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Enhancement of the Social Interaction and Status of Neglected Children: A Peer-Pairing Approach

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Obtained sociometric nominations from 229 first- and second-grade children. Based on these data, a sample of 24 peer-neglected, 24 popular, and 24 average children was identified, and behavioral observations of social interaction during recess were conducted. Peer-neglected and popular children were randomly assigned to peer-pairing or control conditions. Each neglected child in the treatment group was paired with a popular child from her or his own classroom. Each peer pair participated in twelve 15-min play sessions over a 4-week period. Sociometric nominations and behavioral observations were reconducted following intervention and 1-month post-treatment. Results revealed significant improvement for treatment group subjects on both sociometric status and positive interaction rate. Results were maintained at follow-up.

Substantial literature indicates that poor peer relations are predictive of later social competence problems (for a review, see Parker & Asher, 1987). Peer relationship difficulties may, therefore, constitute important developmental risk factors for more disabling forms of later maladjustment or psychopathology. Yet, progress has been forthcoming in the fine-grained delineation, classification, and treatment of children's social relationships only over the last decade or so. Research findings, for example, suggest the validity of at least two distinct groupings of children experiencing problems with peer relations—*rejected* and *neglected*. Some children tend to be isolated by the peer group (rejected), whereas others appear to be isolated from their peers (neglected; Rubin, Hymel, Mills, & Rose-Krasnor, 1991).

The bulk of research attention to date has focused on rejected children (i.e., those low on peer acceptance and high on peer rejection). Rejected children have been found to engage in relatively high rates of aggressive and disruptive behavior (e.g., Dodge, 1983). Interventions aimed at improving rejected children's social skills have provided mixed results (Bierman & Furman, 1984; Bierman, Miller, & Stabb, 1987; Coie & Krehbiel, 1984; Tiffen & Spence, 1986). Studies focusing on neglected children (i.e., those low on peer acceptance and low on peer rejection) have been rare. However, recent evidence suggests that neglected children may be at risk for concurrent and later socioemotional difficulties.

Children identified as neglected, based on sociometrics, have higher levels of social anxiety (LaGreca, Dandes, Wick, Shaw, & Stone 1988) and lower perceived social competence (Patterson, Kupersmidt, & Griesler, 1990) than other children. In a prospective study conducted over a 2-year period, Kupersmidt and Patterson (1991) found that neglected girls were twice as likely to report depressive symptoms as rejected children and over five times as likely to report depressive symptoms as popular, average, or controversial children. Neglected children have been found to expect less successful instrumental outcomes than popular or rejected children (Crick & Ladd, 1990). Cirino and Beck (1991) reported that neglected girls displayed deficits in social information processing. Neglected children engage in less socially active behavior than their same-age peers (Begin, 1986) and report having younger neighborhood friends (Kurdek & Lillie, 1985). These children have been described by their peers as poor leaders, less cooperative, (Dubow & Cappas, 1988), and more likely to break school rules and perform inefficiently on academic tasks (Dygdon, Conger,

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& Keane, 1987). Moreover, children with an anxiety disorder were more likely to be classified as neglected than both psychiatric and nonpsychiatric controls (Strauss, Lahey, Frick, Frame, & Hynd, 1988).

Most peer-relations research has focused on the risk status of peer-rejected children because these children have been found to exhibit high rates of externalizing behavior problems (e.g., Dubow & Cappas, 1988; Frentz, Gresham, & Elliott, 1991). Reports of equivocal risk status in peer-neglected children (see Newcomb, Bukowski, & Patee, 1993) must be interpreted with caution because the studies used to reach such conclusions generally have utilized measures that tap externalizing problems and rely heavily on teacher report. Because neglected children are typically described as shy and withdrawn, it is not surprising that significant conduct problems are not reported by parents or teachers. We need to include measures that are theoretically related to the construct of peer neglect to address more accurately the risk status of peer neglected children. Although longitudinal studies are needed to elucidate more clearly potential risk for socioemotional or psychiatric difficulties (e.g., avoidant disorder and social phobia), the studies that have included measures of social anxiety, perceived competence, and depression support continued interest in the plight of neglected children.

