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The Effects of Young Children's Affiliations with Prosocial Peers on Subsequent Emotionality in Peer Interactions

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Abstract

Preschoolers' (60 boys and 64 girls, *M* age = 50.73 months) affiliations with prosocial peers were observed in naturally occurring interactions and then examined in relation to positive and negative emotionality within their peer interactions one semester later. Greater affiliation with prosocial peers in the fall was related to enhanced positive emotionality (especially for girls) and decreased negative emotionality (especially for boys) in later peer interactions. These findings held when initial levels of the emotion were controlled and were found above and beyond variations in classroom levels of prosociality. The findings suggest that peers exert influence in early childhood and that these effects can positively affect the quality of young children's later peer interactions.

Keywords

prosocial affiliation; peers; social adjustment; emotionality

The idea that peers influence each other's development has a rich conceptual and empirical history (see for example, Prinstein & Dodge, 2008). Although much of the work in this area has focused on understanding the implications of being able to establish and maintain peer relationships, researchers have begun to examine equally important questions regarding whether and how children are influenced by the specific characteristics of their peer affiliations (Altermatt & Pomerantz, 2003). Evidence for such peer effects has been found in studies of adolescents showing that peers have powerful influences on the development of problem behaviors. For example, when adolescents interact with aggressive peers, they reinforce deviant communication and interaction patterns, thereby encouraging each other to engage in more antisocial and delinquent behaviors (Dishion, Spracklen, Andrews, & Patterson, 1996). Such peer influences have been found in naturally occurring peer groups (e.g., mutual friendships), as well as contrived ones (e.g., intervention groups), suggesting that this is not simply a function of selection bias. Instead, this effect appears to be due to a fundamental peer process in which exposure to aggressive peers socializes negative behaviors. Moreover, as youngsters spend time with children who have certain qualities (e.g., aggression), over time they come to adopt similar attitudes and behavioral styles (Barry & Wentzel, 2006). Recently, these findings have been extended to young children (Hanish, Martin, Fabes, Leonard, & Herzog, 2005; Snyder et al., 2005), suggesting that peer affiliation effects are fundamental processes found to occur when children first aggregate together for periods of time.

Questions remain, however, about the degree and type of peer influences that children experience. In particular, we know little about the generalizability of peer effects beyond

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problem behaviors, aggression, and risky health behaviors (such as drug and alcohol use). The focus on negative behaviors has been driven by the high individual and societal costs associated with these behaviors (Jones, Dodge, Foster, Nix, & Conduct Problems Prevention Research Group, 2002). Although we might expect that peer affiliations also affect positive social behavior, direct evidence as to whether affiliating with peers with positive social qualities affects later social behavior is largely lacking (cf. Barry & Wentzel, 2006). This issue is the central focus of the present study.

Peers and Prosocial Behavior

In the present study, we examined the effects of affiliation with prosocial peers. Prosocial behavior, defined as voluntary behavior intended to benefit another, is of obvious importance to the quality of social interactions and adjustment (Eisenberg, Fabes, & Spinrad, 2006). Developmental theorists frequently have tied the acquisition of positive social adjustment and morality to processes inherent in social interactions with peers (Piaget, 1932/1965; Sullivan, 1953; Youniss, 1980). For example, it has been argued that because peer interactions involve associations with equals and frequently are cooperative, reciprocal, and mutual, these interactions may provide an optimal atmosphere for the acquisition of concepts and behaviors reflecting justice, cooperation, kindness, and concern for another's welfare (Youniss, 1980). In support of this assumption, Tesson, Lewko, and Bigelow (1987) found that prosocial themes pertaining to reciprocity, sincerity and trust, helping and solving problems, and sensitivity to others' feelings were prominent in 6- to 13-year-old children's reports of the social rules they used in peer relationships. Other research supports the notion that peers may be important for the development of sympathy and prosocial responding, particularly for prosocial behaviors that are directed to people other than parents (e.g., Chung-Hall & Chen, 2010; Zahn-Waxler, Iannotti, & Chapman, 1982). Thus, peers' and children's prosocial behavior are transactionally related: prosocial behavior plays an important role in the quality of peer relationships and plays a role in determining outcomes associated with them (Berndt, 2002).

In everyday life, however, we know that opportunities to affiliate with prosocial peers are not equally distributed among children. Fabes and colleagues (Fabes, Martin, & Hanish, 2002) examined the degree to which different types of children have opportunities to interact with prosocial peers by analyzing how often low- and high-prosocial children (i.e., those at least 1 standard deviation below or above the mean in teacher-reported prosociality) interacted with each other. Based on observations, a clear pattern emerged – very low prosocial children played often with other very low prosocial children, and very high prosocial children played often with other very high prosocial children (about 20 to 25 percent of their social interactions). In contrast, rarely were low and high prosocial children observed affiliating with each other (about 5 percent). Thus, children who are very low in prosociality rarely have opportunities to interact with highly prosocial children. We do not know, however, the degree to which these differences in affiliations with prosocial peers affect children's social adjustment.

Peer interactions and activities are guided by group norms, providing opportunities for children to learn various social rules and behaviors. By serving as a basis for social interactions, these peer dynamics and norms contribute to the regulation of the behavior of individuals within the interactions and are important contexts for individual development (Chen, Chang, Liu, & Yunfeng, 2008; Rubin, Bukowski, & Parker, 2006). However, as noted by Chung-Hall and Chen (2010), relatively little is known about peer influence of groups that are organized based on norms that are positive and socially acceptable. The data in the present study are designed to fill this gap in knowledge.

The Present Study

In the present study, we examined the degree to which prosocial peer affiliation predicted the subsequent emotional quality of young children's peer interactions. We adopted a conceptualization of peer affiliation and influence that emphasizes that children exchange information when engaging with peers, and that this exchange works bi-directionally. These peer interactions may occur in dyads, moderate-sized groups, or even entire classes. Furthermore, these interactions occur repeatedly over time, providing many opportunities for learning and social influence. Interactions with peers are expected to influence concurrent individual functioning via their effects on engagement, interests, behavior, and self-concept. These influences may then feed forward to affect later peer interactions and functioning, resulting in a dynamic process over time.

