9.87 (1.73)	.17
Mean fathers' education years	10.12 (2.66)	9.92 (2.19)	.35
Mean number of children in the family	1.07 (0.80)	1.09 (0.78)	.53

^aPV = prevention group; CO = no treatment control group.

^bAll *t*s are not significant, $p > .05$.

^cMean scores.

^dStandard deviations shown in parentheses.

^eScale from 0 to 100; higher scores represent higher socioeconomic status levels.

Table II. Mean SBQ Aggressiveness Scores According to Group and Age^a

Age	Group		Effect size
	CO	PV	
10	2.37 ^b (2.30) ^c	1.95 (1.81)	.22
11	1.98 (1.93)	1.50 (1.64)	.27
12	1.24 (1.50)	.75 (1.06)	.39

^aSBQ = Social Behavior Questionnaire; CO = no treatment control group; PV = prevention group.

^bSBQ aggressiveness mean scores.

^cStandard deviations in parentheses.

objects worth less than \$10 (19.4% PV subjects vs. 51.5% CO subjects; $\chi^2 = 7.69, p < .05$), stealing bicycles (2.8% PV vs. 20.6% CO subjects; $\chi^2 = 5.40, p < .05$).

Friends' PEI Disruptive Scores

This analysis verified differences between CO and PV subjects' best friends with regard to the disruptive scale of the PEI. The entire PEI disruptive scale was used for this analysis since no specific effect was hypothe-

sized with respect to only aggressiveness items. As can be seen in Table III, PV subjects' best friends at age 10 tended to be perceived by peers as less disruptive than CO boys' best friends, $t(30) = 1.55, p = .06$ (one-tailed).

At age 11 the same trend was evident but did not attain statistical significance. Finally, at age 12, PV children's best friends were perceived by their classmates as significantly less disruptive than CO boys' best friends, $t(36) = 1.79, p < .05$ (one-tailed). As shown in Table III, the effect sizes for the intervention on the friends' disruptiveness ratings were small at age 11 but moderate at ages 10 and 12.

At ages 10, 11, and 12, the proportions of PV subjects with best friends varied between 61.5% and 77.3% (average 67.6%) whereas the proportions of CO subjects with best friends varied from 48.6% to 62.9% (average 55.0%). The proportion of subjects in each group having a best friend

Table III. Best Friends' PEI Disruptive Mean Scores According to Group and Age^a

Age	Group		Effect size
	PV	CO	
10	-.08 ^b (.86) ^c	.42 (.97)	.54
11	-.39 (.79)	-.17 (.88)	.26
12	-.34 (.66)	.11 (.88)	.58

^aPEI = Pupil Evaluation Inventory; CO = no treatment control group; PV = prevention group.

^bPEI disruptive standardized mean scores.

^cStandard deviations in parentheses.

Table IV. Mean Number of Friends (Standard Deviations), and Proportion of Boys with One Best Friend According to Group and Year^a

Age	Group	
	PV	CO
10	1.36 (1.09) (77.3%)	1.01 (1.29) (53.6%)
11	1.29 (1.23) (63.9%)	1.27 (1.23) (62.9%)
12	1.13 (0.99) (61.5%)	1.15 (1.33) (48.6%)

^aPV = prevention group; CO = no treatment control group.

did not vary significantly across groups (see Table IV). Also, boys in the PV group and boys in the CO group did not vary with regard to the mean number of friends they had each year. Means and standard deviations are presented in Table IV.

DISCUSSION

Teachers rated PV boys at age 12 as less aggressive than CO subjects. A similar trend was evident at age 11 but it was not significant. Despite the fact that the subjects were not specifically referred for help, these results are of interest due to the high stability of aggression over time (Olweus, 1979) and the relative difficulty of reducing this type of behavior through intervention (Kazdin, 1987). Moreover, these results cover a fairly long followup period and involve raters (i.e., teachers) blind to most of the boys' group status. In addition, at age 12, PV subjects were less likely to report vandalism and stealing compared to their CO counterparts. Approximately, one out of three CO boys compared to one out of six PV boys were involved in these delinquent acts. In addition, the PV boys had lower delinquency scores at ages 11 and 12 compared to the CO boys, although these differences did not reach statistical significance. Given the relative young age of the subjects, these nonnegligible differences may preview more important differences in the years to come.