The majority of programs designed to improve social competence have assumed that socially isolated or neglected children lack the requisite skills necessary for successful social interaction. Such programs often have been successful in increasing the frequency of the specific target behaviors trained (e.g., LaGreca & Santogrossi, 1980). However, these social skills training programs have not proven useful in increasing peer acceptance as measured by sociometrics (e.g., Berler, Gross, & Drabman, 1982; Whitehill, Hersen, & Bellack, 1980). Furthermore, in a social skills training program with 25 elementary school-age neglected children, no beneficial effects were observed on either behavioral measures of interaction or on self-report measures of social skills or competence (Tiffen & Spence, 1986).

Strain and Fox (1981) suggested that peer-mediated interventions for the treatment of social isolation may be superior to adult-mediated approaches. The inclusion of peers may be a necessary component of interventions designed to affect changes in peer acceptance. Peer-mediated interventions generally have focused on providing peers with incentives and/or training to increase their rate of positive social interaction with target children (e.g., Christopher, Hansen, & MacMillan, 1991; Paine et al., 1982; Strain & Odom, 1986). An alternate approach involves merely providing target children with opportunities to engage in joint-task activities with nonisolated peers. Sociometrically low-rated children have been placed in small groups with sociometrically high-rated children to engage in activities such as preparing a skit for the class (Chennault, 1967) or making a movie (Lilly, 1971).

Furman, Rahe, and Hartup (1979) found that socially withdrawn preschoolers given the opportunity to interact with younger playmates in free-play sessions evidenced increases in their observed frequency of peer interaction as compared with no-treatment controls. In an attempt to replicate this finding, Rubin, Both, and Rose-Krasnor (1988) identified socially withdrawn children based on observations and paired these children with socially active peers from different classrooms for free-play interaction sessions. The authors found no beneficial effects, but they noted that results may have been different if familiar peers were used.

Peer-mediated interventions have demonstrated the potential to affect social interaction positively. Such programs may have potential preventive benefits and can prove more cost-effective than traditional social skills training programs. However, several limitations of previous research deserve to be mentioned. In regard to assessment, a significant problem is that socially isolated subjects, as defined in most of the existing studies, no doubt represent a heterogeneous group. By not making the distinction between socially isolated children who are peer neglected and those who are peer rejected, past efforts likely have been confounded by the inclusion of at least two groups of isolate children: the withdrawn and the aggressive. When the neglected–rejected distinction has been made, efforts have focused almost exclusively on peer-rejected children. Of further concern, it is unclear how the peers were selected for participation in most studies (e.g., Furman et al., 1979; Strain, Shores, & Timm, 1977). Have peer groups consisted mainly of popular, average, or even socially rejected children? Peer-interaction sessions generally have been conducted in a group format (e.g., Bierman & Furman, 1984; Chennault, 1967). Such formats do not always ensure that the target children actually spend a substantial portion of the session interacting with socially skilled peers. One-on-one interaction between a peer-neglected child and a higher status peer may produce stronger effects. A final concern regards outcome assessment: Existing studies often have relied exclusively on behavioral observations (e.g., Furman et al., 1979; Strain et al., 1977) or on measures of peer acceptance (e.g., Oden & Asher, 1977), whereas a combined approach likely would yield the most beneficial information.

In this study, we addressed the utility of a peer-pairing procedure in enhancing the sociometric status and positive social interaction of peer-neglected first- and second-grade children. Peer pairing consisted of one-on-one interaction sessions, with each neglected child paired with a popular child from her or his own classroom. Sociometric and behavioral observation measures were included to address potential differential

effects on peer acceptance and level of social interaction. A 1-month follow-up assessment was included to rate maintenance of treatment gains.

