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THE RELATIONSHIP BETWEEN PARENT-RATED BEHAVIOR PROBLEMS AND PEER RELATIONS IN PRESCHOOL CHILDREN

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The relationship between parent-rated behavior problems based on the Preschool Behavior Questionnaire (PBQ) and the peer relations of nonhandicapped and mildly developmentally delayed preschool children was examined in this study. Measures of the peer-related social interactions of 3- and 4-year-old nonhandicapped children and a 4-year-old developmentally delayed group were obtained as children participated in a series of specially designed playgroups. Correlations with scores for the behavior problem dimensions obtained from the PBQ with social interaction and negative relationship peer interaction factors revealed significant relationships only for the nonhandicapped 4-year-old children. Children rated by their mothers as high on the Hostile-Aggressive, Anxiety-Fearful, and Total Behavior Disturbed dimensions were less socially interactive with peers and received higher negative relationship scores than children with lower ratings.

Establishing appropriate and productive relationships with peers during the preschool years constitutes an important developmental task that has significant implications for young children's cognitive and social development (Hartup, 1983). The complexities of the processes that can affect the qualitative and quantitative features of peer relations have now been studied extensively, and a variety of important child and environmental characteristics have been identified (Guralnick, 1986). Among the child characteristics that can influence the ability of children to establish social interactions with their peers is the existence of behavior problems. Although it has been well documented that clinical groups have difficulty establishing appropriate peer relationships in comparison to nonclinical ones (e.g., Guralnick & Weinhouse, 1984; Higgenbotham & Baker, 1981; Howes, 1984), it also appears that, within both nonclinical and clinical samples, the extent to which young children exhibit behavior problems such as anxiety, hostility, or

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hyperactivity correspond in a meaningful pattern to preschool children's peer relations (Campbell & Cluss, 1982; Kohn & Parnes, 1974; Rubin & Clark, 1983).

The Preschool Behavior Questionnaire (PBQ; Behar & Stringfield, 1974), has been the instrument most frequently used to evaluate this correspondence between behavior problems and peer relations. Consisting of a 30-item list of behavior problem statements, the PBQ asks respondents to judge how typically each item represents the behavior of a particular child. Factor analyses from the initial standardization sample yielded three unipolar orthogonal factors labeled Hostile-Aggressive, Anxious-Fearful, and Hyperactive-Distractible. A Total Behavior Disturbed score also is obtained. Substantial interrater and test-retest reliability have been demonstrated for this scale (Behar & Stringfield, 1974).

In the most comprehensive study to date of a nonclinical sample, Rubin and Clark (1983) demonstrated that each of the factors of the PBQ derived from teacher ratings was able to predict features of preschool children's peer relations. These predictions were based on expectations from previous research and a logical analysis of the construct each factor was presumed to represent. Specifically, it was found that children who received higher ratings on the Anxious-Fearful dimension engaged in more nonsocial and nonadaptive play activities, were more involved in interactions with teachers, and received more negative and fewer positive sociometric ratings by their peers than those children who received lower Anxious-Fearful ratings. Children rated higher on the Hostile-Aggressive factor were socially more interactive but had a higher proportion of negative peer exchanges than children rated lower on that dimension. As expected, their classroom peers also rated them more negatively and less positively on the sociometric measure. Finally, more immature forms of social play were displayed by those children who received higher ratings on the Hyperactive-Distractible dimension compared to those with lower scores. These children also were perceived more negatively by their peers. Despite the fact that this outcome pattern corresponded to the authors' predictions, it is important to note that even the significant correlations were relatively modest ($M = .24$).

Similar relationships have been observed for teacher ratings of clinical samples. Campbell and Cluss (1982) found significant positive correlations between the Hostile-Aggressive and Hyperactive-Distractible dimensions of the PBQ and aggressive and noncompliant behaviors observed in preschool classrooms for a group of parent-identified hyperactive children. Guralnick and Groom

(1985) found that, for mildly and moderately developmentally delayed children, the degree to which children failed to engage in play was correlated with higher teacher ratings on the Hostile-Aggressive and Hyperactive-Distractible dimensions as well as with the Total Behavior Disturbed score. In addition, delayed children rated as more Anxious-Fearful engaged in social interactions with their peers to a lesser extent than those receiving lower scores. These relationships were independent of the intellectual levels of the children in the study.

