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The Impact of First-Grade “Friendship Group” Experiences on Child Social Outcomes in the Fast Track Program

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Abstract

Many interventions for children's behavior problems successfully utilize a group format for social skills training, providing opportunities for practice and performance feedback from peers. Recent studies however, suggest that grouping aggressive children together may reduce intervention effectiveness or even increase risk. The present study examined the relative impact of children's own behavior and their experiences with peers in the first-grade “friendship groups” of Fast Track, a multi-component preventive intervention program. Two-hundred sixty-six children (56% minority, 29% female) participated in 55 friendship groups. Children's own positive and negative behavior in friendship groups was related to relative improvements in social cognitive skills, prosocial behavior, and aggression, assessed through child interviews, teacher ratings, and peer sociometric nominations. Results from hierarchical linear models also revealed that the amount of peer escalation children received for their disruptive behavior during sessions impeded some intervention gains, whereas mere exposure to other children's positive or negative behavior was rarely related to outcomes.

Keywords

aggressive behavior; at-risk children; social skills training; group processes; peer relations

INTRODUCTION

Developmental research suggests that social skill deficits and problematic peer relations play important roles in the emergence and escalation of aggressive behavior problems. Children who show “early starting” patterns of heightened aggression at school entry commonly show deficits in key social cognitions (including low levels of emotional understanding, tendencies to make hostile attributions, and pre-emptive aggressive responding) and low levels of prosocial behavior and self-control (Vitaro, Tremblay, Gagnon, & Boivan, 1992). Not simply correlates of early aggression, these skill deficits—along with the problematic peer relations they engender—make unique contributions to the stability and severity of aggressive behavior problems in the later elementary grades (Dodge, Pettit, Bates, & Valente, 1995; Farmer, Bierman, & the Conduct Problems Prevention Research Group, 2002; Miller-Johnson, Coie, Maumary-Gremaud, Bierman, & CPPRG, 2002).

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Given this research, it is not surprising that intervention programs have utilized social skills training and peer group experiences, either alone or in combination with parent training and/or school-based interventions, to improve the social competence and peer relations of at-risk aggressive children. Reductions in aggression and increases in prosocial behavior have been documented for young aggressive children trained in positive play skills (Bierman, Miller, & Stabb, 1987) and prosocial coping skills (Prinz, Blechman, & Dumas, 1994). Reductions in aggression also occur when older aggressive children have been trained in anger management, self-control, and social problem solving skills (Lochman, Burch, Curry, & Lampron, 1984) or have been taught to make fewer hostile attributions regarding ambiguous peer provocation (Hudley & Graham, 1993). In a number of effective multi-component programs designed to prevent or reduce conduct problems, social skills training in the context of peer group experiences has been a focal component of the intervention (Pepler, King, Craig, Byrd, & Bream, 1995; Tremblay, Pagani-Kurtz, Mâsse, Vitaro, & Pihl, 1995; Vitaro, Brendgen, Pagani, Tremblay, & McDuff, 1999; Walker, Stiller, Severson, Feil, & Golly, 1998).

Despite these generally positive findings, recent research suggests that grouping aggressive children for intervention, at times, may have iatrogenic effects (Dishion, McCord, & Poulin, 1999). Three years after the conclusion of one cognitive-behavioral intervention to prevent substance use among preadolescents, for example, program participants showed increases in smoking and teacher-reported delinquency, which the investigators linked with deviant peer affiliations that were reinforced during their group skills training intervention (Poulin, Dishion, & Burraston, 2001). These findings have sparked keen interest in understanding any potential problematic peer influences that may occur in the context of group-based social skills training.

Peer Influence in the Context of Coaching Interventions and Natural Groups

From the standpoint of social learning theory (which provides the basis for social skill training programs), peer inclusion in coaching interventions should be very beneficial; peer partners facilitate opportunities for skill practice, provide performance feedback, and foster generalization from structured intervention sessions to naturalistic peer interactions (Bierman, 2004; Ladd & Mize, 1983). Indeed, in one of the few studies to actually assess peer interactions during coaching sessions, Bierman (1986) found that the positive responsiveness of peer partners along with the in-session prosocial skill performance of target children predicted positive outcomes for those socially withdrawn children.

Developmental research, however, suggests that peer influence sometimes contributes to increases in aggressive behavior problems. Specifically, several researchers have observed elevated levels of coercive exchanges among peers in naturalistic situations and furthermore, have documented that those exchanges contribute to increases in aggressive behavior over time. Observing preschool children across the course of a year, for example, Patterson, Littman and Bricker (1967) linked high levels of aggression at the end of the year with three types of peer experience: provocative modeling (experiences in which the child was the victim of aggressive behaviors); positive peer reinforcement (experiences in which the child used aggression successfully to dominate peers and control play materials); and negative peer reinforcement (experiences in which the child used aggression successfully to terminate negative peer initiations). Observing older grade-school children, Asarnow (1983) found that aggressive dyads were particularly likely to react negatively to conflict during cooperative peer activities and to escalate (in an attempt to dominate rather than resolve) conflicts when they occurred. Observing adolescents, Dishion and his colleagues (Dishion, Spracklen, Andrews, & Patterson, 1996; Patterson, Dishion, & Yoerger, 2000) found that the conversations of delinquent dyads contained more references to rule-breaking than the conversations of either nondelinquent or mixed dyads; they also found that the degree to which friends reinforced rule-breaking talk with laughter predicted future delinquent activity. Each of these studies suggests

that the risk for negative peer modeling and reinforcement of aggressive behavior is increased when aggressive youth interact with one another.

Some theorists have suggested that exposure to groups with many aggressive members may extend beyond the direct effects of behavioral shaping. Wright, Giammarino, and Parad (1986) examined the correlates of peer status among groups of boys attending a summer camp for children with behavior problems. Consistent with developmental research, aggressive behavior predicted peer rejection in most groups but, surprisingly, was unrelated to peer rejection in those groups containing many aggressive boys. Wright et al. (1986) concluded that the presence of many aggressive boys in the group contributed to a shifting of social norms and a higher level of social acceptability for aggression. Additional studies have replicated this finding in experimental play groups of first- and third-grade boys (Boivin, Dodge, & Coie, 1995) and in first-grade classrooms (Stormshak, Bierman, Bruschi, Dodge, Coie, & CPPRG, 1999).

Naturally, this line of research raises questions about the wisdom of grouping aggressive children together for intervention (Patterson et al., 2000). Although the negative impact of exposure to naturalistic peer groups with many aggressive members has been documented for children as young as first grade (Kellam, Ling, Merisca, Brown, & Ialongo, 1998), and negative peer modeling and reinforcement may certainly operate at that age as well (Patterson et al., 1967), intervention programs for young elementary-aged students have not been highly concerned about creating coaching groups that include only aggressive children or a high proportion (i.e., 30–50%) of aggressive children. Unlike naturalistic peer groups, coaching sessions are highly structured and well-monitored by adults. Hence, it remains unclear whether deviant peer modeling and reinforcement operate in the context of coaching interventions for young children. Such negative peer influences may be more likely in coaching programs that group aggressive children together, but the extent to which they actually occur or affect child outcomes has not been examined empirically.

The Present Study

To better understand those issues, the present study examined process measures assessing child behavior and peer responding during the first-grade “friendship group” sessions that were part of Fast Track (CPPRG, 1992). The present study also examined the relation of those process measures to the preintervention characteristics and first-year outcomes of children participating in those groups.