Based on this conceptualization, we expected that the more time spent affiliating with peers, the greater the likelihood that children influence each other. In previous research, it has been found that even over the course of a single school semester (3–4 months), peer interactions were sufficient for producing significant changes in behavior the following semester, and these effects were above the initial levels of behavior (Martin & Fabes, 2001). Through differential patterns of interactions with peers, children gain various skills, attitudes, and interests that affect their subsequent behavior. Thus, to better understand how affiliations with particular kinds of peers may influence later behavior, it is important to track over time the types of peers with whom children affiliate. This requires repeated assessments of children's peer interactions over time – something we undertook in the present study. We used these intensive repeated assessments to estimate each child's unique pattern of affiliation with prosocial peers.

Additionally, we calculated the overall classroom level of prosocial behavior in a child's class and used this as a proxy for processes beyond dyadic and small-group influences. In doing this, we could examine the degree of influence associated with larger peer networks and determine whether prosocial peer affiliations predict subsequent behavior above and beyond these broader group-level effects.

In particular, we focused on how prosocial peer affiliation affects the emotional quality of interactions with peers. We view emotions as social phenomena – resulting from and resulting in action tendencies that facilitate or inhibit social interactions (Frijda, 1986). As such, the emotional quality of peer interactions is important to current and later individual and social adjustment and competence. For example, positive emotions are thought to enhance social interaction tendencies and build resources and skills for a person to use in social situations (Fredrickson, 2001). Furthermore, interactions that are promoted by positive emotionality allow children the opportunity to increase their thought and action repertoires because they result in learning about social situations and contexts. For young children, positive emotionality is particularly useful as they began to interact in new social contexts (e.g., the preschool environment) and learn how to positively engage their peers. In contrast, negative emotionality is thought to be aversive to others and/or to result from poor peer relationships (Denham, McKinley, Couchoud, & Holt, 1990). For example, researchers have found that preschoolers who are relatively high in negative emotionality tend to have poorer peer relationships and evidence more negative social adjustment (Dougherty, 2006; Spinrad et al., 2004).

Children who are high in prosociality are also likely to be high in positive emotionality (Eisenberg & Fabes, 1991). Moreover, interactions that are characterized by qualities of prosociality (cooperativeness, helpfulness, kindness, etc.) are more likely to elicit positive than negative emotions. These qualities enhance expressions of positive emotionality and

minimize expressions of negative emotionality within peer interactions. Such a conclusion is based on the idea that children with higher prosocial orientations have lower rates of behavioral and emotional problems and greater rates of social and psychological adjustment and enhanced peer relationships (Clark & Ladd, 2000). Thus, affiliations with prosocial peers are likely to have an effect on the degree to which children experience and express positive and negative emotions. In turn, changes in emotionality affect later peer relationships thereby creating a context for continued influence on individual and social adjustment.

Based on existing theory and research (Eisenberg et al., 2006), we predicted that affiliating with prosocial peers would have positive effects on children's later peer interactions. In turn, this should enhance positive emotionality and decrease negative emotionality when playing with peers. In the present study, we explored the extent to which affiliations with prosocial peers predicted the emotional qualities of young children's peer interactions. Specifically, we looked at the degree to which prosocial peer affiliations enhanced positive affect during peer interactions and/or decreased negative affect during peer interactions. Thus, we examined the degree to which prosocial affiliation contributed to later positivity in social interactions and to decreased negativity in peer interactions. Because positive emotionality and emotional competence have been found to be important elements of social competence and peer acceptance (Denham et al., 2003; Rose-Krasnor, 1997), and, conversely, that negative emotionality, especially anger, can be detrimental to positive social adaptation (Denham & Couchoud, 1990; Martin, Fabes, & Hanish, 2011), we focused our outcome assessments on the degree to which children's affiliations with prosocial peers affected the emotional quality of their later interactions with peers. We predicted that children who had more affiliation with prosocial peers would evidence an increase in positive affect and a decrease in negative affect during subsequent peer interactions.

We also expected that this pattern would be moderated by the sex of the child. Specifically, we expected that the impact of affiliation with prosocial peers would have a greater effect on girls than on boys. We expected this moderation for several reasons. Because prosocial behavior is more frequently associated with feminine than masculine roles, girls may be exposed to higher levels of prosocial peers (e.g., because they play more often with other girls) than are boys. Additionally, because the expression of positive emotion is more expected of girls than of boys, and because girls are expected to minimize displays of harmful negative emotions, boys and girls might evidence different levels of outcomes. For these reasons, we expected that there would be stronger relations for girls than boys for positive emotionality and stronger relations for boys than girls for negative emotionality (Fabes & Martin, 1991; Maccoby, 1998).

The degree to which children's behavior is affected by peers is likely the result of two distinct processes: selection and influence (Kandel, 1978). Similarity among peers explains, in part, why individuals become affiliated in the first place (Hallinan & Williams, 1990); however, peers' characteristics explain change in behavior over time (Berndt & Keefe, 1995). As noted by Barry and Wentzel (2006), to study influence one must control for selection. In the current study, we did this by examining the extent to which prosocial peer affiliation predicted children's later behavior while taking into account children's emotional behavior at the initial time point – thereby accounting for the extent to which individual characteristics may have led children to select peers as play partners in the first place. By looking at change within individuals over time in our analyses and controlling for initial levels of emotionality, we also controlled for similarity and the correlation that exists between individuals and their selected peers at this initial time point.