Method

Subjects

The initial subject pool consisted of 390 first- and second-grade children enrolled in public school in a small southern city. Consent was obtained for 229 children (58.7%). Of those providing consent, 49.3% were Caucasian, 48.0% African American, and 2.7% other; 50.8% were girls, and 49.2% were boys. The average age of the sample was 7.63 years. Playground observations were conducted on a subset of children meeting sociometric selection criteria (24 peer neglected, 24 popular, and 24 average; see the Procedure section).

Measures

Sociometrics. Sociometric nominations provide information regarding the degree to which a child is liked by her or his peer group, and they have demonstrated concurrent and predictive validity (e.g., Hops & Greenwood, 1988). Sociometrics have been used with children ranging in age from preschool (e.g., Hayvren & Hymel, 1984; MacDonald, 1987) through early elementary school (e.g., Begin, 1986; Coie & Dodge, 1988; Dodge, Coie, Pettit, & Price, 1990; Rogosch & Newcomb, 1989) and preadolescence (e.g., Bierman & Furman, 1984; Dodge, Coie, & Brakke, 1982; Kupersmidt & Coie, 1990). Sociometric nomination scores of young children have been reported to be relatively stable across time and predictive of subsequent behavioral problems and deficits in social interaction (Ironsmith & Poteat, 1990; Wasik, 1987).

Playground observations. A behavioral coding scheme based on that used by Strain and Timm (1974) was implemented to obtain ratings of positive social interaction, negative social interaction, and solitary play as follows:

1. Positive interaction: This includes all vocalizations directed to another child excluding screams, shouts, cries, and whines; all cooperative responses involved with sharing an object; and hugs and holding hands.
2. Negative interaction: This includes screams, shouts, or other utterances that indicate rejecting and oppositional behavior; hit, pinch, kick, and "nonplaying" push or pull; grabbing object from another child; and destroying construction of another child.
3. Solitary play: This includes all solitary activity.

For each category, scores were derived representing the percentage of intervals in which the behavior occurred.

Procedure

Sociometric nominations. All children for whom consent was obtained took part in the sociometric nomination procedure. Each participating subject was brought outside the classroom individually and asked to name three classmates with whom he or she most and least liked to play. Nominations were obtained by a graduate student assistant, an undergraduate student assistant, and the principal investigator. Positive and negative nominations received by each child were summed separately and converted to a proportion to enable comparisons across classrooms (i.e., number of nominations received/number of nominators). Baseline nominations were obtained in February, allowing ample time for children to become familiar with their classmates. Nominations were made verbally; thus, subjects were free to nominate any class member. Such an approach has advantages over a roster method that lists only names of children consenting to participation; more representative data may be obtained through verbal nomination. As the salience of classmates was a key factor of interest, the possibility that a classmate may have been forgotten by a nominator was considered a given part of the process of assessing social status rather than a methodological weakness. That is, the fact that a child is overlooked by all (not nominated by any) classmates is considered the sine qua non of peer neglect. In addition, this approach allows a social status comparison of children for whom consent is and is not obtained, further addressing the representativeness of selected samples.

Children were classified into sociometric status groups using the statistical criteria presented by French and Waas (1985). Based on the proportion of positive and negative nominations received, sociometric groups were identified as follows: *popular* children were those who received a high proportion of positive nominations ($SD = .5$ above mean) and a low proportion of negative nominations ($SD = .5$ below mean); *neglected* children were those who received a low proportion ($SD = .5$ below mean) of positive and negative nominations. *Rejected* children were defined by a high proportion of negative nominations and a low proportion of positive nominations. Children in the *controversial* category were those who received a high proportion of both positive and negative nominations. *Average* status children were those who were only moderately well liked and not actively disliked (this was a residual category

defined by exclusion of subjects meeting criteria for popular, neglected, rejected, or controversial status). Because neglected children constitute a relatively underinvestigated group, they were selected as the focus of this investigation. Popular children were selected to serve as peer partners. Average children served to provide a normative comparison for social interaction rate. Controversial and rejected children were excluded because we believed that they constituted neither appropriate models for neglected children in the peer-pairing intervention nor an appropriate normative comparison in regard to social interaction rate. Limited resources prohibited inclusion of popular–rejected pairings in this initial study.

