Physical Attractiveness, Social Skills, and Same-Sex Peer Popularity

GERALD R. ADAMS
JAIPAUL L. ROOPNARINE

ABSTRACT. We completed three studies to assess the amount of variance contributed by facial attractiveness and social skills to the prediction of same-sex popularity. Study 1 was an observational investigation that examined the influence of facial attractiveness, visual attention, and dispensing and receiving positive, neutral, and negative behaviors for peer popularity. Study 2 was a replication–extension that added teacher assessments of social skills and competencies. Both investigations used preschool-aged children. Study 3 included kindergarten, fourth-, and seventh-grade children and extended the investigation to a larger age range. As we hypothesized, facial attractiveness, social competence, and antisocial behaviors predicted same-sex peer popularity. For both boys and girls, social competence most strongly predicted popularity. Although developmental age differences were anticipated, only two nonsignificant trends were observed. We discuss our findings in terms of the social power of attraction, expulsion, and action.

CONSIDERABLE EVIDENCE INDICATES that the degree to which one is liked or valued by peers has important ramifications for understanding social behavior and individual development (Asher, 1983; Coie & Dodge, 1983; Coie & Kupersmidt, 1983; Putallaz, 1983; Rubin, 1985). Long-term effects of a child's popularity are increasingly being documented (e.g., Cowen, Pederson, Babijian, Iszzo, & Trost, 1973). For example, one extensive review of the literature (Parker & Asher, 1987) concluded that unpopularity during childhood is predictive of later maladjustment.

Two separate lines of research have focused on the study of peer popularity in early childhood. Social psychologists have studied the role of physical appearance in influencing likability or desirability as a friend or playmate. Developmental psychologists have examined the role of social skills in predicting peer popularity. Numerous studies (e.g., Dion, 1973; Dion & Berscheid, 1974) have disclosed that a child's attractiveness plays

an influential role in determining popularity in peer-group settings. Evidence reported by developmental psychologists (Langlois & Stephan, 1977; Langlois & Stycznski, 1979), ethologists (Weisfeld, Muczenski, Weisfeld, & Omark, 1987), experimental social psychologists (Kleck, Richardson, & Ronald, 1974), developmental social psychologists (Adams & Crane, 1980), and educators (Byrnes, 1987), using self-rating, observer-rating, experimental, and observational-interactional techniques, consistently supports the hypothesis that attractive children and adolescents are more likely to be rated or perceived as being popular. Further, some evidence suggests that girls' popularity, more so than boys', may be influenced by attractiveness (e.g., Krantz, 1987; Vaughn & Langlois, 1983)—particularly as they get older (Weisfeld, Block, & Ivers, 1984).

From an interpersonal attraction hypothesis, physical attractiveness is thought to function as a highly valued social stimulus associated with perceived social desirability. Thus, physically attractive children are preferred as desirable playmates and friends. As Berscheid and Walster (1974) have suggested, attractive peers may be more innately reinforcing because of their appearance, whereas being associated with attractive peers may enhance one's prestige value. Perhaps the most parsimonious explanation may simply be that we attend to and look at those who are pleasing to look at (Dion, 1977) and are viewed as having more redeeming social worth (Adams & Crane, 1980; Dion & Berscheid, 1974; Kleck et al., 1974; Langlois & Stephan, 1977).

Peer relations literature (Hartup, 1983) also indicates that popular children manifest more effective social skills than unpopular children do. For example, Ladd (1983) reported, in an observational study of elementary-school-aged children, that average and popular children tend to have close social networks with mutual friends, but that unpopular children have social interactions in smaller groups that contain younger or unpopular peers. Further, unpopular children spend less time in prosocial interactions and are more agonistic in their behavior. In a short-term longitudinal study, La Freniere and Charlesworth (1983) concluded that popular children are rated by teachers as competitive and dominant on the one hand, but as warm, responsive, and capable of close relationships on the other. In contrast, unpopular children are viewed by teachers as being inhibited, anxious, shy, reserved, isolated, withdrawn, and submissive/dependent. These and other findings suggest a direct link between social skills and peer popularity, with popularity predicted by social competence. This proposed link may be referred to as the social skills hypothesis.