Based on developmental theory and longitudinal research, Fast Track provided at-risk children (those exhibiting high rates of aggressive and disruptive behavior at school entry) with social skill training and positive peer experiences along with parent training, home visiting, classroom programming, and academic tutoring (see Bierman, Greenberg, & CPPRG, 1996; McMahon, Slough, & CPPRG, 1996). First-year outcomes for the multi-component Fast Track program were positive and included statistically significant effects in areas of child social cognitions, peer relations, aggressive behavior, academic achievement, parent-child relationships, and parent-teacher involvement (see CPPRG, 1999, for a complete report of these findings). Relative to children in the control group, children in the intervention group displayed more positive gains in emotion recognition, emotion coping, and social problem-solving, were observed engaging in more positive and less aggressive peer interaction, and were viewed more positively by peers (based on sociometric “like most” and “like least” nominations.) Both teachers and parents saw more positive change in the behavior of children in the intervention group relative to those in the control group over the course of first grade. Children in the intervention group also had more advanced reading skills, were doing better academically in school, and were less likely to be receiving special education services at the end of first grade. Parents of intervention children were more involved in their children's education; said they

relied less on physical punishment as a means of discipline, and were observed to interact with more warmth while playing with their children. Overall, 18 of 40 potential outcomes in Fast Track showed significant intervention effects, always favoring the children in the intervention group, and the average effect size of these significant differences was .33.

Given the multi-component design of Fast Track, it is not possible to tie these positive effects to any one intervention component, nor to disentangle the likely transactional influences of change in child and family skills. To tease out potential effects of children's friendship group experiences on outcomes, however, it is possible to look at variability *within* the intervention group. This study examined the degree to which variations in child behavior, peer responding, and general peer behavior during friendship group sessions accounted for variability in the degree of child change within the intervention condition. This study focused on social cognitions, prosocial behaviors, and aggression because these were the domains of functioning specifically targeted by the Fast Track friendship groups curriculum (Bierman et al., 1996). In addition, based upon prior empirical work, cross-domain influences were expected, such that intervention effects in any one of these domains were expected to influence change in the others (see Bierman, 2004, & Dodge, 1986, for reviews). This study focused on outcomes at the end of first grade because during this year all children in the intervention condition received the same standardized and intensive social skills training (22 sessions). In subsequent years, intervention groups were reconfigured to accommodate student moves to new schools and grade retentions, and individualized services were initiated, so that after first grade, children within the intervention condition were receiving different levels of social support interventions.

Following the social learning theory upon which the group coaching program was based, we hypothesized that, controlling for preintervention behavioral characteristics, children who displayed active engagement during group sessions would be most likely to acquire the skills being taught and show the greatest improvements in social cognitions and prosocial behaviors, and the greatest reductions in aggression over the course of the year. Second, we hypothesized that negative peer responding during group sessions (e.g., reacting to and escalating off-task and disruptive in-session behavior) would distract children from the curriculum and interfere with their ability to master the skills being taught; such negative peer responding might also reinforce children's inappropriate behavior, resulting in deviancy training (Poulin et al., 2001). Finally, we hypothesized that the social norms of each intervention group (reflected in the mean rates of positive and negative in-session behavior of the other children in the group) might affect children's response to treatment by providing a new context in which specific social cognitions, such as hostile attributions, might be more or less adaptive, by enhancing or undermining the overall focus of the group on the curriculum, and by setting a standard by which children calibrated their own behavior. Hence, the first aim of this study was to assess associations between three intervention processes (positive child engagement, deviancy training, group behavioral norms) and child outcomes.

This study also addressed a second question: To what degree were the preintervention characteristics of children assigned to a particular friendship group related to the likelihood of positive or negative group processes emerging during the course of the intervention (e.g., high levels of overall positive in-session behavior, low levels of overall negative in-session behavior, and low levels of peer escalation)? This question has important policy and programming implications, as it addresses the degree to which controlling the composition of a group by using information about children's preintervention behavior might increase or decrease the likelihood that beneficial therapeutic group processes will emerge during intervention.

METHOD

Participants

Participants in this study lived in predominantly low-income neighborhoods in Durham, NC, Nashville, TN, rural central Pennsylvania, and Seattle, WA. Identification of these children began with a population-based screening of all kindergarten children attending Fast Track schools, using teacher ratings on the 10-item Authority Acceptance subscale of the Teacher Observation of Classroom Adaptation—Revised (TOCA-R; Werthamer-Larsson, Kellam, & Wheeler, 1991). The parents of children who scored in the top 40% on teacher ratings of aggressive and disruptive behavior were contacted and asked to complete a 24-item questionnaire describing similar behavior problems at home. Scores on these two measures were standardized and averaged, and children who scored in the top 10–15% at each site on the combined screen were invited to participate in the study. Sets of schools (matched on size, ethnicity, percentage of students receiving free lunch, and school levels of behavior problems) were randomly assigned to the intervention or control condition, and all identified high-risk children who entered intervention schools in first grade were assigned to the Fast Track intervention sample.

The sample for this study included 266 intervention children (71% boys, 29% girls) who attended at least one friendship group in the fall and one friendship group in the spring of first grade.⁴ They were between 6 and 7 years of age ($M = 6.48$ years, $SD = 0.47$), and most were African American (54%) or European American (44%). Many of these children (65%) came from families in the lowest two categories of socioeconomic status (Hollingshead, 1979), and about one-half (52%) lived in single-parent families.

First-Grade Friendship Group Intervention

Friendship groups in Fast Track were designed for the 5 or 6 children (range 3–7, $M = 4.84$, $SD = 1.07$) attending first grade at each intervention school in each year of the study. Altogether, there were 55 friendship groups. Scheduled weekly after school or on the weekend, friendship groups ran for one hour (with parent training groups held concurrently) and were part of an enrichment program that also included parent–child interaction time and tutoring sessions. The friendship group program was coordinated with a school-based social competence promotion program (PATHS, Kusche, & Greenberg, 1994), and complemented by a peer-pairing program in which at-risk target children participated in weekly, half-hour generalization practice sessions with rotating classroom partners. Friendship groups utilized stories, films, role-plays, and discussions to illustrate and promote skill concepts. Cooperative activities and group social problem solving challenges provided opportunities for skill practice and performance feedback. Sessions focused on reviewing and practicing skills in emotional understanding, accurately reading social cues, communication, friendship building, self-control, and social problem solving (see Bierman et al., 1996, for more details).

Friendship groups were led by Fast Track staff members known as educational coordinators, most of whom were former teachers or guidance counselors, and paraprofessional co-leaders. Educational coordinators received extensive training at Fast Track, and they had a detailed manualized curriculum specifying the weekly lessons and activities. In addition, they

⁴This study only included children in cohorts 2 and 3. Different friendship group process measures were used with the first cohort of Fast Track, creating incomplete process data for the purposes of this study. An additional 24 children (9% of the total possible sample of 290) were excluded from this study because they attended no friendship groups at all ($n = 12$) or they switched friendship groups between the fall and spring ($n = 12$) and did not have one coherent group experience. These excluded children were significantly more likely to be European American and were marginally significantly more likely to be from one study site, but they did not differ from the children retained in this study in terms of cohort, sex, socioeconomic status, household composition, or any preintervention covariates included in the analyses.

participated in weekly supervisory staff meetings, and their supervisors participated in weekly conference calls to ensure cross-site fidelity of implementation.