Subject selection. The first sociometric screening identified 24 peer-neglected children (12 boys and and 12 girls) for whom consent was obtained. Subsequently, 24 popular and 24 average children were selected and matched for sex to the neglected subjects. Children in the popular group served as partners for the neglected subjects in the peer-pairing treatment. The sociometrically average children served merely as a comparison group and did not take part in the peer-pairing intervention.

Group assignment. Of the 15 total first- and second-grade classrooms, 6 contained one identified neglected child each, and 9 contained two neglected children each (for whom consent was obtained). Because neglected children were to be paired with popular peers from their own classroom, assignment to the treatment or control group required consideration of classroom membership. To assign the identified children to treatment or control conditions, random selection was performed until half the classroom pairs had been assigned to the peer-pairing intervention. Subject pairs in the remaining classrooms were assigned to a no-treatment control group. Racial composition of the treatment group was matched to that of the control group and consisted of 6 Caucasian pairs, 4 African-American pairs, and 2 African-American/other pairs.

Playground observations. Behavioral observations of social interaction during recess were conducted for the 72 subjects (24 neglected, 24 popular, and 24 average subjects) by undergraduate research assistants who had been trained by the principal investigator and used to interrater reliability criterion of .85. Observers were blind to subject classification. Observations consisted of 10-sec intervals, with the occurrence of positive social interaction, negative social interaction, and solitary play coded within each interval. Each subject was observed on nine occasions (three pretreatment, three posttreatment, and three follow-up) for a total of 10 min per occasion. Recess periods were 15 min in length, including time allowed to enter and leave the playground. Thus, the observation period covered the majority of time available for free play. The three observation sessions were conducted across a 5-day span within each period (pretreatment, posttreatment, and follow-up). Results were averaged across sessions (by period) to provide mean interaction rates for each observational category for each child. Reliability checks were performed between each research assistant and the principal investigator. Interrater agreement averaged across the three periods was 96.31% (17% of total sessions assessed interval by interval).

Intervention. Peer-pairing sessions were conducted during the subjects' regular recess period. Each neglected child in the treatment group was paired with a popular child from his or her own classroom. Pairs were matched for sex. During the sessions, subject pairs engaged in a series of joint-task activities requiring interaction (e.g., card or board games). Sessions were held in a separate research area (empty classroom), other than the subjects' own classroom. Subjects were told that the researcher was "interested in how children play together." Notably, no children refused to participate or even questioned the researchers further following this vague statement of purpose. Teachers were provided with the same statement. At the beginning of each 15-min session, the neglected child and his or her peer partner were presented with one of a variety of activities involving joint interaction. A typical example would be the presentation of an Etch-a-Sketch and several plastic overlays depicting various mazes. The pair was told that they must work together to negotiate the maze, with one child controlling the horizontal knob and the other controlling the vertical knob. Line movement necessary to negotiate the maze required participation of both children. After presenting the task, the monitors (the graduate student assistant and the principal investigator) sat in a corner of the room and provided only minimal instruction and intervention as necessary (e.g., provided materials). Each peer pair participated in twelve 15-min play sessions over a 4-week period. Minor disputes among children arose over play materials on only a few occasions, and these disputes included the same two peer pairs. No negative reactions to subject involvement were noted by researchers or reported by classroom teachers.

To assess change over time as a function of treatment, sociometric nominations and behavioral observations were obtained at completion of the treatment phase and at a 1-month follow-up.

Results

Based on the initial screening, the percentage of subjects who met criteria for each of the sociometric status groups was as follows: 10.3% neglected, 12.6%

popular, 5.9% controversial, 13.3% rejected, and 57.9% average. The percentage of subjects falling within each classification is consistent with those reported by Terry and Coie (1991). The stability of positive nominations across the 15-week period from Time 1 (baseline) to Time 3 (follow-up) was moderately high (.72, $p < .001$). Negative nominations were somewhat less stable (.45, $p < .001$).