Methods

Participants

Children were recruited from a university-sponsored child-care facility in a southwestern metropolitan city. Over the course of a 3-year period, 6 preschool (3–4 years of age) classrooms and 3 kindergarten (5–6 years of age) classrooms were involved in the study (2 preschool and 1 kindergarten classroom were involved each of the 3 years). All classrooms were full-day, 5 day-a-week programs. The schools served children from mainly middle-income families. The teacher-child ratio was high, one teacher for every four to five children. The permission rate was 99%.

As part of a larger project, 124 children (64 boys and 60 girls) participated in the present study. We obtained permission from all children in all classes. At the beginning of data collection, the mean age of the children was 50.73 months (SD = 10.13) (age range for all children = 35 to 74 months; 86% of the children were more than 40 months). The majority (69%) of the sample were non-Hispanic White, 9% were Hispanic, 9% were Asian American, 5% were African American, 2% Native American, and the remaining 7% were of mixed ethnicity (based on parent – mostly mother – reports of ethnicity). Children came primarily from two-parent households (69%), another 13% of parents were currently divorced, and the remaining 18% of parents had never been married. Most parents had attained at least a bachelor's degree (75% and 83% respectively for fathers and mothers).

Procedures

Data were collected across the academic school year (approximately 8 months). Time 1 data (T1) were collected in the fall (approximately September through December) and Time 2 data (T2) were collected in the spring (approximately February through May). Data collection usually began 1 month after each semester began (to allow for training of coders and for children and teachers to become familiar with each other). Data collection at Times 1 and 2 were separated by about 6 weeks.

Observations—During the fall and spring semesters, children's naturally occurring behaviors were observed daily in their classrooms and on the playgrounds (using procedures previously employed by Martin & Fabes, 2001). Observations were conducted inside and outdoors during free-play and semi-structured play periods to ensure that children would have choice in both activities and potential interaction partners; observers refrained from coding during teacher-defined and teacher-structured group activities, such as group-time, lunchtime, and naptime. Coders were trained by experienced graduate students and went through intensive training sessions and practice before collecting data. Coders underwent extensive training (lasting about 4 weeks) and practiced coding until they reached adequate levels of efficient and reliable coding.

Each semester, 10 undergraduate observers (all female) rotated through a randomly ordered list of participating children and observed each child for 10 seconds. Coders were present in the classroom almost all day and were present almost every day of the week. After observing a child for 10-secs, observers recorded the behavior in which the target child was engaged for the majority of the time. For the present study, the behavioral coding categories included whether the child was engaged with other children or was alone. For those observations involving peer interactions, observers recorded the identity code of the target child's play partner(s). For peer interactions to be coded, there must have been direct evidence of children engaged with another child(ren) (e.g., talking to, mutual activity engagement, etc.). Parallel play, play in which children were involved in the same activity

but not interacting, was coded separately. Watching other children but not interacting (e.g., on-looker play) was also coded separately from peer play.

For each interaction observed with a peer, the coder rated the occurrence and intensity of general positive (happiness, joy, affection, etc.) and negative emotions (anger, fear, sadness, etc.) of the target child during that 10-sec period. Coders rated the target child's positive and negative emotions, each on a 4-point scale (ranging from 0 = "no evidence of emotion" to 3 = "strong evidence of emotion"). Assessments of emotionality were based on facial expressions, body language, and the content, quality, and tone of vocalizations (crying, laughing, saying "I'm mad"). Positive and negative emotionality in peer interaction scores were aggregated (mean emotionality) separately across each semester for fall and spring. It is important to note that during each 10-sec period, negative and positive emotionality during peer interactions were coded separately and could co-occur within a 10-sec period (this happened rarely – in less than 1 percent of the cases were both positive and negative emotions observed during the same 10-sec period). After recording the data, the coder observed the next child on the list for 10 secs and entered the data. Coders did this in order for each child on the list and then returned to the top of the list once the entire list of children was completed.

Across the 3 years of data collection, a total of 33,138 observations were collected, of which 52 percent involved peer interactions. The total number of observations per child ranged from 113 to 419, with an average of 267 observations per child (SD = 71.59). Differences in the number of observations were due to the relative availability of the children (i.e., some children were absent more than others or arrived/left earlier than others). To account for these fluctuations, and to control for individual differences in general sociability, we controlled for proportion of peer interactions in the subsequent regression analyses (as was done in Hanish et al., 2005).

For inter-rater reliability, two observers simultaneously coded approximately 10% of the observations. This procedure has demonstrated satisfactory reliability and validity in previous studies (Martin & Fabes, 2001). Kappas for the reliability across all of the coders in the present study for assessments of whether the child was interacting with a peer and the identification of the specific peer were .91 and .94, respectively. Inter-rater reliabilities for positive and negative emotionality were high (mean rs = .94 and .92 respectively). Exact interrater agreement on positive and negative emotionality between coders occurred in 98% and 99% occasions, respectively.

Teacher Ratings of Prosociality

At the end of the fall semester, the lead classroom teachers (9 female and 1 male) completed a packet of questionnaires for each participating child that included the 7-item prosocial subscale of the Child Behavior Scale (e.g., "Helps other children" "Kind toward peers"; Ladd & Profilet, 1996). Items were rated using a 3-point scale (ranging from 1 = "doesn't apply" to 3 = "certainly applies"). The alpha coefficient for the T1 ratings was .94. For each child, a measure of classroom level prosociality was calculated by taking the average prosociality rating for all children in a classroom minus the child's own prosociality rating.

Calculation of T1 Prosocial Peer Affiliation

Our measure of affiliation with prosocial peers at T1 was based on observed counts (over the course of the fall semester) of the number of times that each child was observed with a peer weighted by the lead teacher's ratings of that peer's prosocial behavior. Prosocial peer affiliation levels for each semester were calculated by first multiplying the number of times that each child interacted with a particular peer by that peer's prosocial score. For example,

if Timothy was observed to play with Peer1 110 times, Peer2 10 times, Peer3 10 times, Peer4 40 times, and Peer5 50 times and these peers had teacher-rated prosocial scores of 2.5, 2, 2.5, 3, and 2, respectively, we would first multiply each peer's rating by the number of times Timothy played with each (e.g., for Peer1 = 110 X 2.5).