Despite the limited number of studies on this issue, the consistency of the findings suggests that young children who exhibit a range of behavior problems as reported by teachers on the PBQ, whether from clinical or nonclinical samples, are less likely to be able to establish successful and appropriate relationships with their peers. Nevertheless, the generality of these findings can be questioned since teacher ratings of behavior problems were based on observations of children directly in the preschool setting. It is possible that, since observations of children's peer relations probably constituted an important source of information for PBQ ratings by the teachers, the obtained correspondence between behavior problems and peer interactions may have been enhanced by this common observational base. In fact, a number of the PBQ items are related directly to child-child social interactions and peer-related interpersonal skills.

A more rigorous test of the relationship between behavior problems as assessed by the PBQ and peer relations could be obtained if behavior problems were rated by parents rather than by teachers. Although ratings by parents may be based on observations of their child in the preschool classroom to some extent, the primary sources of information are more likely to be observations in the home and in neighborhood settings. Moreover, possible relationships between parent-rated behavior problems and peer relations addresses more clearly the issue of the cross-situational consistency of children's behavior problems (see Stevenson-Hinde, Hinde, & Simpson, 1986). If behavior problems are present as general characteristics of individual children, their influence should be reflected in interaction patterns observed in a variety of environments. That is, these cross-situational relationships should still be observable despite the fact that the features and demands of specific settings are certain to modify the expression of any behavior problems. This issue of the cross-situational generality of children's characteristics has been evaluated in a similar way for the relationship between parent-rated temperament of children and their peer relationships

(Billman & McDevitt, 1980; Guralnick & Groom, in press; Hinde, Stevenson-Hinde, & Tamplin, 1985).

Accordingly, the purpose of the present investigation is to examine the relationship between parent-rated behavior problems on the PBQ and children's peer relations. This correspondence will be evaluated separately for both 3- and 4-year-old children drawn from nonclinical populations to determine if this relationship varies as a function of chronological age. In addition to these two nonclinical samples, a group of mildly developmentally delayed children also will be included in the study. Although the PBQ did not include children with significant developmental delays in the standardization sample, it has nevertheless been found to be appropriate for a more mildly affected population (see Guralnick & Groom, 1985). It is recognized as well that the PBQ was not originally designed for parents, and there is conflicting evidence as to the appropriateness of using raters other than teachers (Behar, 1977; Campbell & Cluss, 1982; Gray, Clancy, & King, 1981). Nevertheless, the PBQ was selected because few well-researched parent rating scales designed to assess the behavior problems of young children are available, because the PBQ seems appropriate for parents based on an analysis of its content, and the fact that the PBQ has been the primary instrument used in existing studies that have examined correlations with peer relationships.

Method

Overview

As part of a larger study (Guralnick & Groom, 1987), previously unacquainted groups of nonhandicapped and mildly developmentally delayed preschool-age boys were brought together to form a series of mainstreamed playgroups. Each playgroup met daily for a 4-week period (20 sessions). Eight such playgroups were formed, each composed of three normally developing 3-year-olds, three normally developing 4-year-olds, and two mildly developmentally delayed 4-year-olds. The delayed children were selected to achieve a chronological age match with the normally developing 4-year-olds and a developmental age match with the normally developing 3-year-olds. The Preschool Behavior Questionnaire (PBQ; Behar & Stringfield, 1974) was completed by mothers during the time their child participated in the playgroup. During the 4-week period, the social and play interactions of each child were videotaped from an adjacent observation room during a designated free play period. At the conclusion of each playgroup, peer sociometric ratings were completed by each of the eight children.