Of interest is the finding that consent was less likely to be provided for peer-rejected children (30.8%) than for the remaining social status groups (69.4% popular, 65% neglected, 61.6% average, and 65.2% controversial). Such differential consent rates may question the integrity of previous investigations of peer-rejected children (e.g., rejected children who do not provide consent may be less defiant and thus not representative of the group as a whole). Although the consent rate for neglected children was consonant with the consent rates for popular and average children, the possibility of sample bias must be noted. It may be the case that neglected children for whom consent was provided represent a unique subset of children who may have been more likely to respond to the intervention than children for whom consent was not provided.

Descriptive statistics for the treatment and control groups at baseline, following the peer-pairing intervention (PostTx), and the 1-month follow-up (FU) are presented in Tables 1 through 3. Dependent measures included positive nominations (PosNoms), negative nominations (NegNoms), and observations of positive social interaction (PosInt), negative social interaction (NegInt), and solitary play (SolPlay).

Because the classification procedure utilizes extreme scores (leading to restricted variance of nomination scores for the neglected and popular groups), nonparametric statistical procedures were used in subsequent analyses.

Omnibus Tests at Baseline

To assess for overall baseline differences (ignoring treatment vs. control status) among the neglected, popular, and average groups on the dependent variables, the Kruskal–Wallis (K–W) test was performed as an omnibus test. As expected, a significant group effect was found for the sociometric measures: PosNoms, $\chi^2(2, N = 72) = 57.13$; and NegNoms, $\chi^2(2, N = 72) = 23.88$, $ps < .001$ (FU comparisons are discussed later). In addition, a significant group effect was found for the observation measures: PosInts, $\chi^2(2, N = 72) = 25.07$, $p < .001$; and SolPlay, $\chi^2(2, N = 72) = 21.16$, $p < .001$. No statistically significant group differences were noted for NegInts.

As a follow-up to the omnibus tests, specific between-group differences (again ignoring treatment or control status) at baseline were assessed with Mann–Whitney U tests. Compared to popular subjects, neglected subjects received fewer PosNoms ($U = 0$, $p < .001$) and were observed to engage in fewer PosInts ($U = 86.5$, $p < .001$) and more SolPlay ($U = 122.5$, $p < .001$). Compared to average subjects, neglected subjects received fewer PosNoms ($U = 9.0$, $p < .001$), fewer NegNoms ($U = 89.5$, $p < .001$), and were observed to engage in fewer PosInts ($U = 77.0$, $p < .001$) and more SolPlay ($U = 83.5$, $p < .001$). Popular subjects received more PosNoms ($U = 58.0$, $p < .001$) and fewer NegNoms ($U = 81.0$, $p < .001$) than did average sub-

Table 1. *Descriptive Statistics for Neglected Subjects*

	Preintervention		Postintervention		Follow-Up	
	M	*SD*	*M*	*SD*	*M*	*SD*
PosNoms						
Treatment	0.03	0.04	0.20	0.14	0.16	0.15
Control	0.05	0.05	0.08	0.13	0.11	0.15
NegNoms						
Treatment	0.03	0.05	0.13	0.18	0.16	0.14
Control	0.06	0.05	0.14	0.14	0.17	0.14
PosInt						
Treatment	52.86	15.14	77.00	18.16	70.14	19.52
Control	61.31	21.82	63.39	13.98	56.89	17.37
NegInt						
Treatment	2.36	5.31	0.75	1.98	0.14	1.68
Control	3.58	6.24	0.28	0.96	1.19	2.04
SolPlay						
Treatment	45.06	16.49	19.56	16.16	29.72	20.89
Control	33.22	21.99	36.63	14.25	41.94	16.45

Note: PosNoms = positive nominations; NegNoms = negative nominations; PosInt = observations of positive social interaction; NegInt = observations of negative social interaction; SolPlay = observations of solitary play. Interaction data reported as percentages of time subject was observed in PosInt, NegInt, or SolPlay. $n = 12$/group.