Preintervention and Outcome Measures

Measures of social cognitions, prosocial behavior, and aggression served as the primary outcomes for the present study and were collected prior to and after intervention. The social cognition measures were collected during summer home visits, conducted before and after first grade. Preintervention measures of aggression were collected from teachers at the end of kindergarten; preintervention measures of prosocial behavior were collected from teachers in the fall of the first-grade year prior to the initiation of the friendship groups. Postintervention measures of prosocial behaviors and aggression included a re-administration of these teacher-ratings in the spring of the first-grade year following the completion of the friendship groups, along with the spring administration of school-based observations and sociometric interviews.

Social Cognitions—Emotional understanding, tendencies to make hostile attributions, and social problem-solving skills served as our measures of social cognitions because they represent common skill deficits among children with conduct problems and are associated with aggressive responding in peer interactions (Dodge, 1986). The Emotion Recognition Questionnaire (Ribordy, Camras, Stafani, & Spaccarelli, 1988) assessed emotional understanding. Children were presented with 16 stories describing a character in an emotionally evocative situation and asked to identify his or her feeling state by pointing to a picture of a happy, sad, mad, or scared face. The total score on this measure was the percent of correct responses ($\alpha = .56$). Descriptive statistics, including information on intervention and control group differences, for this measure and all other measures in this study are presented in Table I.

The Home Interview with Child, adapted from a measure first developed by Dodge (1980), assessed children's tendencies to make hostile attributions for peers' behavior. After looking at each of eight drawings depicting a failed attempt at peer entry or minor harm under conditions of ambiguous intent (i.e., being bumped), children were asked why they thought the children in the pictures had acted as they had. Trained coders rated each explanation as hostile or non-hostile (inter-rater reliability $\kappa = .94$), and the total score represented the percent of hostile attributions expressed across the vignettes ($\alpha = .64$).

The Social Problem Solving Scale, adapted from instruments used by Rubin and Krasnor (1986) and Dodge, Bates, and Pettit (1990), assessed children's responses to relationship challenges. Presented with drawings of peer situations, four depicting group entry dilemmas and four depicting ambiguous peer provocation, children were asked to describe three different ways a child might solve the problem. Scores were based on the percentage of responses that interviewers rated as competent across the vignettes. Independent coder agreement was high ($\kappa = .91$) and internal consistency was satisfactory ($\alpha = .78$).

Prosocial Behavior—Outcome measures of prosocial behavior were collected from three independent informants. Teacher ratings on the 9-item Social Health Profile (CPPRG, 1997) assessed prosocial behavior at the beginning and end of first grade. This measure included positive behaviors (e.g., friendly, helpful) and appropriate emotion regulation (e.g., controls temper, appropriate expression of needs/feelings). Each item was rated using a 6-point scale (0 = *almost never* to 5 = *almost always*), and an average score representing prosocial behavior was computed for each time point ($\alpha = .90$).

At the end of first grade, research staff members observed children for four half-hour periods that included both classroom and playground time. Using a computerized coding system, observers coded child behaviors in 30-second intervals. Observers received extensive training

before initiating school observations, reaching a criterion standard on training videotapes (i.e., $\kappa > .70$). In addition, randomly conducted and frequent ongoing assessments of inter-rater reliability in the field were also high ($\kappa > .70$). In the present study, we focused on the percent of 30-second intervals in which children were engaged in prosocial interactions.

For another measure of prosocial behavior, we conducted classroom-wide sociometric nominations. During individual interviews at the end of first grade, children identified classmates who fit the following description: "Some kids are really good to have in your class because they cooperate, help others, and share. They let other kids have a turn." Nominations were standardized within classroom to control for variation in size and participation rates.

Aggressive Behavior—Outcome measures of aggressive behavior also were collected from three independent informants. At the end of kindergarten (preintervention) and end of first grade (postintervention), teachers completed the Authority Acceptance subscale of the TOCA-R (Werthamer-Larsson et al., 1991), rating child aggressive and disruptive behaviors. Items, such as "fights" and "teases classmates," were rated on a 6-point Likert scale (0 = *almost never* to 5 = *almost always*) and averaged to create a total score ($\alpha = .91$).

School observers rated aggressive and disruptive behavior postintervention. After completing each of four 30-minute observation sessions, as described above, they too completed the 10 items of the Authority Acceptance subscale. The sets of ratings were averaged to create a composite postintervention score.⁵ Although school observers also counted the number of aggressive behaviors observed, these counts were low and poorly distributed, due primarily to the structured nature of the classroom context, where overt aggression was rare. Observer ratings, which tapped a broader spectrum of disruptive behaviors and included information about severity, had better distributions and hence, were selected for use in this study.

Finally, during their individual interviews, children in each first-grade classroom identified classmates who fit the following description: "Some kids start fights, say mean things, and hit other kids." The number of nominations each child received was standardized within classroom to provide a postintervention sociometric score for aggressive behavior.

Friendship Group Process Measures

The hypotheses for this study focused on the potential influence on child outcomes of three friendship group processes: (1) the child's active engagement in the intervention and acquisition of prosocial and self-control skills, reflected in high rates of positive in-session behavior and low rates of negative in-session behavior (child engagement), (2) the degree to which the child received in-session responding by peers that might serve to provoke, escalate, and reinforce disruptive behaviors (deviancy training), and (3) the social norms of the friendship group, as reflected in the average in-session behavior of group members (social norms). At two time points during the year (mid-way through the friendship group sessions and at the end of the sessions), group leaders completed ratings describing the in-session behavior exhibited by each child and the response he or she got from peers.

During the first year of Fast Track, process measures included weekly ratings of each child's in-session behavior completed by group leaders. This method of data collection proved cumbersome to group leaders and revealed relatively low levels of variability over time. Hence, beginning in the second year of the project, process measures were developed to tap broader domains of child functioning in group, based upon multiple session observations. Modeled after ratings used by Englund, Levy, Hyson, and Sroufe (2000), group leaders rated children

⁵Although school observers also counted the number of aggressive behaviors, these values, in the classroom context especially, were frequently zero or extremely low and showed limited variability.

in domains of functioning, each of which included multiple behavioral indicators and descriptive anchors. For example, the rating of nurturing and compliant behaviors tapped children's tendencies to make frequent and spontaneous prosocial advances to other peers, to be positive and responsive to their overtures, to be sensitive to the desires of peers, and to volunteer to help and share with peers during friendship groups. Ratings of positive problem-solving skills tapped children's abilities to articulate feelings, explain problems, and explore appropriate solutions in planning or conflict situations; it also tapped their willingness to listen to peers' points of views and engage in appropriate negotiation and compromise during interactions. Each domain was rated on a 4-point Likert scale, with descriptive paragraphs anchoring each point on the scale. Scores were averaged across items and across the two time points to provide a summary score of in-session positive behavior ($\alpha = .80$).⁶

Negative in-session behavior was assessed through four ratings. The rating of inattentive, impulsive, and immature behaviors tapped children's intrusive behaviors, their tendencies to become so excitable or aroused that they required staff member assistance in regulating their actions, and the degree to which their own behaviors disrupted ongoing friendship group activities. The rating of oppositional, non-compliant, and resistant behaviors tapped children's tendencies to resist directions by staff members, to engage in power struggles and adopt stubborn or rigid positions that were resistant to redirection or negotiation, and to become upset or angry when they could not do something their way. The rating of physical or verbal aggression assessed the frequency with which children blamed others, threatened others, were physically intimidating to peers, yelled, hit, or kicked. The rating of hostile withdrawal assessed children's negativistic attitude toward peers, staff members, or group activities (i.e., "This is stupid"), and their refusal to constructively participate in group discussions and role plays. These ratings also were made on 4-point Likert scales—with descriptive paragraphs anchoring each point on the scale—and were averaged across items and time points for a summary score of in-session negative behavior ($\alpha = .89$).