Next, following the procedure used by Hanish et al. (2005), we divided the summed product scores (540 in this hypothetical) by the number of play partners with whom a child was observed to play (e.g., 540/5 = 108). This computational approach gives weight to a child's distribution of prosocial affiliations rather than the sum of affiliations.

We then standardized the scores using a scale of 100 observations, such that the number of observations for each child was divided into 100 and then multiplied by the mean prosocial affiliation score. Importantly, the number of observations included the number of the times the child was observed playing alone (For Timothy, we used 20 as a figure). Including these solitary play observations results in a more accurate reflection of the *concentration* of prosocial affiliation relative to the child's pattern of social tendencies. Moreover, inclusion of solitary play observations is important to create a score that takes into account the differential number of observations collected on children. As such, the resulting measure, called the *prosocial affiliation quotient*, reflected the relative degree to which a child affiliated with prosocial peers per 100 times a child was observed and is roughly analogous to a score that characterizes the prosocial qualities of each child's peer group relative to that child's social tendencies during fall semester. For Timothy, his hypothetical prosocial affiliation score equals 45.0 (e.g., 108 * [100 / 240]).

Results

The primary purpose of this research was to examine the effects of young boys' and girls' affiliation with prosocial peers. After conducting descriptive analyses, we examined the degree to which our measure of prosocial affiliation was correlated with other measures of children's peer functioning. Then, to assess the effects on the quality of peer interactions, we explored whether affiliation with prosocial peers in the fall predicted children's positive and negative emotionality in social interactions with peers in the spring.

Descriptive Analyses

Tabachnick and Fidell (2001) suggest that when levels of skewness and kurtosis reach above two times the standard error of each variable they should be transformed. Skewness and kurtosis for all variables in our study exceeded this level and were thus transformed using a square root transformation. These transformed data were used in all analyses but the untransformed data are presented in the descriptive table of means for readability (see Table 1).

Examination of sex differences in study indexes revealed some significant differences (see Table 1). Analysis of co-variance (controlling for proportion of peer interactions) revealed that girls were rated by teachers as being significantly more prosocial at T1 than were boys, $F(1,121) = 11.49$, $p < .001$. Girls also had significantly higher prosocial affiliation scores than boys but this difference was only marginally significant, $F(1,121) = 2.61$, $p < .10$. For the emotions observed during peer interactions, as indicated in Table 1, boys were observed to express more positive and negative emotions at T1 than were girls, Fs(1,121) = 4.74 and 4.25, ps < .05, respectively (controlling for proportion of peer interactions observed at T1). However, girls were observed to express more positive emotions in peer interactions during the spring semester ($F(1,121) = 10.06$, $p < .005$ (controlling for proportion of peer interactions at T2; see Table 1).

We then examined the degree to which teachers' ratings of prosociality varied across classrooms. Although we did not have enough classrooms to justify a multi-level model, we wanted to ascertain if there were classroom differences in prosociality and control for these if such differences were found. Thus, we computed an analysis of co-variance on teachers' ratings of prosocial behavior with classroom (n = 9) as our independent variable (controlling for sex). For this analysis, there was a significant effect for classroom, $F(8,114) = 2.34$, $p < .05$. Mean classroom prosociality ranged from a low of 1.77 to a high of 2.32 (*SD*s ranged from .29 to .70). As a result, we included classroom level prosociality in the regression analyses that follow to control for classroom level differences and to ascertain the degree to which our dyadic/small group measure of prosocial affiliation predicted above and beyond classroom level prosociality.

Zero-Order Relations Among Study Indices

Table 2 presents the zero-order relations among the study indices. Children's age (in months) was positively related to teacher-rated prosociality, classroom level prosociality, and T1 prosocial affiliation. Thus, in general, age was correlated with higher levels of individual, interactional, and classroom-level prosociality. In addition, older children were relatively likely to be observed expressing positive emotions in peer interactions at T1.

Not surprisingly, children's teacher-rated prosociality was significantly and positively related to both classroom level prosociality and T1 prosocial affiliation (see Table 2). Teacher-rated prosociality was also inversely related to negative emotionality at both T1 and T2. Additionally, emotions observed in peer interactions at T1 and T2 were related: T1 positive and negative emotionality in peer interactions were positively correlated with their corresponding levels at T2.

The T1 prosocial affiliation quotient also was positively related to positive emotionality at both T1 and T2. Classroom-level prosociality also was inversely related to both T1 and T2 negative emotionality. Thus, at both the individual and classroom level, relatively higher levels of prosociality were associated with less peer-related negative emotionality in both the fall and spring.

Effects of T1 Prosocial Peer Affiliation on Emotions in T2 Peer Interactions

To examine our main research questions regarding the impact of level of affiliation with prosocial peers in the fall on the emotional qualities of peer interactions in the spring, we computed two separate but similar hierarchical regression analyses. First, as suggested by Aiken and West (1991), we centered the predictors in the regressions by subtracting the mean of the measure for all children from each child's score. For each analysis, in the first step we entered the control variables of age, classroom-level prosociality (calculated for each child based on the mean of prosociality for her/his peers), and the proportion of peer interactions. We also entered either T1 positive or negative emotion during peer interaction to control for initial individual differences in such measures. Thus, a significant prediction to T2 emotion reflects prediction above and beyond initial levels. Next, we entered sex of child (1 = boys and 2 = girls) and T1 prosocial affiliation quotient. The only multiplicative interaction term found to be significant in initial analyses (when all possible interactions were included) was the Sex X Prosocial Affiliation Quotient interaction term. As a result, we re-computed the regressions with only this interaction in the final step (based on the fact that the other interactions were not predicted nor significant; this also increased our power).