Subjects

Recruitment of nonclinical samples of normally developing children was accomplished through advertisements in local newspapers and newsletters and through contact with administrators and teachers of public and private nursery schools. Delayed children were recruited from the rosters of community-based service programs. Specific chronological age (CA) and intelligence test (IQ) score ranges were established as part of the inclusion criteria for each of the three groups of children constituting the playgroups. Children were screened through individual administrations of the Stanford-Binet Intelligence Scale (Terman & Merrill, 1973). For the older group of nonhandicapped children, the CA range was established at 48-60 months and the I.Q. range from 90-125. For the younger nonhandicapped group, established ranges were 30-42 months for CA and 90-125 for I.Q. For children with mild delays, the CA range also was set at 48-60 months but with I.Q.s ranging between 55-80. The categorization of children as mildly delayed was generally in accord with the classification scheme of the American Association on Mental Deficiency (Grossman, 1983), and conformed to community practice.[1] Other criteria for participation were that children had no prior experience in mainstreamed programs, had no handicapped siblings, and exhibited no major sensory, motor, or behavioral impairments. Children meeting the inclusion and exclusion criteria were assigned to playgroups on a random basis. Additional details of the recruitment procedures, other criteria for participation, and assignments to playgroups can be found in Guralnick & Groom (1987).

Table 1 presents the characteristics of the sample for each group summarized across the eight playgroups. Although each of the playgroups was not identical, the established ranges as part of the inclusion criteria and the sampling procedure minimized across-playgroup variability. Within each of the three groups, mean differences across playgroups averaged less than 2 months for both CA and MA,[2] and IQ varied by less than an average of 6 points. Socioeconomic status did not differ across groups ($p>.05$).

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[1]One child did exceed the IQ cut-off of 80 but was included due to the existence of a syndrome (Williams) consistent with the developmental pattern of the other children in the sample.

[2]Corrected MAs, designed to restore a mental age–chronological age equivalence for the average child on the revised Stanford-Binet Intelligence Scale (see Shorr, McClelland, & Robinson, 1977) yielded the following for the nonhandicapped older, nonhandicapped younger, and mildly delayed groups, respectively: 59.88 months (range 48-68); 38.92 months (range 32-52), and 37.31 months (range 31-47). Corrected MAs were used for all analyses.

Table 1
Characteristics of the Sample for Each Group Across Playgroups

Measure	Group		
	Nonhandicapped Older ($N=24$)	Nonhandicapped Younger ($N=24$)	Mildly Delayed ($N=16$)
Chronological Age	53.75 (3.31)	36.54 (2.72)	52.25 (3.28)
Mental Age	65.50 (5.08)	44.83 (5.31)	43.25 (3.61)
Intelligence Quotient[1]	110.83 (8.25)	106.50 (8.62)	71.56 (6.42)
Socioeconomic Status[2]	49.15 (14.88)	47.25 (10.12)	39.98 (16.37)

Note: Standard deviations are in parentheses.
[1]Based on individual administrations of the Stanford-Binet Intelligence scale (Terman & Merrill, 1973)
[2]Based on the Seigel Prestige Scale (Hauser & Featherman, 1977)

Playgroup Setting and Procedure

Each playgroup operated 2 hours per day, 5 days per week for a minimum of 4 weeks (20 sessions) either in the morning or afternoon. Across the 4-week period, each child was videotaped for a total of 100 minutes during regularly scheduled free play activities. Playgroups were supervised by a teacher and a graduate assistant in a spacious university-based laboratory school classroom designed specifically for preschool-age children. Details of the classroom environment and recording procedures can be found in Guralnick and Groom (1987).

Peer Measures

Videotaped recordings were analyzed using two separate scales. The first focused on more global measures of social participation originally developed by Parten (1932). For this scale, coders recorded the quality of social participation for 11 mutually exclusive and exhaustive categories during each 10-second interval using a slightly modified version of the scale developed by Rubin and his colleagues (Rubin, Maioni, & Hornung, 1976; Rubin, Watson, & Jambor, 1978). Each videotape was reviewed a second time in order to examine specific peer-related social behaviors. For this purpose, an individual social behavior scale was developed based on the work of White and Watts (1973) and adapted in a manner similar to Doyle, Connolly, and Rivest (1980) and to Guralnick and Groom (1985, 1987). Specifically, observers recorded continuously the occurrence

of individual social behaviors organized within 14 major categories. Eleven categories were designed to record the social interactions of the focal child as directed to peers: (a) gains the attention of a peer, (b) uses peer as a resource, (c) leads peer in activities—positive and neutral, (d) leads peer in activities—negative, (e) imitates a peer, (f) expresses affection to peer, (g) expresses hostility to peer, (h) competes with peer for adult's attention, (i) competes for equipment, (j) shows pride in product or attribute to peer, and (k) follows peer's activity without specific directions to do so. Two of the three remaining categories focused on the social behaviors of the focal child in response to directed activities of a peer: (a) follows the lead of peer in response to verbal or nonverbal directions, and (b) refuses to follow or ignores peer's directions or requests. The final category was one in which the focal child served as a model for a peer. Finally, at the end of the playgroup each child was individually presented with color photographs of each playgroup participant to obtain peer sociometric measures following the approach established by Asher, Singleton, Tinsley, and Hymel (1979). Detailed definitions and rationales for these measures as well as coding protocols can be found in Guralnick and Groom (1987).