Finally, one rating assessed the frequency of peer encouragement and escalation of negative behavior. This rating was based on how often friendship group members noticed a child's negative behavior and responded to it with laughter, encouragement, or imitation. This rating could be high even if several group members expressed displeasure with the negative behavior, as long as the child was disrupting ongoing activities and receiving some attention for his or her actions. Again, this rating was made on a 4-point Likert scale and averaged over two time points.

Group level behaviors reflected the average of positive and negative in-session behavior scores of all members in each group. We also examined the percentage of girls in each friendship group as a group-level variable. Forty-percent of the friendship groups had no girls. Of those with girls, 19 groups had 2 girls, and 9 groups had 3 girls, and 3 groups had one girl. Although our policy was to avoid having one girl in an otherwise all-boy group, attendance problems and changes in group membership caused this to happen in three instances.

RESULTS

Descriptive Analyses of Friendship Group Processes

On average, children attended 77 percent of the 22 friendship groups that were planned ($M = 17.07$, $SD = 5.15$). Descriptive analyses of staff ratings of children's in-session experiences (summarized across the year) indicated that just over one-half of all children (54%) received high scores (average ratings of 3 or 4) on positive in-session behavior, reflecting frequent,

⁶Unfortunately, only the educational coordinator for each friendship group made process ratings, so inter-rater reliability could not be computed.

spontaneous, and cooperative social problem solving and nurturant behaviors. Many children (41%) received an intermediate score (rating of 2), indicating that positive in-session behavior was evident but depended on adult prompting and support. Only a small number of children (5%) received a low score (rating of 1), indicating low levels of positive in-session behavior.

A majority of children (79%) were able to control their inattentiveness, noncompliance, aggression, and hostility, as indicated by scores of either low (average rating of 1) or infrequent and reactive (rating of 2) in-session negative behavior. In the context of this well-structured and supported program, a minority of children (18%) displayed some negative behavior, but staff members easily could redirect them (rating of 3). Very few children (3%) displayed such high rates of negative in-session behavior (rating of 4) that management was a challenge.

Peer escalation was typically well controlled, being no problem or a very limited problem for most (75%) of the children. Staff member ratings, however, suggested that some children (20%) occasionally received some peer attention for their negative behavior, but this attention occurred only some of the time (for about one-quarter of all relevant behaviors, according to the rating guidelines), it was not sustained, and it did not result in other children's also engaging in the disruptive activities. Only a small number of children (5%) regularly received attention for disruptive behavior.

As presented in Table II, bivariate correlations show consistency across the three process measures, such that children who showed high levels of positive in-session behavior tended to show low levels of negative behavior, and those who exhibited more negative behavior received more peer escalation. In addition, regular patterns of association emerged between each child's in-session behavior and the average in-session behavior of other children in his or her friendship group. Children who showed high levels of positive behavior were likely to be in groups in which the average level of positive behavior among peer partners was also high; conversely, children who showed high rates of negative in-session behavior were likely to be in groups with higher average levels of negative peer partner behavior and peer escalation.

Bivariate correlations among measures representing children's friendship group experiences, children's preintervention characteristics, and children's outcomes are presented in Table III. In this table and in all of the following analyses, all measures of friendship group processes were weighted by rates of attendance so that the influence of children who attended every friendship group was greater than the influence of children who attended less frequently. Although it is possible that greater attendance may mean increases or decreases in positive outcomes, depending on the strength of the intervention versus the strength of iatrogenic effects, additional analyses revealed that attendance itself was not significantly related to any of the outcome variables and that this weighting had very little impact on the overall pattern of findings.

Prediction of Variation in Outcomes from Process Measures

To examine more systematically the effects of friendship group processes on children's outcomes, hierarchical linear models (Raudenbush & Bryk, 2002) were estimated, accounting for the natural nesting of children within friendship groups, and producing both individual, Level 1, and group, Level 2, effects with appropriate standard errors. In each of these models, children's sex, race, and preintervention scores were entered as control variables at Level 1, and site, cohort, and the percentage of girls in the group were entered as control variables at Level 2; of central interest were the additional Level 1 predictors of children's positive in-session behavior, negative in-session behavior, and experiences of peer escalation, and the additional Level 2 predictors of the overall group level of positive and negative in-session behavior.⁷ Reflecting active child engagement in the intervention, we anticipated Level 1 child effects linking high rates of in-session positive behavior and low rates of in-session negative

behavior with improved outcomes. Reflecting deviancy training processes during intervention, we hypothesized Level 1 effects for peer escalation, such that peer reinforcement for negative behavior would impede or reduce intervention effects. Reflecting the possibility that children would be affected by the general social behaviors of their group partners (e.g., social norm processes), we anticipated links between child outcomes and the overall positive or negative in-session behavior of their group partners.

Because children's preintervention characteristics are included in these hierarchical linear models, significant parameter estimates reflect deviations from expected post-treatment standing—rather than rank order alone—in the relevant outcomes. All variables (except individual sex and race, and the percentage of girls in the groups) were rescaled with a mean of 0 and a standard deviation of 1 to produce standardized parameter estimates with a range from -1 to 1 for ease of interpretation. Further, because the bivariate correlations between the mean of other children's behavior and individual outcomes were not significant, a lenient approach was developed to maximize the likelihood of detecting effects of group level behavior on outcomes. Children's preintervention characteristics and the measures of friendship group processes at Level 1 were group mean centered rather than grand mean centered; thus, the parameter estimates for the friendship group processes at Level 2 do not control for any of the Level 1 variables.

Social Cognition Outcomes—The first set of hierarchical linear models assessed the degree to which variation in social cognitions could be predicted from friendship group process measures. In each of these models, which are summarized in Table IV, a child's preintervention score on the outcome measure was included as a covariate.

These results demonstrate that social cognitions were related—albeit at a marginally significant level—to friendship group processes. Children's positive in-session behavior tended to predict gains in social problem solving and emotion recognition, and reductions in hostile attributions. Children's negative in-session behavior was related to lower levels of social problem solving. In addition, being in a group with peer partners who showed high levels of negative in-session behavior tended to increase hostile attributions. Almost all of the variance in these social cognitive outcomes, however, occurred at the individual level rather than the group level.⁸

Prosocial Behavior Outcomes—The second set of hierarchical linear models assessed the effects of friendship group processes on children's prosocial behavior outcomes. These results are summarized in Table V. In this case, only teachers' ratings of prosocial behavior were available as a preintervention covariate; neither school observations nor sociometric nominations were collected prior to intervention.

Significant effects emerged linking children's in-session behaviors and peer experiences with each of the three prosocial behavior measures (teacher ratings, direct observations, and peer sociometric nominations.) Children's engagement in friendship groups, reflected in high levels of positive in-session behavior, significantly predicted the degree of gains on teacher ratings of prosocial behavior and direct observations of positive peer interactions. Conversely,

⁷Each child received a rating regarding the degree to which they received peer escalation in response to their disruptive behavior. Hence, escalation is a Level 1 variable because it refers to the individual child's experience in group, even though the experience being measured involves treatment by peers.