Boys who participated in the prevention program associated with less disruptive friends at ages 10 (although marginally) and 12 years compared to control subjects. This particular result conflicts with previous research which suggests that there is little improvement in social acceptance at the group level for children participating in social skills training or parent management skills training (Bierman, 1989; Price & Dodge, 1989). Methodological differences between studies may explain these seemingly contradictory results. In the present study, subjects were not selected on the basis of peer likability ratings and, hence, they were not all rejected by their peers. Indeed, in another study (Vitaro, Tremblay, Gagnon, & Pelletier, in press), only half of aggressive kindergarten boys were sociometrically rejected according to Coie and Dodge's (1983) criteria. Several authors have argued that group acceptance and friendship constitute distinct and independent experiences in a child's social world (Asher & Hymel, 1981; Bukowski & Hoza, 1989; Furman & Robbins, 1985). An illustrative example can be found in Williams and Asher study (1987) whereby more than one-third of the rejected fourth, fifth, and sixth graders in their sample received three or more "best-friend" nominations. Consequently, friends' selection may be modified by the intervention program

even though social acceptance at the group level may remain unaffected. Unfortunately, no peer acceptance data were collected in the present study.

Increases in the differences between PV and CO subjects over time paralleled the increasing association of PV boys with less disruptive peers compared to the CO subjects. Initial reduction in the PV boys' aggressivity, as reflected by their teacher ratings, although not significant, may have been sufficient to foster friendships with less deviant peers at age 10 (albeit marginally). In turn, association with nondeviant peers⁵ may have accentuated the initial impact of the prevention program leading to marginally significant differences at age 11 in teacher ratings between PV and CO subjects. Finally, at age 12, PV boys established relationships with clearly nondeviant peers compared to CO boys. Moreover, they were rated by teachers as significantly less aggressive than CO boys. In this study, however, no direct causal link between friends' selection and behavior improvement could be established.

The putative influence of nondeviant peers on PV boys' aggressive behavior may be explained by a modeling effect and positive reinforcement for appropriate behaviors by nondeviant friends. Peers, especially friends, influence each other above and beyond their initial similarity (Billy & Udry, 1985; Nelson & Aboud, 1985). Consequently, prevention boys may have benefited from their association with nondeviant peers whereas this was not the case with control boys. Association with nondeviant peers could thus be the mediating factor between initial nonsignificant impact of the prevention program on the boys' behavioral repertoire and later (age 12) seemingly strong outcomes, such as aggressiveness and delinquency. Association with nondeviant friends for prevention boys may, however, not have been fostered by their marginal behavioral improvement at ages 10 and 11. It is possible that the selection of nondeviant friends may have been the result of parental pressure and supervision. Prevention boys reported more often than control subjects that their parents exerted close supervision in the choice of their friends (Tremblay et al., 1992). Parents' preoccupation with their sons' friends may well have resulted from their participation in the prevention program. Snyder, Dishion, and Patterson (1986) reported evidence showing that parents influence adolescent substance use through their effects on the children's peer group selection. These two explanatory hypotheses are not mutually exclusive and may even be complementary. On one hand, minimal reduction of aggressiveness through social skills training facilitates access to nondeviant friends. On the other hand, parents

⁵It was possible to qualify prevention boys' friends as nondeviant with regard to peer-rated disruptive scores since their standardized scores were near zero or negative, that is, near or below the classroom mean.

learn to scrutinize more closely their sons' selection of friends. This speculative model requires additional empirical support.

The possibility that differences between CO and PV boys' friends are an artifact of differential placement of boys in special classrooms with other behaviorally disordered children was ruled out. Boys who were placed in special classrooms or in remedial school were excluded from the sample because they had limited access to normal peers. Conversely, boys who had repeated a grade remained part of the sample because they still had access to normal peers. In addition, the proportion of children who repeated a grade in the CO group did not differ from the proportion of boys in the PV group who repeated a grade.

The present results do not clearly support the notion that aggressive behavior is a necessary precursor of delinquency since other behaviors may have been "manipulated" through the prevention program. Indeed, some evidence suggests that family functioning has been affected. Academic and social-cognitive skills may also have been changed. This confound of variables could easily be solved by devising single-component prevention programs aimed at reducing only aggressive behaviors. While one such design may be elegant, it would result in weak effects on outcome measures related to aggressivity and, ultimately, to delinquency (Kazdin, 1987). Multicomponent (and multieffect) programs may prove necessary to impact on these related, yet distinct, outcomes. Consequently, the use of preventive trials to test the developmental significance of modifiable early risk behaviors, in addition to providing evidence of their short-term effectiveness, may prove more complicated than suggested by some authors (Kellam, & Rebok, 1992; Parker, & Asher, 1987; Spilton Koretz & Barham Lazar, 1992).

Future research should be directed toward clarifying the nature and dynamics of the mediating mechanisms linking short-term outcomes of a prevention program to long-term outcomes. This link is rarely direct. In addition, clinicians and educators should try to influence directly or indirectly behaviorally disordered children's choices of friends as well as providing social skills training, parent training, or reinforcement programs aimed at modifying their behavioral or social-cognitive repertoires. Friend selection may prove a necessary component to ensure durable change and continued progress.

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