Although a direct link can be suggested between social skills and peer popularity, evidence suggesting a mediational association with physical attractiveness can also be found. Numerous studies with samples of children

(e.g.,m Dion & Stein, 1978) and adults (e.g., Chaiken, 1971; Goldman & Lewis, 1977) have shown that physical attractiveness is associated with interpersonal confidence and effective social skills. Dion and Stein (1978) have shown with elementary-school-aged children that attractive youths are more socially effective at influencing others than are their unattractive peers. In addition, Lerner and Lerner (1977) have found that physical attractiveness of fourth- and sixth-grade children is predictive of both positive peer relations and teachers' appraisals of social/emotional adjustment. Therefore, a mediational social skills hypothesis can be advanced. That is, physically attractive children may be more socially competent, wherein interpersonal confidence, socially desirable personality characteristics, and social skills associated with being attractive have mediational effects that influence popularity.

Nonetheless, little seems to be known yet about the unique role that attractiveness and social skills have for predicting peer popularity. Therefore, three investigations were undertaken to determine the individual variance contributed by physical attractiveness and social skills in predicting peer popularity. In each of the reports that follow, a series of hierarchical regressions were computed, entering physical attractiveness or social skill behaviors as the first predictive variable, followed by the reciprocal indicator. Interactions between physical attractiveness and social skill behaviors were also assessed.

Study 1

A series of studies (Vaughn & Waters, 1980, 1981; Waters, Garber, Gornal, & Vaughn, 1983) have demonstrated that visual attention from peers is significantly correlated with the children's degree of popularity. That is, more popular children are given greater behavioral attention. Likewise, Waters et al. (1983) report that visual attention by peers is correlated with adult assessments of social competence. Although Vaughn and Langlois (1983) reported only a minor association between physical attractiveness and visual attention, Dion (1977) demonstrated a substantial association between the two constructs. Nonetheless, Vaughn and Langlois reported a strong association between attractiveness and popularity. Further, Masters and Furman (1981) provided evidence indicating that a child's popularity is associated with overall rates of receiving and dispensing reinforcing and neutral acts, and Dion and Stein (1978) reported similar findings in their correlational analysis of physical attractiveness and interpersonal influence among young children. Finally, disruptive aggressive behavior has also been shown to be correlated with peer popularity and physical attractiveness. That is, disruptive aggressive behavior has been found to be

associated with physical unattractiveness and unpopularity (e.g., Adams & Read, 1983; Coie, Dodge & Coppotelli, 1982).

Therefore, in Study 1, the measures of social skills included assessments of visual attention, receiving and dispensing positive, neutral, and negative acts, and aggressive behaviors. Visual attention from peers was viewed as the behavioral byproduct of skillfulness and a reflection of a form of social power because those individuals in a social group who are attended to are likely to be the most influential with others. Popularity and attractiveness were expected to be associated with greater visual attention and higher frequencies of receiving and dispensing positive and neutral behaviors. Further, popularity and attractiveness were expected to be associated with lower rates of receiving and dispensing of negative acts and aggressive behaviors.

Method

Subjects

The sample included 80 children from four preschool classrooms. The children ranged in age from 48 to 59 months (M = 57 months). Each classroom had 10 boys and 10 girls. The four preschool classrooms were operating in university laboratory settings with student-teachers. All children but one were White and from middle-class two-parent homes. Children were randomly placed into classrooms from a single enrollment list. The same general curriculum was offered in all classes. All students entered the program at the same time and had been together for 6 weeks at the beginning of the study.

Procedure

Facial attractiveness ratings. Photographs were taken of each child from the shoulder up. Each photo featured a smiling face. Pictures were rated, one at a time, by 16 adult judges, who were unfamiliar with the children; the judges used a 9-point facial attractiveness scale (1 = unattractive; 5 = average; 9 = attractive). Averages of each child's ratings across the 16 judges ranged from 2.2 to 6.8. Judges were treated as items, and internal consistency of ratings was assessed using Cronbach's alpha (alpha = .89). A one-way analysis of variance (ANOVA) to assess for possible mean differences between raters was observed to be nonsignificant. Further, each child's picture was rated, one at a time, by children in other preschool classrooms (n = 30 boys and 30 girls) where the target children were also unfamiliar to the raters. These ratings included only same-sex peers. The

children used a 3-point attractiveness scale (1 = unattractive; 2 = average; 3 = attractive). Average attractiveness ratings ranged from 1.3 to 2.9, with a somewhat lower internal consistency than found for adult judges (alpha = .78). Averaged adult and children's ratings were significantly correlated ($r = .76$, $p < .05$). The findings indicate similar standards for judging attractiveness are applied by children and adults. However, it should be noted that La Freniere and Charlesworth (1983) demonstrated that familiar versus unfamiliar adult ratings may be associated with different predictive behavioral correlates. Given the local human ethics committee standards, only unfamiliar ratings were obtained. Averaged unfamiliar adult ratings were used in the analyses, given the higher internal consistency and similarity in means across judges.