Positive emotionality in T2 peer interactions—Table 3 presents the results of each step of the hierarchical regression for the prediction of T2 positive emotionality in peer interactions. As can be seen, there were no significant effects for the indexes entered on the

first step. There were, however, significant effects of both sex and T1 prosocial affiliation entered on the second step. Greater rates of positive emotional peer interactions at T2 were observed in girls and children who had higher T1 prosocial affiliation (see Table 3). A significant interaction of prosocial affiliation and sex on the final step this effect qualified these effects.

This interaction was explored by computing the hierarchical regressions separately for boys and girls. The results of these regressions revealed that the significant interaction found in Table 3 was due to a stronger positive relation for T1 prosocial affiliation for girls than for boys (although both were significant; standardized coefficients = .69 and .76, *t*s = 6.61 and 7.50, *p*s < .0001; R^2 for final models = .53 and .57 for boys and girls, respectively). Thus, T1 prosocial affiliation predicted a greater likelihood that both boys and girls would express more positive emotionality during T2 peer interactions, but this pattern was stronger for girls than for boys.

Negative emotionality in T2 peer interactions—Table 4 presents the results of each step of the regression for the prediction of T2 negative emotional peer interactions. Similar to the prediction of T2 positively emotional social interactions, there were no significant effects for any of the indexes entered on the first step. Also similar to the previous analysis, both sex and prosocial affiliation were significant predictors of T2 negative emotionality – both were inversely related. Thus, greater rates of negative emotional peer interactions at T2 were observed in boys and in children who had lower T1 prosocial affiliation quotients (see Table 4). The significant interaction of T1 prosocial affiliation and sex of children on the last step once again qualified these effects.

This interaction term was explored by computing the hierarchical regressions separately for boys and girls. The results of these regressions revealed that the significant interaction found in Table 4 was due to a stronger inverse relation found for prosocial affiliation for boys than for girls (although both were again significant; standardized coefficients = –.83 and –.45, *t*s = –8.73 and –4.47, *p*s < .0001; R^2 for final models = .60 and .56 for boys and girls, respectively). As such, prosocial affiliation predicted a lowered likelihood that both boys and girls would later experience negative emotional peer interactions, although this pattern was stronger for boys than for girls.

Discussion

The primary goal of this research was to assess the degree to which prosocial peer affiliation in the fall semester was related to the emotional quality of interactions young children had with their peers a semester later. We did this by controlling for earlier emotionality (to control for peer selection effects when examining peer influence, Barry & Wentzel, 2006). The findings have important implications for our understanding of early peer influence.

Prosocial Affiliation and Peer Interactions

For both boys and girls, affiliation with prosocial peers was related to an increase in positive emotionality and a decrease in negative emotionality in peer interactions a semester later. These findings held above and beyond children's initial tendencies to express positive and negative emotionality in peer interactions that may have led them into certain kinds of peer interactions in the first place (e.g., emotionality in the fall). In addition, these effects were found when controlling for the overall classroom level of prosociality. As Hartup (2005) noted, when children interact in groups, they are affected by characteristics of the group. For example, changes in aggression over time among individuals in small groups have been found to be related to the average aggression of the members of the group (Boxer, Guerra, Huesmann, & Morales, 2005). By including classroom level of prosociality in our analyses,

we controlled for this possible mean level effect. As such, our findings reveal a relatively clear peer affiliation effect that does not seem to be accounted for by peer selection or by classroom level indexes.

Importantly, this study extends previous research on peer affiliation by illustrating that peers can have a positive influence on young children's social development. Indeed, the literature related to understanding how the aggregation of peers affects behavior and adjustment is tilted strongly towards peer deviance and its effects rather than towards peer competence and its effects (Hartup, 2005).

Although the impact of prosocial affiliation was similar for both boys and girls, there were significant Prosocial Affiliation X Sex of Child interactions in the regression analyses. In both analyses, the results were due to the magnitude of the effect – the effect was greater for girls for positive emotionality and greater for boys for negative emotionality. Such findings suggest that peer effects for boys and girls may operate in gender-stereotypic ways – that is, the influences may be stronger when they involve behaviors that are consistent with gender stereotypes. This is an interesting issue that warrants further consideration and is consistent with other research that has found that peer influences for young children promote behaviors and responses that move children along gender-stereotypic lines (Martin & Fabes, 2001).

Our findings also add to the limited body of research showing peer influence effects in early childhood (Hanish et al., 2005; Snyder et al., 2005). Together, these studies reveal that peer influence processes operate early in development, and suggest that further investigation is warranted on a variety of peer influence effects in young children.

Examining affiliation in peers in early childhood raises some methodological challenges. Because of young children's developmental level, the nature of their peer affiliations and their ability to describe those affiliations are less sophisticated than for older children. Consequently, the self-report methodologies that have been used to assess peer affiliations in older children and adolescents often are not conducive to assessing peer affiliation in young children. To overcome this limitation, we utilized observations of children's peer contact and interactions – a strategy that relies on trained observers rather than self-reports (see also Gest, Farmer, Cairns, & Xie, 2003). We also used a computational index (based on Hanish et al., 2005) to calculate the degree to which children had contact with prosocial peers. This index is particularly suited for use with observational data because it provides a relatively precise count of the number of times children are seen to affiliate with play partners. This method is useful for identifying the particular children that each child interacts with and takes into account specific qualities of those children.

The index of prosocial affiliation we developed calculated the relative *concentration* of affiliations children have with prosocial peers. As we computed it, children with relatively high prosocial affiliation quotient scores had a higher proportion of contact with children who were relatively high in prosociality (and the reverse for those with relatively low prosocial affiliation scores). Similar to social network approaches (Wasserman & Faust, 1994), this index reflects the idea that the number of ties and strength of ties (as measured in our study by frequency of interaction) with other individuals in a child's network are important determinants of individual behaviors and actions. Relational ties between children are channels for transfer or "flow" of behaviors, attitudes, and actions. Thus, a child's affiliatory environment provides opportunities for or constraints on individual action. Our index emphasizes that the qualities and content of the peer ties also matter in determining outcomes and later adjustment.