⁸The intraclass correlation coefficient may be used to partial individual from group level variance for each outcome. The individual variance component (labeled " r^2 ") and the group variance component (labeled " μ^2 ") for the model with no predictors (labeled "unconditional") may be compared to the total variance (r plus μ) in outcome. For example, the formula for the total percent of variance existing at the group level is: $\mu_{\text{unconditional}}/(\mu_{\text{unconditional}} + r_{\text{unconditional}})$. The percent of original variance at the group level that is explained by the full model is $(\mu_{\text{unconditional}} - \mu_{\text{conditional}})/\mu_{\text{unconditional}}$. The percent of the total variance in outcome that is explained by the group level variables in the full model with all predictors (including site and cohort and individual predictors) is $(\mu_{\text{unconditional}} - \mu_{\text{conditional}})/(\mu_{\text{unconditional}} + r_{\text{unconditional}})$.

negative in-session behavior displayed during friendship groups impeded gains, significantly predicting lower levels of teacher-rated prosocial behavior and also predicting (at the level of a marginally significant trend) fewer peer prosocial nominations. One unexpected finding, however, was that being the recipient of higher levels of peer escalation during friendship groups also predicted more peer prosocial nominations. At the group level, the one significant predictor was the percentage of girls in the group. Being in a group that included more girls predicted more positive changes in teacher-rated prosocial behavior and peer prosocial nominations. These findings support the small but additive importance of children's own positive and negative behavior in friendship groups—and the influence of having girls in those groups—in predicting the degree to which children made gains in prosocial behavior.

Aggressive Behavior Outcomes—The final set of hierarchical linear models assessed the relations between friendship group processes and children's aggressive behavior outcomes. The results are summarized in Table VI. In these models, kindergarten teacher ratings of aggressive behavior were used as the preintervention covariate.

Friendship group processes had a significant effect on all three measures of children's aggressive behavior outcomes (teacher ratings, direct observations, and peer nominations.) Active engagement and skill acquisition in friendship groups, indexed by high levels of positive in-session behavior, predicted reductions in teacher ratings and observer ratings of aggressive and disruptive behavior. High levels of negative behavior in friendship groups did not add to positive in-session behavior and preintervention characteristics in predicting any of the aggressive outcomes, but peer escalation (receiving attention and reinforcement from others for being disruptive) during friendship groups did. In-session peer escalation impeded improvement, and was linked with higher relative levels of postintervention aggressive behavior, as assessed by teacher ratings and peer nominations.

Significant effects also emerged for two group level variables. The presence of girls in a friendship group predicted postintervention reductions in aggressive behavior, as assessed by both teacher ratings and peer nominations. Moreover, the average level of group members' negative in-session behavior impeded intervention responsivity, predicting higher levels of peer aggression nominations. This effect should be interpreted cautiously, as it does not control for individual negative in-session behavior. Further, it is notable that the overall percent of total variance in peer nominations existing at the group level (2%) far exceeded the percent of total variance existing at the individual level (98%).

These hierarchical linear models for aggressive behavior, as well as the models for social cognitions and prosocial behavior, suggest that children's acquisition of skills during coaching interventions (i.e., high levels of positive in-session behavior) is a consistent and important predictor of intervention outcomes, as is the inhibition of negative in-session behavior. Peer partner behavior toward individual children, reflected in negative peer escalation (deviancy training), can impede efforts to reduce aggression, but general group characteristics (social norms) appear less important in predicting outcomes.

Predicting Friendship Group Processes

One important remaining question with policy and program design implications is the extent to which peer partners' preintervention characteristics predict the friendship group experiences of each individual child. To answer this question, the average preintervention characteristics of the individual children in each friendship group were correlated with the overall level of positive behavior that occurred in the friendship group, the overall level of negative behavior that occurred in the friendship group, and the overall tendency of the children to escalate and reinforce each other's disruptions. For these analyses, the 55 friendship groups were the unit of interest, and all variables represented the mean of group members' scores.

As displayed in Table VII, friendship group members' preintervention social cognitions did not predict group processes, with the exception of one marginally significant trend suggesting that groups comprised of children with high hostile attribution scores were more likely to experience negative in-session behavior. Higher average preintervention prosocial behavior scores among group members were (marginally significantly) related to higher levels of positive in-session behavior and lower levels of negative in-session behavior, and (significantly) predicted low levels of peer escalation. High average preintervention aggressive behavior significantly predicted low levels of positive in-session behaviors and high levels of negative in-session behavior and peer escalation. These analyses suggest that children's preintervention characteristics, especially their prosocial and aggressive behavior, could have been used strategically to compose groups that were more likely to elicit positive engagement and behavioral regulation during sessions.

Those group-level correlations, however, do not clearly separate out the degree to which individual children assigned to groups were simply consistent in their behavior in the classroom (at preintervention) and in the group, from the degree to which the particular peer partners children were assigned influenced their behavior in friendship groups. To address this question more specifically, sets of hierarchical regression equations were conducted.⁹ In these regression equations, each child's positive in-session behavior, negative in-session behavior, and experiences of peer escalation during friendship groups were the outcomes. In the first step of the regressions, the child's own preintervention characteristics (i.e., social cognitive scores, teacher-rated prosocial behavior, teacher-rated aggressive behavior, and child sex) were entered as predictors of their in-session experiences. Then, in the second step, we added the average scores on these measures of the peer partners. The first set of predictors (their personal scores) thus reflected the degree to which children showed cross-setting consistency, demonstrating behaviors in friendship group sessions that were similar to those they showed in the classroom. The second set of predictors addressed the degree to which the preintervention characteristics of their assigned peer partners uniquely affected their in-session experiences, beyond the prediction afforded by their own characteristics.

As shown in Table VIII, clear evidence emerged that children's own preintervention characteristics predicted their in-group experiences, with their preintervention levels of prosocial and aggressive behavior predicting to in-session positive and negative behavior, as well as to peer escalation. Only in the case of positive in-session behavior did group members' preintervention characteristics add incremental prediction. Children assigned to groups with less aggressive peer partners were more likely to show higher rates of positive engagement and skill acquisition during friendship group sessions.

DISCUSSION

Despite evidence supporting the effectiveness of group coaching interventions for elementary-aged aggressive children (Lochman & Lenhart, 1993), recent research documenting iatrogenic effects for at-risk adolescents trained in groups (Dishion et al., 1999; Poulin et al., 2001) has raised questions about the extent to which grouping together at-risk aggressive children for coaching may decrease intervention efficacy or even increase children's problems. Conceptually, the inclusion of peer partners in social skills training should improve program impact by increasing in-session opportunities for positive peer modeling, naturalistic skill practice, performance feedback from peers, and skill generalization (Ladd & Mize, 1983). The characteristics of peer partners, however, and their influence on child outcomes has not been well-studied, especially for young children. This study addressed this issue by examining processes in friendship groups comprised of aggressive children participating in Fast Track.

⁹Regressions are presented for ease of interpretability. Analyses also were conducted with HLM, and the conclusions were similar.

We examined associations between three intervention processes (child engagement, deviancy training, and group norms) and child outcomes, controlling for preintervention scores. We also examined the degree to which the preintervention characteristics of children and their partners predicted these three intervention processes.

Prevalence of Three Intervention Processes in Groups Composed of At-Risk Children

Descriptive analyses examined the degree to which social skill training groups composed solely of children with elevated aggressive-disruptive behavior problems were characterized by positive vs. negative in-session behavior and peer escalation. These analyses suggested that a majority of the children (75%) in these groups were positively engaged in the intervention program, showing high levels of positive behavior and regulating their negative behavior effectively during friendship group sessions. A subset of children (20%), however, were less positively engaged and showed occasional negative in-session behavior, requiring but responding well to redirection by staff members. About the same number of children sometimes received attention for their negative behavior from some of their peers, but that attention was not sustained or followed by peers' joining in the negative behavior, and it was usually curtailed with minimal staff member redirection. A small percentage of children (5%) had more extreme difficulties in the friendship group setting, requiring individualized behavioral management techniques to control their negative behavior and other children's escalation of it. It is important to note that positive behavioral management strategies received a high level of attention in the Fast Track curriculum, staff training, and supervision process; hence, the rates of child behavioral engagement reflect performance in the context of a program that was highly tailored to the behavioral management needs of children with disruptive behavior problems. These results suggest that, with a structured skill training program and careful supervision and behavioral management by staff, negative behavior typically occurs at low levels during sessions and can be controlled effectively. The degree of effort required to maintain behavioral control varies, with focused staff attention required in 20% of the groups, and management strategies ineffective in 5% of the groups.