Peer popularity rating. The senior investigator administered the Asher, Singleton, Tinsley, and Hymel (1979) sociometric rating task to each child. Given evidence of sex bias in ratings where opposite-sex raters are possibly more negative (e.g., Hayden-Thomson, Rubin, & Hymel, 1987), we used only same-sex ratings. Internal consistency of ratings was high for both the male and female subjects (alphas = .77 and .81, respectively). Inter-student agreement on the popularity ratings averaged .83 (Spearman's rho). Likewise, to establish an estimate of convergent validity, we asked each head teacher to rank-order perceived popularity for children in each class. Teacher rankings were significantly correlated with peer ratings for both the male ($r = .49$, $p < .05$) and female ($r = .61$, $p < .05$) subjects. A nonsignificant one-way ANOVA was observed in a comparison of the four teachers' average popularity rankings.

Social Skills. Based on the Furman and Masters (1978) study, we obtained overall rates of receiving and dispensing positive, negative, and neutral behaviors to same-sex peers. Each child was observed in a random order for three 6-second intervals for a total of 120 intervals of observation over a 5-week period (24 observations per week). (Pilot work that included a comparison between 120 and 480 intervals revealed acceptable correlations (r) of .79 or higher, ranging from .79 to .91 for the various behaviors; therefore, the lesser number of observations spread over 5 weeks was judged adequate for an estimate of behavior for this study.)

During each interval of 120 observations, two observers concomitantly recorded the behavior of the target and any form of interaction with another child. The researcher noted whether the target received or dispensed positive behaviors (e.g., help giving, guidance, gift giving, invitations to play, permission, praise, affection, reassurance and protection, giving status, warm greetings, smiling or laughter, compliance, acceptance of directions, cooperative play or promises of reward, negative behaviors (noncompliance, rejection of an activity, blaming, disapproval, insults, quar-

reling, yelling, ignoring, taking or damaging property, physical attacks or threats), and neutral behaviors (general conversation, associate play). The observers were blind to the intent of the study, including attractiveness and popularity ratings, and completed all observations. Overall proportional agreement between raters was 81%. Interobserver reliabilities were calculated, using Pearson's *r* and kappa coefficients with separate calculations for boys and girls. For the boys, interobserver reliabilities (Pearson's *r*s) ranged from .69 to .89 (dispensing positive = .78; dispensing negative = .81; dispensing neutral = .89; receiving positive = .71; receiving negative = .84; receiving neutral = .75). Kappa coefficients were only slightly smaller. Correlations between the first 60 and second 60 observations revealed consistent behavior for both boys and girls (*r*s ranged from .69 to .81).

Visual attention (or regard) from the same-sex peers was assessed, using a modification of the strategy defined by Vaughn and Langlois (1983). A *look* was defined as an orientation of the head and eyes toward the target child for 1 to 3 seconds during each time period. Separate observational intervals were used to assess visual attention. A total of 240 intervals over a 5-week (18 observations per week) period was used in this study. Two additional observers concomitantly completed all 240 observations for each subject. Three-second observation periods were followed by a 3-second scoring period. Interrater agreement between the two observers was acceptably high for both the male and female subjects (Pearson's r = .92, kappa = .89 for boys, and Pearson's r = .89, kappa = .86 for girls). Cor-

TABLE 1
Means and Standard Deviations for Boys' and Girls' Social Interaction Behavior

Behavior	Boys		Girls	
	M	*SD*	*M*	*SD*
Receiving				
Positive	5.2	3.4	6.1	4.0
Negative	8.3	4.9	6.9	2.7
Neutral	4.9	3.1	3.7	3.0
Dispensing				
Positive	5.9	2.7	6.3	3.9
Negative	8.1	5.1	7.3	2.5
Neutral	4.8	3.3	4.2	2.9
Aggression	6.4	4.3	4.1	2.2
Looking toward target	14.9	6.3	17.8	7.9

relation between the first 120 and the second 120 observations revealed a general consistency in looking behaviors (males, $r = .80$; females, $r = .88$; $ps < .05$).