Implications for Interventions

Our focus on early childhood is also important in regard to possible interventions. Early childhood is a period of time when most children are motivated to move beyond adult-child interactions and solitary play to explore and enjoy the cooperative and shared play offered by peers (Fabes, Gaertner, & Popp, 2006). Peer interactions also tend to be much more fluid than they are later in later childhood or adolescence, allowing children to recover more easily from social mistakes without the damage to their social reputations that likely will occur later in life (Bierman & Erath, 2006). This fluidity may also allow for easier management and intervention. For young children, interventionists need not face pulling apart or readjusting memberships of the well-established groups that are likely to be apparent in the social ecologies of older children and adolescents. Instead, the more fluid arrangements of young children's interactions provide an easier context for making adjustments and changes in peer relationships. Additionally, most of the skills needed for effective peer interaction in early childhood are behaviorally based, enhancing the ease with which interventions can be implemented. Problems with peers become more complicated with age as the group structures, social reputations, and behavioral patterns become more ingrained and difficult to change (Bierman, 2004). Thus, interventions designed to promote positive peer interactions can provide young children with the competencies they need to be successful with peers and to meet the challenges they encounter related to self-regulation and social acceptance.

The data from the present study provide some clues as to how negative peer influences may be minimized and about how peer interactions may be harnessed to promote positive behavior and adjustment. Encouraging children to interact with prosocial peers has multiple benefits: Not only was diminished negative emotionality in peer interactions related to affiliation with prosocial peers but so was enhanced positive emotionality.

An issue that has to be taken into account in interventions is prosocial segregation. In the present study, children who were relatively high in prosociality in the fall had greater affiliation with prosocial peers than did children who were relatively lower. Such a finding could reflect the likelihood that children who are low in prosociality have fewer opportunities to engage children who are higher in prosociality and to gain experience and learn from them. The Fabes et al. (2002) data showed that this was especially true for children who were extremely low in prosociality. The tendency for children to segregate by levels of prosociality suggests that interventions have to actively promote these interactions, and efforts need to be made to understand how to increase the likelihood that such interactions will be maintained over time.

These findings suggest that proactive management of peer associations during early childhood may be effective in reducing affiliations among deviant children and their negative sequellae, and in promoting affiliations among prosocial and socially competent children and their promising sequellae. In developing such interventions, there may be concern that the direction of influence would work in the negative direction, with deviant children pulling down the behavior of more prosocial children rather than the reverse. However, some research indicates that interventions that purposefully arrange the affiliation of young, at-risk children with prosocial peers may influence at-risk children in a positive way without deleterious impact on the behavior of low-risk peer associates (Vitaro, 2004). Thus, it is important to recognize the need to actively manage peer ecologies during early childhood to promote skill development and to reduce negative peer influence.

Limitations and Conclusions

There are some limitations that warrant consideration. Similar to other studies suggesting that children influence other children, our data are correlational and caution is recommended when using these kinds of data to support the thesis that behavior change comes about through the interaction of one child with another. Moreover, the rating of children's prosociality was based on teacher reports. As such, caution should be used in generalizing beyond teachers' assessments of children's of prosocial behavior (e.g., teachers may focus on only the most obvious and salient prosocial qualities – such as helpfulness) and it should be recognized that other measures (such as observations) may produce different results because of the potential to provide a different assessment of children's prosocial tendencies.

Additionally, although we used a time-sensitive design to test our main hypotheses, the time frame was relatively short and we do not know how long lasting these effects are or how other (e.g., neighborhood playmates) or later affiliations affect the pattern of findings we obtained. The linkage of peer processes and later social adjustment also may reflect third variables such as child temperament or attachment. Also, our measure of positive and negative emotion did not differentiate among types of emotions (e.g., fear versus anger). Future research might consider doing this and examining specific types of emotion in relation to peer processes and related outcomes.

Furthermore, the processes involved in the transmission of behaviors and actions associated with peer influence remain elusive and likely are multi-dimensional (Brown, Bakken, Ameringer, & Mahon, 2008). However, as noted by Hartup (2005), "the first step is to describe the situations and circumstances involving peers that seem to foster change" (p. 392). We made an effort in the present study to do this and showed that selection or classroom level effects do not completely explain these circumstances. In some manner, and possibly through several different processes, young children's affiliations with prosocial peers increase positive emotionality and decrease negative emotionality within their subsequent peer interactions. Because relatively higher rates of positive emotionality and relatively lower rates of negative emotionality have been linked to positive social adjustment and competence, the findings have important implications for young children's well-being. As such, prosocial peers may represent important sources of positive support and guidance for young children's social development.

Despite the limitations, the findings of this study suggest that peer affiliation effects are important processes to consider in children's social adjustment and functioning. Moreover, it is clear that peer processes operate in early childhood and that they likely are important to understanding peer affiliation effects in older youth. Peer affiliations in early childhood have been understudied but they may form the foundation upon which later peer affiliations are built. We also recognize that several other factors affect prosocial development (e.g., temperament, parenting, media, etc.; see Eisenberg et al., 2006). However, young children clearly are active agents in their own development, spending time with particular interactional partners and responding in particular ways to their peers, which then influences their development and their future interactions. Thus, as children get older, we might expect that the relation between child functioning and peer affiliation becomes stronger and longitudinal studies that address these changes certainly are warranted.

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References

Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage; 1991.

Altermatt ER, Pomerantz EM. The development of competence-related and motivational beliefs: An investigation of similarity and influence among friends. Journal of Educational Psychology. 2003; 95:111–123.

Barry CM, Wentzel KR. Friend influence on prosocial behavior: The role of motivational factors and friendship characteristics. Developmental Psychology. 2006; 42:153–163. [PubMed: 16420125]

Berndt TJ. Friendship quality and social development. Current Directions in Psychological Science. 2002; 11:7–10.