Table 2. *Descriptive Statistics for Popular Subjects*

	Preintervention		Postintervention		Follow-Up	
	M	*SD*	*M*	*SD*	*M*	*SD*
PosNoms						
Treatment	0.50	0.14	0.47	0.24	0.43	0.21
Control	0.45	0.13	0.42	0.22	0.36	0.24
NegNoms						
Treatment	0.03	0.05	0.11	0.17	0.15	0.16
Control	0.03	0.05	0.15	0.11	0.16	0.15
PosInt						
Treatment	78.00	14.74	88.83	12.93	87.33	13.05
Control	81.97	7.56	89.03	10.46	82.76	12.79
NegInt						
Treatment	0.53	1.02	0.25	0.62	0.36	1.25
Control	1.47	2.09	0.08	0.29	0.79	2.04
SolPlay						
Treatment	21.44	16.53	10.08	12.10	12.33	13.00
Control	16.53	8.00	10.89	10.43	16.46	12.75

Note: See Table 1 for definitions of abbreviations. n = 12/group.

Table 3. *Descriptive Statistics for Average Subjects*

	Preintervention		Postintervention		Follow-Up	
	M	*SD*	*M*	*SD*	*M*	*SD*
PosNoms	0.26	0.11	0.24	0.18	0.23	0.17
NegNoms	0.20	0.15	0.18	0.15	0.17	0.14
PosInt	84.04	14.37	81.32	14.91	70.88	13.45
NegInt	1.92	2.68	1.15	3.95	1.88	4.95
SolPlay	14.04	13.27	17.46	13.43	27.24	14.26

Note: See Table 1 for definitions of abbreviations. n = 24/group.

jects, but the two groups did not differ significantly on rate of PosInts or SolPlay.

Treatment and Control Group Differences

The preceding analyses indicate significant group differences on the sociometric and observation measures at baseline, ignoring experimental condition (treatment or control). To assess for treatment and control group differences on baseline measures following random assignment, Mann–Whitney U tests on the dependent variables were computed separately for the neglected and popular groups. No significant between-group differences were observed. Therefore, random assignment of the children to the treatment and control conditions resulted in no significant pretreatment differences on any of the dependent measures.

Treatment Effects

The primary set of analyses focus on treatment and control group differences in response to treatment. To assess the effect of the peer-pairing intervention on sociometric status, a 2 × 2 chi-square homogeneity of proportion analysis was conducted. The frequency of control group versus treatment group subjects whose classification demonstrated improvement to average or popular status at PostTx (as opposed to maintaining neglected status) formed the basis of the analysis. Therefore, the 2 × 2 contingency table represented the variables Condition (treatment or control) × Improvement Status (yes or no). Results revealed a significantly greater proportion of treatment subjects demonstrating improvement in sociometric status than control subjects, $\chi^2(1, N = 24) = 8.03, p < .01$. Seventy-five percent of neglected subjects in the treatment group demonstrated improvement in sociometric status, as opposed to 17% of neglected subjects in the control group. A similar 2 × 2 chi-square homogeneity of proportion analysis was conducted for sociometric status at the 1-month follow-up. A significantly greater proportion was found again in favor of the treatment group (75% versus 17%), $\chi^2(1, N = 24) = 8.03, p < .01$.

The preceding analyses demonstrated improvement in sociometric standing for neglected subjects in the treatment group. To assess further the effects of the peer-pairing intervention, chi-square analyses were