Aggressive behavior was defined as engaging in teasing with intent to aggravate, hitting, kicking, pushing, hurting, or verbal assault with intent to dominate, threaten, or control. A separate 240 intervals of concomitant observations were completed to assess aggressive behavior. The observational and scoring periods were identical to those used to assess visual attention. The same observers who completed the visual regard observations also completed these observations. Pearson's r and kappa coefficients assessing interrater agreement between the two observers were approximately the same for male and female subjects (Pearson's $r = .83$, kappa $= .81$ for boys, and Pearson's $r = .91$, kappa $= .86$ for girls). Correlations between the first and second halves of the total observation period, for boys and girls, suggest relative consistency in behavior (males, $r = .78$; females, $r = .70$; $ps < .05$).

Results

The proportion of same-sex versus opposite-sex interactions was highly similar for boys and girls in each of the four classrooms. Boys (81%) and girls (77%) interacted mostly with same-sex peers. Girls were observed to interact slightly more than boys with opposite-sex classmates. A chi-square test of proportional differences between the four classrooms by boys and girls for same-sex interactions was nonsignificant. Given that the focus of these studies was on same-sex interaction behaviors and same-sex peer popularity, a similar comparison was completed for frequency of visual attention, aggression, and dispensing and receiving behaviors toward same-sex peers between the four classrooms. La Freniere and Sroufe (1985) have suggested that classroom ecologies may create differences that would confound collapsing of subjects across classrooms. Separate one-way ANOVAs between the four classrooms, computed separately for boys' and girls' behaviors, once again were found to be nonsignificant. These analyses suggest that boys and girls spend approximately the same proportion of time in same-sex interactions and that it is appropriate to collapse subjects across classrooms. The means and standard deviations for each of the four general categories of social behaviors, collapsed across classrooms, are provided for males and females (see Table 1).

Peer popularity was treated as the dependent variable. Facial attractiveness and social skill behaviors were entered as independent variables in regression analyses, using a hierarchical inclusion strategy. In one set of analyses, facial attractiveness was entered first, followed by the two com-

posite social skills scores that were derived from a correlation of the social behaviors. In a second set of analyses, the two composite social skills scores were entered first, followed by the facial attractiveness ratings. All possible interactions were included in the analyses. Separate regressions were computed for the boys and the girls. (In these and all remaining regression analyses, the reported F values are for the increment to R^2 afforded to that step, i.e., unique variance.)

Correlational analyses, computed separately for boys and girls, revealed that visual attention, receiving and dispensing neutral and positive acts correlated with each other at or above $r = .46$ (median correlation = .52) for each gender. Therefore, a composite score was derived that reflects the degree to which an individual maintains high visual attention, is positively reinforcing to others, and is the recipient of positive behaviors from others. This composite is referred to as the *social competence* score. In contrast, aggressive behavior and dispensing and receiving negative acts were correlated at or above $r = .52$ (median correlation = .61) for both genders. Therefore, these behaviors were summed to reflect a negative, aggressive social behavioral style. This composite is referred to as an *antisocial* score. All items within each composite score were standardized prior to summation.

Regression analyses are summarized in Table 2. For the boys, when facial attractiveness was entered first, all three independent variables made a significant contribution to popularity. The full model accounted for 28% of the variance. Facial attractiveness accounted for 17%, with increments of 5% for antisocial behavior and another 6% for social competence. Antisocial behavior was negatively associated with popularity, whereas facial attractiveness and social competence were positively correlated with peer popularity. However, when social competence was entered first, followed by the remaining variables, facial attractiveness was not found to account for significant variance beyond that accounted for by social competence (22%) and antisocial behavior (4%). No significant interactions were observed.

For the girls, when facial attractiveness was entered first, all main-effect variables also made a significant contribution to popularity. The full model accounted for 50% of the variance. Facial attractiveness (35%) accounted for most of the variance, with increments of 7% for antisocial behavior and 8% for social competence. However, when social competence was entered first, followed by the remaining variables, social competence accounted for 42% of the variance followed by a significant 5% increment by antisocial behavior. In this analysis, facial attractiveness failed to add a significant increment (3%). The same directional associations were observed for the girls as those found for the boys. Antisocial behavior was nega-

TABLE 2
Study 1 Regression Results: Incremental Contributions of Facial Attractiveness, Antisocial Behavior,and Social Competence as Predictors of Same-Sex Peer Popularity

Variable in equation	*Beta*	*F*	Multiple *R*	R^2
	Boys			
First regression				
Facial attractiveness	.41	6.62*	.41	.17
Antisocial behavior	.33	5.26*	.47	.22
Social competence	.23	4.41*	.53	.28
Second regression				
Social competence	.44	6.92*	.44	.22
Antisocial behavior	−.25	4.76*	.51	.26
Facial attractiveness	.07	2.07	.53	.28
	Girls			
First regression				
Facial attractiveness	.59	8.84*	.59	.35
Antisocial behavior	−.27	5.66*	.65	.42
Social competence	.26	4.64*	.71	.50
Second regression				
Social competence	.65	6.98*	.65	.42
Antisocial behavior	−.26	4.86*	.69	.47
Facial attractiveness	.10	2.35*	.71	.50

*$p < .05$.

tively associated with popularity, whereas facial attractiveness and social competence were positively associated with same-sex peer popularity. Again, no significant interactions were observed.