Berndt TJ, Keefe K. Friends' influence on adolescents' adjustment to school. Child Development. 1995; 66:1312–1329. [PubMed: 7555218]

Bierman, KL. Peer rejection: Developmental processes and intervention strategies. New York: Guilford; 2004.

Bierman, KL.; Erath, SA. Promoting social competence in early childhood: Classroom curricula and social skills coaching programs. In: McCartney, K.; Phillips, D., editors. Handbook of early childhood development. New York: Blackwell; 2006. p. 595-615.

Boxer P, Guerra NG, Huesmann LR, Morales J. Proximal peer-level effects of a small group selected prevention on aggression in elementary school children: An investigation of the peer contagion hypothesis. Journal of Abnormal Child Psychology. 2005; 33:325–338. [PubMed: 15957560]

Brown, BB.; Bakken, JP.; Ameringer, SW.; Mahon, SD. A comprehensive conceptualization of the peer influence process in adolescence. In: Prinstein, MJ.; Dodge, KA., editors. Understanding peer influence in children and adolescents. New York: Guilford; 2008. p. 17-44.

Chen X, Chang L, Liu H, Yunfeng H. Effects of the peer group on the development of social functioning and academic achievement: A longitudinal study in Chinese children. Child Development. 2008; 79:235–251. [PubMed: 18366421]

Chung-Hall J, Chen X. Aggressive and prosocial peer group functioning: Effects on children's social, school, and psychological adjustment. Social Development. 2010; 19:659–680.

Clark KE, Ladd GW. Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. Developmental Psychology. 2000; 36:485–498. [PubMed: 10902700]

Denham SA, Blair K, DeMulder E, Levitas J, Sawyer K, Auerbach-Major S, Queenan P. Preschool emotional competence: Pathway to social competence? Child Development. 2003; 74:238–256. [PubMed: 12625448]

Denham SA, Couchoud, Elizabeth A. Young preschoolers' ability to identify emotions in equivocal situations. Child Study Journal. 1990; 20:153–169.

Denham SA, McKinley, Marcia, Couchoud, Elizabeth A, Holt, Robert. Emotional and behavioral predictors of preschool peer ratings. Child Development. 1990; 61:1145–1152. [PubMed: 2209184]

Dishion TJ, Spracklen KM, Andrews DW, Patterson GR. Deviancy training in male adolescent friendships. Behavior Therapy. 1996; 27:373–390.

Dougherty LR. Children's emotionality and social status: A meta-analytic review. Social Development. 2006; 15:394–417.

Eisenberg, N.; Fabes, RA. Prosocial behavior and empathy: A multimethod developmental perspective. In: Margaret, S.; Clark, editors. Review of personality and social psychology: Prosocial behavior. Vol. Vol. 12. Newbury Park, CA: Sage; 1991. p. 34-61.

Eisenberg, N.; Fabes, RA.; Spinrad, T. Prosocial developmentIn. In: Damon, W.; Eisenberg, N.; Lerner, R., editors. Handbook of child psychology: Social, emotional, and personality development. Vol. Vol. 3. New York: Wiley; 2006. p. 646-718.

Fabes, RA.; Gaertner, BM.; Popp, TK. Getting along with others: Social competence in early childhood. In: McCartney, K.; Phillips, D., editors. Handbook of early childhood development. New York: Blackwell; 2006. p. 297-316.

Fabes, RA.; Martin, CL.; Hanish, LD. The role of sex segregation in young children's prosocial behavior and disposition; Paper presented at the Groningen Conference on Prosocial Dispositions and Solidarity; Groningen, Netherlands.

Fabes RA, Martin, Carol L. Gender and age stereotypes of emotionality. Personality & Social Psychology Bulletin. 1991; 17:532–540.

Fredrickson BL. The role of positive emotions in positive psychology: The Broaden-and-Build theory of positive emotions. American Psychologist. 2001; 56:218–226. [PubMed: 11315248]

Frijda, NH. The emotions. New York: Cambridge University Press; 1986.

Gest SD, Farmer TF, Cairns BD, Xie H. Identifying children's peer social networks in school classrooms. Links between peer reports and observed interactions. Social Development. 2003; 12:513–529.

Hallinan MT, Williams RA. Students' characteristics and the peer-influence process. Sociology of Education. 1990; 63:122–132.

Hanish LD, Martin CL, Fabes RA, Leonard S, Herzog M. Exposure to externalizing peers in early childhood: Homophily and peer contagion processes. Journal of Abnormal Child Psychology. 2005; 33:267–281. [PubMed: 15957556]

Hartup WW. Peer interaction: What causes what? Journal of Abnormal Child Psychology. 2005; 33:387–394. [PubMed: 15957565]

Jones MB, Dodge KA, Foster EM, Nix R. Conduct Problems Prevention Research Group. Early identification of children at risk for costly mental health service use. Prevention Science. 2002; 3:247–255. [PubMed: 12458763]

Kandel DB. Homophily, selection, and socialization in adolescent friendships. American Journal of Sociology. 1978; 64:427–436.

Ladd GW, Profilet SM. The Child Behavior Scale: a teacher-report measure of young children's aggressive, withdrawn, and prosocial behaviors. Developmental Psychology. 1996; 32:1008–1024.

Maccoby; Eleanor, E. The two sexes: Growing up apart, coming together. Cambridge, MA: Belknap Press; 1998.

Martin CL, Fabes RA. The stability and consequences of young children's same-sex peer interactions. Developmental Psychology. 2001; 37:431–446. [PubMed: 11370917]

Martin, CL.; Fabes, RA.; Hanish, LD. Young children's sex-segregated play. In: Pellegrini, AD., editor. Handbook of play. New York: Wiley; 2011.

Piaget, J. The moral judgment of the child. NY: Free Press; 1932/1965.