Associations Between Three Intervention Processes and Outcomes

Child engagement in intervention, as reflected in high rates of positive in-session behavior and low rates of negative in-session behavior emerged as an important predictor of variability in outcomes among the children receiving intervention. Being positively engaged (e.g., showing high levels of cooperative, nurturant, and adaptive social problem-solving skills in-session) significantly predicted four behavioral outcomes: teacher-rated prosocial behavior, direct observations of positive peer interactions, teacher-rated aggressive behavior, and observer-rated aggressive behavior. Consistent with the social learning theory model, this robust pattern of findings suggests that skill acquisition is a critically important mechanism of change generated by coaching programs. Interestingly, negative in-session behavior was not related to any of the postintervention measures of aggressive behavior, but did impede postintervention gains in teacher-rated and peer-nominated prosocial behavior. Thus, in achieving the desired effects of social skills coaching interventions, it may be as important—or even more important—for group leaders to facilitate children's positive engagement as to control their negative behaviors.

Evidence for the damaging effects of deviancy training during intervention sessions also emerged. When peer partners provided attention and reinforcement for a child's disruptive activities during coaching sessions, postintervention levels of peer-nominated and teacher-rated aggression were more likely to be high. Such responses could have contributed to the fact that neither of these measures showed a statistically significant intervention effect in the first-grade outcome analyses (CPPRG, 1999).

Ironically, peer escalation during intervention sessions also predicted higher levels of peer-nominated prosocial behavior. This finding perplexed us, given that sociometric nominations for aggressive and prosocial behavior were themselves inversely correlated. Post-hoc exploration of this issue revealed that the aggressive children who elicited escalation from peers during intervention sessions represented two groups: a larger group who were low in peer prosocial nominations and fit the aggressive-rejected peer profile, and a smaller group who were not low in their peer prosocial nominations and fit the peer-accepted aggressive profile (Cillessen, van IJzendoorn, van Lieshout, & Hartup, 1992). Quite possibly, there were some subtle differences in the peer attention received by these two subgroups, with the former group being more often “laughed at” during friendship group sessions, reinforcing their disruptive behavior and peer alienation, but the latter group being more often “laughed with,” reinforcing the use of disruptive behavior as a social strategy for attaining peer visibility. This pattern is consistent with other research which suggests that, although most aggressive children are disliked by their peers, a small subgroup are able to regulate their aggression in a way that allows them to maintain friendships and gain some positive notoriety in the peer group (Bagwell, Coie, Terry, & Lochman, 2000). Thus, peer escalation could have reinforced both aggressive and prosocial orientations.

Relative to children's own behavior during coaching sessions, and their personal experiences of peer escalation, the characteristics of their peer partners (group social norms) played a much smaller role in predicting outcomes. The average behaviors of peer partners (reflecting the social norms of the group) emerged as a significant or marginally significant predictor for only two of nine outcome measures: Peer partners' negative behavior appeared to impede children's progress in making non-hostile attributions of negative intent, and it appeared to increase the likelihood they would receive sociometric nominations for aggression. In both cases, however, peer partners' behaviors accounted for a very small amount of explained variance. The failure to find much impact for the friendship group social norms may be due to the age of the children being served. Developmentally, children in first grade may not be as focused on their peers for cues regarding how to act as the older children and adolescents for whom iatrogenic effects have been documented (Dishion et al., 1999).

Not fully anticipated, the percentage of girls in the coaching groups emerged as the most important group characteristic, significantly predicting greater gains in teacher and peer nominated measures of prosocial behavior, as well as greater reductions in teacher and peer-nominated measures of aggression. Being in a group with more girls was more important to children's outcomes than actually being a girl was, and this impact was not due simply to better behavior in these groups during intervention sessions. In fact, the percentage of girls in a group was only weakly related to the average levels of positive in-session behavior ($r = .16$), negative in-session behavior ($r = -.20$), and peer escalation ($r = -.15$), and the significant finding for percent girls emerged when controlling for the effects of average group levels of positive and negative behaviors on child outcomes. This suggests that the presence of girls affected group dynamics in some other way. Previous research has shown that girls are more likely to admit newcomers to a group than boys, and tend to promote more positive intimacy in both same-sex and cross-sex friendships (Zarbatany & Pepper, 1996; Zarbatany, Van Brunschot, Meadows, & Pepper, 1996). Perhaps girls' presence produced more accepting and cohesive friendship groups, and/or groups that were less threatening and provoking. This issue certainly requires more study, but does suggest that including more girls in coaching programs for children with conduct problems could facilitate intervention effectiveness, at least at this age, and underscores the potential risks of aggregating homogeneous groups of boys together for skill training.

Predicting Group Processes from Pretreatment Characteristics

Given the apparent importance of grouping children in ways that produce high levels of positive child engagement and low levels of deviancy training during intervention, one question of great importance is the degree to which these intervention processes can be predicted by the pretreatment characteristics of the children being assigned to intervention groups. In our hierarchical linear models, we examined the degree to which the pretreatment characteristics of individual children and their group partners predicted intervention processes. In these regressions, children's own preintervention behavior emerged as an important predictor of their in-session behavior and of the likelihood they would receive peer reinforcement for negative behavior. Children who were the hardest to manage in the classroom were most likely to also be the hardest to manage in the group intervention setting. In general, once the influence of the child's preintervention behavior on their in-session behavior was accounted for, the behavioral characteristics of their peer partners did not add explanatory value to the negative intervention process variables. The one exception was a group effect in which average peer partner preintervention aggression levels predicted lower levels of child in-session positive engagement. However, the degree to which deviancy training occurred during intervention sessions appeared to be more a function of the child's negative behavior than a function of the behavioral characteristics of the peer partners. If replicated, this is an important finding, as it suggests that one cannot protect from deviancy training simply by selecting less aggressive peer partners, nor does the inclusion of aggressive partners necessarily increase risk for deviancy training. In addition to group composition, other factors that may affect levels of deviancy training in group intervention sessions, such as group size, characteristics of the curriculum, and behavior management strategies warrant further investigation.

Implications, Limitations, and Future Directions

Overall, the findings of this study suggest that young children with high levels of aggressive–disruptive behaviors can benefit from coaching interventions, and that grouping them with other children who have elevated aggressive–disruptive behaviors often provides an effective context for coaching. When groups are well-managed, children are engaged in high levels of positive interaction and skill acquisition, and partners are not reacting to and reinforcing negative behavior, positive gains appear likely, even for children treated in groups comprised of partners with behavior problems. On the other hand, the results also suggest that groups composed of aggressive–disruptive children can be difficult to manage, and are vulnerable to the emergence of negative in-session behavior and deviancy training, and that these intervention processes undermine intervention effects when they occur.