Study 2

The findings of Study 1 suggest that social skills and facial attractiveness can predict popularity. Socially skilled persons are likely also to be more attractive. Estimates of unique contributions by each factor suggest that social skills may be more influential for popularity.

To reassess the finding, we conducted Study 2 as a replication–extension of the first investigation. A combination of measures, including a Q-sort technique developed by Waters, Garber, Gornal, and Vaughn (1983) and observations of frequency of visual attention (Vaughn & Langlois, 1983), facial attractiveness, and sociometric ratings of popularity by same-sex

peers (Asher et al., 1979), were used. This investigation expanded our methodology to include not only ratings by children or peers and classroom observations of same-sex interactions but also teacher assessments.

Method

Sample

The sample included 80 children (39 boys, 41 girls) from four different preschools. The children ranged in age from 41 to 52 months (median = 48 months). Approximately an equal number of males and females were enrolled in each class. Socioeconomic status, parental characteristics, and classroom curriculum were comparable to those reported in Study 1.

Procedure

Attractiveness and popularity ratings. Facial attractiveness was assessed by same-sex peers in other school settings as described in Study 1. The Asher et al. (1979) sociometric rating was used to assess same-sex popularity. Similar estimates of internal consistency and reliability to those reported in Study 1 were found.

Social skills. Visual attention (looking) was assessed, using the same strategy and sampling procedure as detailed in Study 1. Estimates almost identical to those reported in Study 1 of reliability and proportions of same-sex to opposite-sex interactions for boys and girls across classrooms were observed. Further, a Q-sort technique described by Waters et al. (1983) was completed by head teachers at the end of a 6-week teaching period. Although the full 100 items were used, only 36 items measuring social skillfulness (n = 12), engagingness with peers (n = 10), purposiveness in social behavior (n = 5), and confidence versus anxiousness (n = 9) were used in this study. First, the items were sorted into three categories (characteristic, neither characteristic nor uncharacteristic, and uncharacteristic). Second, each category was subdivided into three to yield a total of nine categories. Finally, working from extremes to the center category, items were adjusted to conform to a standard distribution. Internal consistency of these items ranged from .79 to .92 (alpha coefficients).

Correlations between the four Q-sort dimensions and visual attention ranged from r = .44 to .73 (median r = .57) in separate computations for the boys and the girls. Similar correlations were observed for each grade level. Teachers' ratings were clearly corroborated by peers' visual attentiveness behavior. Given the moderately high intercorrelations, a composite *social competence* score was derived after all items were standardized.

At the high range, it reflects a child who holds visual attention from peers and is seen by a head teacher as being characterized as socially skilled, engaging with peers, purposive in behavior, and confident in his or her behaviors and actions. The lower range reflects a child who does not hold visual attention from peers; is unskilled; is not engaging with peers; and manifests anxious, unconfident images.

Results

The hierarchical regression was computed with facial attractiveness entered first, followed by the social competence indicator (and vice versa). The findings are summarized in Table 3. For the boys, when facial attractiveness was entered first, the full model accounted for 18%. Facial attractiveness accounted for 10%, and social competence 8%. In the reversed analysis, social competence accounted for 15%, with facial attractiveness adding an incremental 3%. Once again, social competence held the largest unique effect on peer popularity for the boys.

TABLE 3
Study 2 Regression Results: Incremental Contributions of Facial Attractiveness and Social Competence as Predictors of Same-Sex Peer Popularity

Variable in equation	*Beta*	*F*	Multiple *R*	R^2
	Boys			
First regression				
Facial attractiveness	.31	4.27*	.31	.10
Social competence	.24	4.06*	.42	.18
Second regression				
Social competence	.39	4.31*	.39	.15
Facial attractiveness	.13	1.83	.42	.18
	Girls			
First regression				
Facial attractiveness	.41	4.43*	.41	.17
Social competence	.22	3.96*	.49	.24
Second regression				
Social competence	.46	4.51*	.46	.21
Facial attractiveness	.15	2.93	.49	.24

*$p < .05$.