Prinstein, MJ.; Dodge, KA. Understanding peer influence in children and adolescents. New York: Guilford; 2008.

Rose-Krasnor, Linda. The nature of social competence: A theoretical review. Social Development. 1997:111–135.

Rubin, KH.; Bukowski, WM.; Parker, JG. Peer interactions, relationships, and groups. In: Damon, W., editor. Handbook of child psychology. Vol. Vol. 3. New York: Wiley; 2006. p. 619-700.

Snyder J, Schrepferman L, Oeser J, Patterson G, Stoolmiller M, Johnson K, Snyder A. Deviancy training and association with deviant peers in young children: Occurrence and contribution to early-onset conduct problems. Development and Psychopathology. 2005; 17:397–413. [PubMed: 16761551]

Spinrad TL, Eisenberg N, Harris E, Hanish LD, Fabes RA, Kupanoff K, Holmes J. The relations of children's everyday nonsocial peer play behavior to their emotionality, regulation, and social functioning. Developmental Psychology. 2004; 40:67–80. [PubMed: 14700465]

Sullivan, HS. The interpersonal theory of psychiatry. NY: Norton; 1953.

Tabachnick, GB.; Fidell, LS. Using multivariate analysis. Boston: Allyn and Bacon; 2001.

Tesson G, Lewko JH, Bigelow BJ. The social rules that children use in their interpersonal relations. Contributions of Human Development. 1987; 18:36–57.

Vitaro, F. Social contexts for preventive interventions targeting conduct problems in young children; Paper presented at the Society for Prevention Research; Quebec City, Canada. 2004 May.

Wasserman, S.; Faust, K. Social network analysis. Cambridge: Cambridge University Press; 1994.

Youniss, J. Parents and peers in social development: A Sullivan-Piaget perspective. Chicago: University of Chicago Press; 1980.

Zahn-Waxler, C.; Iannotti, R.; Chapman, M. Peers and prosocial development. In: Rubin, KH.; Ross, HS., editors. Peer relationships and social skills in childhood. NY: Springer Verlag; 1982. p. 133-162.

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Table 1

Means and Standard Deviations for Study Indexes for Total Sample and for Boys and Girls

	Total Sample		Boys		Girls	
Index	***M***	***SD***	***M***	***SD***	***M***	***SD***
Proportion of Peer Interactions	.52	.15	.51	.16	.53	.13
Teacher-Rated Prosociality[1]	2.14	.56	1.96_a	.54	2.30_a	.53
Classroom Level Prosociality[1]	2.12	.20	2.13	.19	2.12	.20
T1 Prosocial Affiliation Quotient	39.36	14.60	37.91	13.22	40.92	10.40
T1 Observed Positive Emotion[2]	1.74	.22	1.77_b	.24	1.72_b	.19
T1 Observed Negative Emotion[2]	1.18	.07	1.19_c	.07	1.13_c	.06
T2 Observed Positive Emotion[2]	1.65	.26	1.61_e	.29	1.71_e	.22
T2 Observed Negative Emotion[2]	1.12	.07	1.16	.06	1.08	.08

Note. Means in the same row that share subscripts were significantly different; *ps* < .05 or better.

N = 124 (64 boys, 60 girls).

[1]Mean rating from 1 (doesn't apply) to 3 (certainly applies).

[2]Mean intensity of emotion rated on a 0 (none) to 3 (high) scale.

Table 2

Zero-Order Correlations of Study Indices.

Index	1	2	3	4	5	6	7
1. Age (in months)							
2. Teacher-Rated Prosociality	.19*						
3. Classroom Level Prosociality	.31**	.34****					
4. T1 Prosocial Affiliation Quotient	.52****	.26***	.03				
5. T1 Observed Positive Emotion	.19*	.11	.03	.29****			
6. T1 Observed Negative Emotion	−.14	−.42****	−.43****	.09	−.05		
7. T2 Observed Positive Emotion	.11	.05	−.10	.21**	.44****	−.04	
8. T2 Observed Negative Emotion	−.16	−.40****	−.19*	.02	−.13	.56****	−.13

Note. dfs = 122.

* $p < .05$;

** $p < .01$;

*** $p < 005$;

**** $p < .001$.

Table 3

Hierarchical Regression of T1 Prosocial Affiliation and Sex of Child Predicting T2 Positive Emotional Responding in Peer Interactions.

Effect	Standardized Coefficient	*t*
Step 1 (R^2 = .06)		
Age	.15	1.29
Proportion of Peer Interactions	.07	.69
Classroom Level Prosociality	−.11	−1.02
T1 Positive Emotionality	.09	.94
Step 2 (R^2 = .37; R^2 change = .31 ****)		
Sex (1=boy; 2=girl)	.45	5.79 ****
T1 Prosocial Affiliation Quotient	.54	6.45 ****
Step 3 (R^2 = .58; R^2 change = .21 ****)		
T1 Prosocial Affiliation Quotient X Sex of Child	.54	7.59 ****

Note

* $p < .05$;

**** $p < .001$.

$N = 124$

Table 4

Hierarchical Regression of T1 Prosocial Affiliation and Sex of Child Predicting T2 Negative Emotional Responding in Peer Situations.

Effect	Standardized Coefficient	*t*
Step 1 (R^2 = .06)		
Age	−.13	−1.14
Proportion of Peer Interactions	.14	1.23
Classroom Level Prosociality	−.15	−1.41
T1 Negative Emotionality	−.02	−.61
Step 2 (R^2 = .54; R^2 change =.48 ****)		
Sex (1=boy; 2=girl)	−.21	−3.25 ***
T1 Prosocial Affiliation Quotient	−.78	−10.93 ****
Step 3 (R^2 =.69; R^2 change =.05 ****)		
T1 Prosocial Affiliation Quotient X Sex of Child	.26	3.69 ****

Note.

* p <.05;

*** p<.005;

**** p<.001.

N=124