This study did not directly compare groups that varied in their composition, in terms of the proportion of members who did or did not have behavior problems. Hence, the extent to which different grouping strategies might protect interventions against vulnerability to negative child behavior and deviancy training is not clear. Given the strong predictability of child pretreatment behavior to their in-session behavior, it may be that highly aggressive children have difficulty engaging positively in social skill training interventions regardless of the characteristics of their peer partners. Additional research is needed to better understand aspects of intervention design (including group composition) that might optimize positive effects for highly aggressive children.

One limitation that warrants specific mention in this study is that, although links between friendship group experiences and program outcomes emerged, the gains documented for the children in Fast Track were not the result of the friendship groups alone. As part of Fast Track, children also received lessons on emotion coping, prosocial behavior, and conflict resolution as part of the classroom-based PATHS curriculum, and they had additional opportunities to practice their new social skills through the highly structured peer pairing component of the

intervention. It is not known how each of the components of Fast Track uniquely contributes to children's improvements, nor what the benefits of social skill training might have been if used as an isolated intervention without the other Fast Track components.

Given the current findings, caution is warranted in assigning highly aggressive children to the same group. If intervention groups show evidence of problematic intervention processes (e.g., low levels of positive engagement, evidence of deviancy training), re-organizing or re-constituting these groups should be considered, in order to establish group contexts more likely to produce desired effects. It also may be worthwhile to consider alternative effective strategies—such as creating smaller groups, including more girls, conducting shorter intervention sessions, and providing individual coaching—to improve the behavioral adjustment of the very aggressive children in social skill training programs (Bierman, 2004).

It should also be kept in mind that the inclusion of non-aggressive partners in social skill training groups designed to treat aggressive children does not come without some risks. That is, to avoid the possibility of iatrogenic peer influence, some group coaching programs for aggressive children have included only or primarily nonaggressive peer partners (e.g., Bierman et al., 1987; Prinz et al., 1994). It is not clear that extended inclusion in intervention groups designed for aggressive youth with social skill deficits is beneficial to these nonaggressive peers; in fact, participation may keep those peers from other activities that would be of greater benefit to them. It is also possible that these nonaggressive peers might dislike aggressive children even more due to their forced and prolonged exposure in coaching groups. It was for these reasons that Fast Track was designed to include intensive, weekly, skill training for children who had similar skill deficits and intervention needs, along with a separate school-based peer-pairing program designed to enhance skill generalization and peer acceptance through limited, positive, interactions with rotating non-problem peer partners (Bierman et al., 1996). More extensive research on the impact of various models for including peer partners in social skill training programs is clearly needed, as the program and policy implications are substantial.

One final issue not assessed by this study is the possibility that the iatrogenic effects of interventions grouping aggressive youth together occur after the period of formal intervention (Dishion et al., 1999). That is, there may be some risk associated with facilitating friendships among aggressive children that are not apparent during the intervention, but manifest themselves at a later point in time when the youth spend unsupervised time together.

In conclusion, the findings of this study suggest that treating young children with aggressive-disruptive behavior problems in a group context can be effective, but also involves some risk that requires careful monitoring for problematic intervention processes. In Fast Track, most children became positively engaged and demonstrated the acquisition of adaptive social cognitions and prosocial behavior, as well as reductions in aggression. Although relatively infrequent, peers did escalate and reinforce the disruptive in-session behavior of some children and thereby impeded their improvement. It appears, however, that such unintended consequences can be minimized by avoiding groups in which the most aggressive children are placed together, by integrating girls with boys, and by carefully monitoring group processes during the course of intervention. Additional research on factors that promote positive intervention processes (and reduce risk for negative processes) in social skill training programs designed for aggressive-disruptive children is clearly needed.

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Table 1
Descriptive Statistics of Children's Preintervention Characteristics and Outcomes

	<i>N</i>	Mean	<i>SD</i>	Range	<i>ES</i>	<i>p</i> value
<i>Social cognitions</i>						
Preintervention						
Emotion recognition	264	10.56	2.91	3.00–16.00		
Hostile attributions	265	0.68	0.24	0–1.00		
Problem solving	265	0.62	0.21	0–1.00		
Postintervention						
Emotion recognition	257	12.85	2.20	4.00–16.00	.54	0.001
Hostile attributions	259	0.65	0.24	0–1.00	.05	0.64
Problem solving	259	0.70	0.17	.08–1.00	.33	0.002
<i>Prosocial behavior</i>						
Preintervention						
Teacher ratings	263	2.37	0.88	.22–5.00		
Postintervention						
Teacher ratings	263	2.52	0.91	0–4.67	.10	.46
Observer counts	258	0.53	0.22	0–1.04	.27	.02
Peer nominations	251	–0.36	0.68	–1.57–2.20	.21	.06
<i>Aggressive behavior</i>						
Preintervention						
Teacher ratings	263	2.22	0.98	0.10–5.00		
Postintervention						
Teacher ratings	263	1.93	1.13	0–4.60	.02	.85
Observer ratings	259	0.45	0.48	0–2.74	.31	.004
Peer nominations	251	0.75	1.29	–1.49–4.42	.10	.38

Note. *ES* represents the effect size from previous analyses of differences between children in the intervention and control groups (CPRG, 1999), and *p* value indicates the statistical significance of those differences.

Table II
Correlations Among Individual Children's Friendship Group Process Variables

	Positive in-session behavior	Negative in-session behavior	Peer escalation
Children's in-session behavior			
Positive behavior			
Negative behavior	-.61 **		
Peer escalation	-.39 **	.63 **	
Average peer partner behavior			
Positive behavior	.40 **	-.20 **	-.31 **
Negative behavior	-.22 **	.27 **	.25 **
Peer escalation	-.31 **	.23 **	.42 **

Note. Average peer partner behavior represents the average of other group members' process scores minus the scores of the individual child.

*
 $p < .05$,

**
 $p < .01$.

Table III

Bivariate Correlations of Study Variables

	Individual children			Group norms	
	Positive behavior	Negative behavior	Escalation by peers	Positive behavior	Negative behavior
<i>Social cognitions</i>					
Preintervention					
Emotion recognition	.07	-.13*	-.04	-.07	.00
Hostile attributions	.01	.13*	.02	.09	.11 [†]
Problem solving	.02	-.08	-.05	-.10	.08
Postintervention					
Emotion recognition	.08	-.17**	-.05	-.10	.10
Hostile attributions	-.20**	.14*	.08	.01	.09
Problem solving	.11 [†]	-.08	-.02	-.07	.11 [†]
<i>Prosocial behaviors</i>					
Preintervention					
Teacher ratings	.17**	-.19**	-.18**	.05	.03
Postintervention					
Teacher ratings	.14*	-.19**	-.11*	-.03	.06
Observer counts	.23**	.02	.04	.01	.00
Peer nominations	.18**	.03	.13*	.01	.01
<i>Aggressive behaviors</i>					
Preintervention					
Teacher ratings	-.18**	.21**	.23**	-.22**	.10
Postintervention					
Teacher ratings	-.24**	.26**	.25**	.10	-.01
Observer counts	-.16*	.13*	.05	.00	-.03
Peer nominations	-.03	.30**	.32**	.07	-.06

Note. Weighted by exposure to group.

[†] $p < .10$.