In comparison, for the girls, facial attractiveness accounted for 17% of the variance when entered first, with social competence adding an increment of 7%. When social competence was entered first, it accounted for 21% of the variance, and facial attractiveness added an increment of 3%.

Study 3

Research on self-understanding and person perception suggests that preschool-aged children attend more to physical attributes than to behavioral or psychological qualities of self and others. Age-related changes in conceptions of social behavior in a peer-relationship context have shown, however, that developmental patterns exist in how children process information concerning social behavior (e.g., see Coie & Pennington, 1976; Younger & Boyko, 1987; Younger, Schwartzman, & Ledingham, 1985, 1986). Therefore, there may be developmental differences in how children process or weigh others' physical, behavioral, and psychological attributes and use them in making affectional peer preferences. As suggested by Damon and Hart (1982) in their framework for conceptualizing self-understanding, biological and/or physical attributes should strongly influence the behaviors of young children, but these influences should be replaced by social competencies in middle childhood. Moreover, psychological characteristics should replace social-behavioral capacities in early adolescence.

Therefore, in the third study of the contribution of interpersonal attraction and social skills as predictors of same-sex peer popularity, the sample was broadened to include kindergartners, fourth graders, and seventh graders. Children from four classrooms for each age level were used to provide a relatively representative sample. Observations of visual regard and the dispensing and receiving of positive and negative behaviors between same-sex peers and ratings of social skills, assertiveness, dominance, reserve, inhibition, and social deviance (Vaughn & Martino, 1988) were obtained from teachers and a research assistant. A version of the Asher et al. sociometric rating system was used to measure same-sex peer popularity. The physical attractiveness of each child was assessed by same-sex children in a separate school district.

Our developmental hypothesis was that for young children (kindergartners), an interpersonal attraction mechanism would substantially account for peer popularity. For older children, however, social competence and psychological factors would become more influential in predicting affectional preferences in same-sex peer popularity.

Method

Subjects

The sample consisted of boys and girls from four classrooms in kindergarten, fourth grade and seventh grade. Fifty boys and 50 girls were included for each of the three grade levels. Classrooms were randomly selected from schools that agreed to participate in the study. Parental and subject permission was obtained prior to completion of the study. Only two parents declined participation. All but eight children were from two-parent, middle-class homes. Four children were minorities.

Procedure

Facial attractiveness ratings. Photographs of each child were obtained and were rated by students of identical grade level in another school district. Approximately 20 boys and 20 girls of the same grade level rated same-sex pictures, using the procedure described in the two previous studies. Internal consistency (alpha) was equal to or higher than .73 for all combinations.

Same-sex peer popularity ratings. Each child was administered the Asher et al. (1979) rating task. The task was slightly modified for the older subjects. Pictures were not used for the fourth- and seventh-grade subjects. Instead, the ratings were based on such phrases as "like to spend time with a lot," "like to spend a little time with," and "don't like to spend any time with." Internal consistency was approximately the same for each gender and grade level (kindergarten: for girls, alpha = .77; for boys, alpha = .83; fourth grade: for girls, alpha = .77; for boys, alpha = .81; seventh grade: for girls, alpha = .90; for boys, alpha = .77). Interstudent agreement on the popularity ratings averaged .76 (Spearman's rho) over all combinations.

Social skills. Arrangements were made with teachers to have four social interaction experiences in each classroom where students could interact with all classmates. These interactions involved a free-play social activity that allowed freedom to move around the room and interact with any class member. During these four interactions, observations were completed on receiving and dispensing positive, negative, and neutral behaviors as well as visual attention between same-sex peers. Each student was observed for a total of 90 3-second observations. Overall proportional agreement was 84%, and the correlation between the two observers for the observed behaviors (kappa) ranged from .82 to .93 (median r = .86). Similar, but slightly higher, Pearson r coefficients were obtained.

Research assistants and teachers were asked, after the completion of the observation task, to rate each child on several social skill measures. Using dimensions derived by Vaughn and Martino (1988) from an analysis of the California Child Q-sort, they completed five items measuring each of six domains on a 5-point Likert-type scale (1 = never observed, 2 = infrequently observed, 3 = sometimes observed, 4 = commonly observed, 5 = always observed). The items and the dimensions measured included *social skills* (is talkative, is verbally fluent, is open and straightforward, expresses feelings, initiates interaction), *assertiveness* (self-assertive, is energetic, explores, is active, is lively), *dominance* (is aggressive, is pushy, dominates over others, teases, likes to compete), *reserved* (is shy, withdrawn, compliant, likes to be alone, is quiet), *inhibited* (is inhibited, reaches out, submissive, constricted, distant), *psychological or social deviance* (deviant from peers, disengages under stress, has strong humor or behavior, obnoxious, trouble maker).