performed on the observation and social interaction data. Frequency of treatment versus control group subjects whose PosInts score (M = 3 sessions) fell above or below the mean of average status subjects formed the basis of the analysis. The social interaction rates of average status subjects were used for comparison in an attempt to provide more socially valid information than would be obtained by merely demonstrating improvements above the peer-neglected subjects' own baseline rates. A significant difference was found in favor of subjects in the treatment group, $\chi^2(1, N = 24) = 9.0$, $p < .01$. Following intervention, 50% of subjects in the treatment group and 0% of subjects in the control group were found to have PosInts above the mean for average status subjects. At the 1-month FU, 50% of subjects in the treatment group and 17% of control group subjects had PosInts above the mean for average status subjects, $\chi^2(1, N = 24) = 4.0$, $p < .05$. Conversely, 50% of subjects in the treatment group and 0% of subjects in the control group had SolPlay scores below those for average status subjects, $\chi^2(1, N = 24) = 9.0$, $p < .01$. At FU, 42% of treatment group subjects and 17% of control subjects had SolPlay scores below the mean for average status subjects, $\chi^2(1, N = 24) = 3.12$, $p < .05$. Individual gains in percentage of time spent in positive interaction for neglected subjects following treatment ranged from 13% to 45% over baseline levels (average gain = 27.9%). No detrimental effects were noted for popular peers as a result of participation in the peer-pairing intervention. In fact, popular subjects demonstrated an average individual positive interaction gain of 11.8%.

Discussion

The implementation of a peer-pairing intervention for sociometrically neglected children resulted in dramatic improvements in social status and social interaction. Moreover, improvements remained stable through the 1-month FU assessment. Most important, treatment effects were discernible at both the ideographic (i.e., compared to own baseline) and nomothetic (i.e., normative comparison) levels. More than four times as many treatment group children evidenced increases in social status (i.e., movement to average or popular) as compared with controls at posttest and 1-month FU.

In addition to improvements in peer-nominated social status, children in the peer-pairing condition demonstrated increased prosocial interaction. A social validation approach to data analysis was utilized. That is, not only was the increase in the PosInts rate above the subjects' own baseline levels, but the increase was above levels for average status subjects. Results show five times more treatment than control children demonstrated shifts to the average or above-average range of interaction at posttreatment. At FU, nearly three times more treatment condition children showed average or above-average interaction rates.

Though no process measures were obtained, the children appeared to enjoy participation in the peer-pairing sessions. Peer-neglected children in the treatment group reported such events as being invited to sleepover parties and to their popular peer partner's birthday party. Following intervention, we noticed that target children played not only with their popular peer partner during recess but with their popular peer's friends as well.

Confronted with these findings, an obvious question is, "How were such improvements possible with such a 'simple' intervention?" Although our study was not developed to address treatment process or mechanisms of action, several possible mechanisms can be proposed. Before speculating on mechanisms, note that the task of a process model would be to explain at least two different outcomes: (a) behavioral changes on the part of the subject, such as increased social interaction; and (b) changes in social acceptance by peers. Taking these two outcome domains into consideration, four models relating to mechanism can be proposed: (a) anxiety, (b) social skills, (c) self-efficacy, and (d) social interactional.

In the anxiety model, the crucial mechanism of action mediating neglected children's improvement is proposed to be the habituation or extinction of anxiety responses to social stimuli (see Barrios & O'Dell, 1989). Such a model seems logical because some evidence suggests that peer-neglected or socially isolated children report more anxiety and dysphoria (e.g., Strauss, Forehand, Smith, & Frame, 1986). Therefore, peer-pairing sessions could function as informal exposure sessions. Although this model is appealing, the anxiety level of the neglected children in our study was not measured, and sessions were much shorter than those in traditional exposure sessions. Also, it is difficult to explain how decreased anxiety levels could so quickly translate into increased social acceptance by peers. Nevertheless, future studies should obtain self-reported state and trait anxiety levels.

In the social skills model (e.g., Keller & Carlson, 1974), behavioral changes are speculated to follow on the modeling of appropriate social behavior by peers, as well as the social reinforcement provided by peers (and possibly inadvertently by the experimenter). In the peer-pairing intervention, such modeling and social reinforcement effects would be noncontrived or naturally occurring. More formalized social skills interventions have been moderately successful in improving social skills (see Van-Hasselt, Hersen, Whitehill, & Bellack, 1979). Future studies should conduct pretreatment and posttreatment social skills assessments even when they are not directly targeted for intervention. However, improvements in the social skills of neglected children

do not explain readily the rapid changes in social acceptance found here.