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

Table IV
Hierarchical Linear Models Predicting Social Cognitive Outcomes

Fixed effects	Coefficient (SD)		
	Emotion recognition	Hostile attributions	Problem solving
Intercept	.397(.347)	-.640(301) *	-.178(.323)
<i>Level 1: Child characteristics</i>			
Sex	-.090 (.139)	.133(.179)	.230(.151)
Race	-.058(.143)	-.061(.179)	-.095(.154)
Preintervention scores	.345(.084) **	.170(.069) *	.263(.073) **
<i>Friendship group processes</i>			
Positive behavior	.109(.063) [†]	-.140(.065) [†]	.141(.085) [†]
Negative behavior	-.006(.072)	.013(.102)	-.174(.102) [†]
Peer escalation	-.133(.086)	.090(.122)	.051(.100)
<i>Level 2: Group characteristics</i>			
Percentage of females	-.149(.299)	-.056(.266)	-.178 (.275)
<i>Friendship group processes</i>			
Positive behavior	-.056(.079)	.002(.064)	.002(.054)
Negative behavior	-.057(.066)	.122(.068) [†]	.039(.053)
<i>Unconditional random effects</i>			
μ : Group-level variance (SD)	.074 (.272)	.102 (.320)	.000(.021)
χ^2 (df = 54)	74.764 *	83.248 **	49.685
r : Individual-level variance (SD)	.929(.964)	.878(.937)	.981(.991)
<i>Conditional random effects</i>			
μ : Group-level variance (SD)	.073(.271)	.024(.155)	.003 (.053)
χ^2 (df = 47)	67.044 *	51.663	50.512
r : Individual-level variance (SD)	.817(.904)	.854(.924)	.918(.958)

Note. Robust SEs. Female is coded 1, and African American is coded 1. Control variables representing site and cohort also were included in all analyses. Level-1 $N = 266$, Level-2 $N = 55$.

[†] $p < .10$,

* $p < .05$,

** $p < .01$.

Table V
Hierarchical Linear Models Predicting Prosocial Behavior Outcomes

Fixed effects	Coefficient (SD)		
	Teacher rating ^a	Observer counts ^a	Peer nominations ^b
Intercept	.673(.392) [†]	.319(.446)	.282(.302)
<i>Level 1: Child characteristics</i>			
Sex	-.047(.113)	.014 (.155)	.003(.187)
Race	-.133(.115)	.143 (.188)	.057(.196)
Preintervention teacher rating	.547(.064) ^{**}	.013 (.071)	.111(.060) [†]
<i>Friendship group processes</i>			
Positive behavior	.105(.051) [*]	.258 (.058) ^{**}	.146(.091)
Negative behavior	-.163(.081) [*]	.038 (.087)	-.170(.099) [†]
Escalation by peers	.021(.082)	-.078 (.091)	.278(.122) [*]
<i>Level 2: Group characteristics</i>			
Percentage of females	.701(.273) [*]	.103 (.327)	.724(.283) [*]
<i>Friendship group processes</i>			
Positive behavior	-.045(.073)	.012(.081)	.011(.059)
Negative behavior	-.017(.098)	.077(.088)	.064(.056)
<i>Random effects for unconditional</i>			
μ : Group-level variance (SD)	.207(.455)	.216 (.465)	.037(.192)
χ^2 (df)	119.303(54) ^{**}	127.172(54) ^{**}	67.030(53) [†]
r : Individual-level variance (SD)	.822(.906)	.771(.878)	.939(.969)
<i>Random effects for conditional</i>			
μ : Group-level variance (SD)	.266(.516)	.181(.425)	.009(.092)
χ^2 (df)	170.807(47) ^{**}	102.026(47) ^{**}	50.926(46)
r : Individual-level variance (SD)	.476(.690)	.739(.860)	.885(.941)

Note. Robust SEs. Female is coded 1, and African American is coded 1.

^aLevel-1 $N = 266$, Level-2 $N = 55$.

^bLevel-1 $N = 262$, Level-2 $N = 54$.

[†] $p < .10$,

^{*} $p < .05$,

^{**} $p < .01$.

Table VI
Hierarchical Linear Models Predicting Aggressive Behavior Outcomes

Fixed effects	Coefficient (SD)		
	Teacher rating ^a	Observer ratings ^a	Peer nominations ^b
Intercept	-.874(.358) *	-.471(.416)	-.070(.245)
<i>Level 1: Child characteristics</i>			
Sex	-.092(.143)	-.218(.143)	-.577(.156) **
Race	.220(.143)	.388(.191) *	.248(.120) *
Preintervention teacher rating	.255(.046) **	-.046(.070)	.059(.070)
<i>Friendship group processes</i>			
Positive behavior	-.261(.061) **	-.183(.074) *	-.042(.052)
Negative behavior	.119(.096)	.094(.093)	.109(.088)
Escalation by peers	.222(.099) *	.086(.093)	.204(.104) *
<i>Level 2: Group characteristics</i>			
Percentage of females	-.655(.271) *	-.190(.296)	-.616(.237) *
<i>Friendship group processes</i>			
Positive behavior	-.094(.063)	.073(.083)	-.016(.046)
Negative behavior	.074(.071)	-.012(.078)	.116(.053) *
<i>Random effects for unconditional</i>			
μ : Group-level variance (SD)	.184(.428)	.200(.447)	.018(.134)
χ^2 (df)	111.633(54) **	117.673(54) **	59.163(53)
r : Individual-level variance (SD)	.826(.909)	.819(.905)	.957(.978)
<i>Random effects for conditional</i>			
μ : Group-level variance (SD)	.110(.332)	.185(.431)	.000(.014)
χ^2 (df)	85.536(47) **	101.784(47) **	31.735(46)
r : Individual-level variance (SD)	.630(.794)	.766(.875)	.750(.866)

Note. Robust SEs. Female is coded 1, and African American is coded 1.

^aLevel-1 $N = 266$, Level-2 $N = 55$.

^bLevel-1 $N = 262$, Level-2 $N = 54$.

* $p < .05$,

** $p < .01$.

Table VII

Correlations Among the Average of Group Members' Preintervention Characteristics and Friendship Group Processes

Preintervention scores	Friendship group processes		
	Average positive in-session behavior	Average negative in-session behavior	Average rate of peer escalation and reinforcement
Social cognitions			
Emotion recognition	-.06	-.16	.03
Hostile attributions	.07	.25 [†]	.00
Social problem solving	-.14	.03	-.02
Teacher-rated behaviors			
Prosocial	.23 [†]	-.23 [†]	-.35 ^{**}
Aggressive	-.42 ^{**}	.42 ^{**}	.37 ^{**}

Note. These values were computed at the group level ($N = 55$), not the individual level.

[†]
 $p < .10$;

*
 $p < .05$;

**
 $p < .01$.

Table VIII
Hierarchical Regression Equations Predicting Children's Friendship Group Experiences

	Positive in-session behavior		Negative in-session behavior		Peer escalation	
	R^2	β	R^2	β	R^2	β
Individual children's preintervention characteristics	$R^2 = .12^{***}$		$R^2 = .18^{***}$		$R^2 = .16^{***}$	
Female		-.03		-.13*		-.17**
Emotion recognition		.13*		-.11		-.02
Hostile attributions		.02		.06		-.04
Social problem solving		.05		-.08		-.06
Prosocial behavior		.20**		-.16**		-.12*
Aggressive behavior		-.17**		.25***		.27***
Average of group members' preintervention characteristics	$R^2 = .18^{***}$ $\Delta R^2 = .06^{**}$		$R^2 = .20^{***}$ $\Delta R^2 = .02$		$R^2 = .18^{***}$ $\Delta R^2 = .02$	
Percent female		.09		-.07		.11
Emotion recognition		-.11		-.07		-.06
Hostile attributions		.03		.08		-.06
Social problem solving		-.11		.09		.01
Prosocial behavior		-.07		.09		-.08
Aggressive behavior		-.16*		.01		.04

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$.