Factor analysis (oblique rotation), using the full 300 subjects, confirmed the six dimensions. Internal consistency of the six factors resulted in internal alphas that reached or exceeded .68 for each of the three age levels. Several items loaded on more than one factor. Correlations (using the full sample) between unweighted average scores from teachers' ratings for each of the six dimensions revealed that social skills, dominance (reverse weighting with a high score indicating low dominance), and assertiveness correlated at or higher than $r = .82$. Reserved, inhibited, and psychological/social deviance correlated at or higher than $r = .87$. These two separate composites were negatively correlated with each other ($r = -.28$, $p < .05$). Teacher and research assistant ratings correlated from $r = .72$ to .81. Given the high correlation and the belief that teachers knew the students best, teachers' ratings were used in further analyses. Also, given the strong correlations between dimensions confirmed through the oblique factor analysis, ratings of social skills, assertiveness, and dominance (reverse weighted) were standardized and summed into a composite *social competence* score; the reserved, inhibited, and deviance items were standardized and included in a *psychological functioning* score. Social competence but not psychological functioning was correlated with visual attention ($r = .39$, $p < .05$).

Results

A stepwise regression using hierarchical inclusion was performed first, entering, in order, facial attractiveness, visual attention, social competence, and psychological functioning, along with grade level. The second set of analyses entered the variables as follows: visual attention, social com-

petence, psychological functioning, facial attractiveness, and grade level. Possible interrelationships between grade level and significant social competence, visual attention, and psychological-functioning factors were assessed by examining grade level by behavior/teacher rating interactions.

Table 4 summarizes the significant results from the regression analyses. For the male subjects in the first set of analyses, in which attractiveness was entered first, facial attractiveness accounted for 10% of the variance, with an incremental 3% accounted for by visual attention, and another 2% by social competence. In the second set, entering visual attention first, visual attention accounted for 7% of the variance, with an additional 6% contributed by social competence. Only 2% more variance was accounted for by facial attractiveness. The findings were similar to those observed in Studies 1 and 2. Both facial attractiveness and social skills indicators were predictive of popularity. Although facial attractiveness accounted for

TABLE 4
Study 3 Regression Results: Incremental Contributions of Facial Attractiveness, Visual Attention, Social Competence, and Psychological Functioning as Predictors of Same-Sex Peer Popularity

Variable in equation	*Beta*	*F*	Multiple *R*	R^2
	Boys			
First regression				
Facial attractiveness	.32	7.12*	.32	.10
Visual attention	.16	4.42*	.36	.13
Social competence	.14	3.40	.39	.15
Second regression				
Visual attention	.26	5.79*	.26	.07
Social competence	.35	7.21*	.36	.13
Facial attractiveness	.08	2.21	.39	.15
	Girls			
First regression				
Facial attractiveness	.36	7.43*	.36	.13
Visual attention	.24	5.61*	.42	.18
Social competence	.19	4.46*	.46	.21
Second regression				
Visual attention	.26	5.79*	.26	.07
Social competence	.31	5.31*	.40	.16
Facial attractiveness	.22	4.77*	.46	.21

*$p < .05$.

some degree of popularity, it added little substantial unique variance beyond visual attention and social competence. Likewise, once facial attractiveness and visual attention were accounted for in predicting peer popularity, social competence added little unique variance.

For the girls, in the first set of analyses, in which attractiveness scores were entered first, facial attractiveness accounted for 13% of the variance, followed by increments of 5% for visual attention and 3% for social competence. In the second set of analyses, visual attention contributed to 7% of the variance, with increments of 9% for social competence and 5% for facial attractiveness. Girls' popularity was observed to be influenced by both facial attractiveness and social competence. Although both social skills and attractiveness held unique and meaningful contributions to popularity, facial attractiveness manifested a more prominent influence for the girls than for the boys.

A final analysis was computed with age entered as the first predictor followed by facial attractiveness, visual attention, and social competence. Separate analyses were computed for each gender. No significant age effects were observed. However, a nonsignificant Age $\times$ Social Competence interaction ($p < .10$) suggested that social skills may be more important for older than younger boys in predicting same-sex popularity. Further, a nonsignificant Age $\times$ Facial Attractiveness interaction ($p < .10$) suggested that facial attractiveness may be more influential for older than younger girls in predicting same-sex peer popularity.