In the self-efficacy model (Bandura, 1977), the crucial mechanism regulating improvement in behavioral functioning is the modification of perceptions of self-efficacy. Changes in self-efficacy can result from verbal instruction, behavioral enactment, and success experiences (Bandura, 1977). Thus, peer-pairing treatments could alter the behavior of neglected children through changes in self-perceptions following efficacy experiences with peers. Future studies may benefit from the inclusion of self-efficacy and outcome-expectancy measures. However, improvements in neglected children's self-efficacy do not provide a parsimonious explanation for changes in peer perceptions.

A social interactional model (e.g., Cairns, 1979) proposes that changes in behavior follow from changes in social reinforcement contingencies. Most important, modeling influences are assumed, and the bidirectional nature of social behavior is emphasized, with reciprocal influences constituting the norm, not the exception. Peer-pairing treatment, therefore, would be conceptualized as the provision and structuring of a facilitative environment conducive to reinforcing mutually social interactional influences. Improvements in observed behavior among neglected children could be explained by reinforcement mechanisms operating in the peer-pairing condition. In addition, changes in peer perceptions may derive largely from the altered perceptions and behavior of the peer confederates as a result of social interaction effects. The possibility of reactivity on the part of classmates who witnessed popular and neglected children leaving together for peer-pairing sessions, and ultimately playing together during recess, is seen as an integral part of the social interaction process, rather than a methodological confound. Bidirectional changes within the system are expected and indicative of a successful intervention program. Treatment effects are not intended to be confined to behavioral changes within the target subject.

Essentially, what may have occurred is that children enjoyed playing together during the peer-pairing sessions, which may have increased the likelihood that they played together during their next recess period (children had two recess periods a day). Other classmates may have seen the target child and popular peer playing together, which may have increased the likelihood that they would interact with the target child. This, in turn, may have increased the probability of reciprocal social initiations by target children. Through such a process, target children may become more integrated with their popular peer's social group.

Future studies are needed to explore the process by which peer pairing facilitates change. Our study was designed to explore the potential utility of the procedure in enhancing the social interaction and status of peer-neglected children. As such, the ability to draw conclusions about mechanisms of change is limited. Subsequent studies should include a variety of self-report instruments to obtain measures of such constructs as anxiety and perceived social efficacy. Sequential interaction data should be obtained, both on the playground and during peer-pairing sessions, to illuminate social interactional influences.

The FU period in this study was limited by the conclusion of the school year. Future studies may benefit from the inclusion of longer FU periods to determine the lasting benefit of the peer-pairing intervention. If it is found that the effects of the intervention fade over time, then the potential benefit of "booster" peer-pairing sessions should be explored.

Research is needed to ascertain whether differential treatment strategies must be employed with neglected, as opposed to rejected, children. It may be that a peer-socialization intervention is sufficient to alter the sociometric standing of neglected subjects who tend to be withdrawn, but that a more involved skills-training approach is necessary to alter the behavior of rejected children. Especially useful would be treatment studies taking a components analysis approach to explore the potential additive or interactive effects of various treatment modalities (e.g., social skills training and peer pairing).

The potential benefit of peer pairing with older age groups also requires further study. It is generally accepted that older children have more established social reputations and engrained patterns of social behavior than do their younger counterparts. Peer-pairing may be of limited benefit with middle- or high-school aged children. Older age groups may require the use of more direct skills building approaches.

Peer-pairing procedures may be cost-effective means of enhancing the quality of life for neglected children. A major potential advantage of such an approach is that it does not require training of peer therapists or specification of external reinforcement contingencies. In addition, peer-interaction activities can be structured to represent those that would occur among children in the natural environment, rather than relying on the contrived scenarios often used in basic social skills research. Such programs could be implemented more readily in school settings than could complex social skills-training programs requiring additional skilled personnel. Teachers easily could incorporate peer-paired tasks into their routine curriculum. In an age of limited funding for social programs, the potential utility of peer-pairing approaches demands further investigation.

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