Discussion

The three investigations summarized in this report have focused on estimating the unique variance contributed by facial attractiveness and social competence for same-sex peer popularity. Across all three studies, facial attractiveness and social competence individually predicted popularity. Consistent with earlier findings (Dodge, 1983), behavioral indicators of antisocial behaviors and/or social competence added significant incremental contributions to the prediction of popularity beyond that of facial attractiveness. However, facial attractiveness accounted for little additional unique variance for preschool-aged boys and girls. Gender differences were observed in Study 3. For boys, facial attractiveness accounted for little beyond social skill indicators. But for girls, facial attractiveness maintained an influence beyond social competence. These findings are consistent with general notions that physical attractiveness is a major factor in females' social relations (Adams & Crossman, 1978; Langlois, 1986).

Others have found that popular children manifest greater social skills and interpersonal competence (Hartup, 1983). Popular children have mu-

tual social networks (Ladd, 1983), manifest dominance in warm and responsive ways (La Freniere & Charlesworth, 1983), and are perceived by other children and adults as socially mature and adjusted persons (e.g., Thompson et al., 1989). Our data further indicate that popular children maintain high visual attention from peers, positively reinforce others, and receive positive behaviors in return (Study 1). They are characterized by adults as socially skilled, purposive and engaging in their behavior, and confident in their social interactions (Study 2). Likewise, popular children are viewed as initiators, verbally fluent, socially capable, self-assertive, energetic, and active, while manifesting little aggressive behavior but high frequencies of positive and reinforcing behaviors toward others (Study 3). In essence, popular children have social power through effective social action.

One might conceptualize these findings within a framework of social power. Facial attractiveness might be viewed as the power to attract. It facilitates visual attention and enhances visibility. Social competence could be viewed as the behavioral ability to influence others through action. Each form of social power has its influence on popularity. However, the power of action, in the form of social behaviors, appears to offer a substantive contribution above that of attraction. Attractive boys and girls have a good likelihood of being popular; however, attractive children who are also socially competent have an even greater likelihood of popularity.

An additional comment seems warranted here. There may also be a form of social power that is expulsive. Our evidence suggests that aggressive behavior not only involves giving but also receiving negative or antisocial actions. This expulsive power then lowers popularity. Similar to prior findings indicating that physically aversive or aggressive behaviors are predictive of peer rejection (e.g., Coie & Kupersmidt, 1983; Dodge, 1983), it was observed in Study 1 that aggressive behavior was associated with low popularity. Although boys are typically more aggressive than girls (a condition confirmed by data reported in Table 1), the negative influence of antisocial behavior on same-sex peer popularity was found for both genders. Essentially, aggressive behavior has an expulsive effect that reduces popularity.

Facial attractiveness held a consistent positive association for both the boys' and the girls' same-sex peer popularity. Like visual attention, facial attractiveness has a form of social power. Dion (1977) has referred to this as an incentive value. This incentive value is the capacity to attract. Potentially, because of the prestige value of being with others who are attractive, facial attractiveness enhances popularity. This form of power is surpassed, it appears, by the social power of competent actions for boys and girls. However, as girls mature from childhood into adolescence, the power of attraction may become more influential in determining same-sex popularity. Ethologists have offered various conceptualizations based on natural

selection process to account for these findings (e.g., see Weisfeld et al., 1984).

The influence of facial attractiveness and social competence was observed in the two studies using preschool children and in the cross-sectional study using middle childhood and early adolescence groups. Although expected, no significant age differences were observed. Nonetheless, nonsignificant trends suggest that, for older children, facial attractiveness may become more salient for predicting girls' popularity, and social competence may become more influential for boys. If these trends are a true reflection of social development, then the power of attraction becomes more salient for girls and the power of action more important for boys. This trend is consistent with several overviews of gender differences in socialization process and social development (e.g., see Block, 1973, 1983).

AUTHORS' NOTES

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GERALD ADAMS, professor of family relations and human development at the University of Guelph, focuses his research on personality and social development during childhood and adolescence. His current research involves the study of the interconnecting influences of family, school, and peers on academic performance and social adjustment. JAIPAUL L. ROOPNARINE is professor of child studies and early childhood education at Syracuse University. His research interests include father-child relations in diverse cultures, childcare, immigrant children, and schooling. He is currently conducting research on fathers in Jamaica, Guyana, and Domenica.