Preschool Behavior Questionnaire

Mothers of children participating in each of the playgroups were asked to complete the PBQ shortly after entering the program. Each of the 30 statements on the PBQ are posed in the negative (e.g., "Is disobedient," "Cries easily," "Destroys own or others belongings"). Mothers were asked to judge how typical each statement is of their child on a 3-point scale. As noted, the PBQ generates scores on three dimensions: Hostile-Aggressive, Anxious-Fearful, and Hyperactive-Distractible. A Total Behavior Disturbed score also is obtained.

Reliability

Prior to coding, three raters were trained for six to eight weeks on the two peer interaction observation scales. Videotapes of pilot playgroups only were used for training and final pre-study reliability assessments. Following the training program, all raters achieved the minimum average criterion necessary for participation of 80% interobserver agreement for each of the major categories for five consecutive 10-minute segments for each of the two scales. Reliability also was obtained during the course of the study for 25% of the playgroup tapes selected on a random basis.

For the social participation scale, reliability was based on percent agreement obtained across each of the 10-second observation

intervals (number of agreements divided by the total number of observations and transformed to a percentage). Cohen's (1960) Kappa also was calculated. For pre-study reliability, raters agreed on a mean of 90% (range 79-99%) of the intervals (Kappa = .88) for the 11 categories of the social participation scale. During the course of the study, average interobserver agreement continued to be high in all instances for each of the eight groups, $M = 91\%$ (range 88-95%), Kappa = .90 (range .86-.93).

For the individual social behavior scale, raters were considered to be in agreement if codes matched exactly within a specified 30-second interval. All individual social behavior categories were included in addition to a "no-interaction" event which completed the possible options within each interval. Percent agreement was obtained for each 10-minute segment by taking the total number of agreements, dividing by the total number of observed individual social interactions, and transforming to a percentage. One unit was added if both observers agreed that no interaction had occurred during an entire 30-second interval. Calculated in this manner, the average pre-study agreement for this scale was 86% (range 77-100%), Kappa = .85. Interobserver agreement for observations carried out during the course of the study (25% of the total) remained high, $M = 90\%$ (range 84-93%), Kappa = .87 (range .81-.90).

Results

To reduce the large number of outcome measures from the social participation, individual social behavior, and peer sociometric rating scales, eight key measures were selected for entry into a factor analysis (see Guralnick & Groom, in press, for details). Based on the sample of all 64 subjects, a principal components analysis using the varimax rotation method was carried out (SAS Institute, 1982). The rotated solution yielded two orthogonal factors with eigen values greater than 1.0. These two factors accounted for 79.9% of the variance.

Factor 1 consisted of loadings on a Social Interaction dimension. Positive loadings were obtained for the following measures: (a) social play, (b) total individual social behaviors, and (c) parallel play. Negative loadings for that factor were obtained for measures of unoccupied behavior and playing alone. The second factor, a Negative Relationship dimension, loaded highest on the number of negative sociometric nominations and the percentage of negative interactions. Positive sociometric ratings loaded negatively on this factor. Factor scores were obtained by multiplying the score for each child on each of the eight measures by the factor loading and

summing. Accordingly, a high factor score on the first factor reflects a socially interactive child, whereas a high factor score on the second factor reflects children who interact negatively and are perceived by their peers as being disliked. Scores for each factor were then entered into the correlational analyses with each of the four scores obtained from ratings by mothers on the PBQ.

As indicated in Table 2, significant correlations between ratings by mothers on the PBQ and the peer interaction factors were obtained only for the nonhandicapped 4-year-olds. Children rated higher on the Hostile-Aggressive, Anxious-Fearful, and Total Behavior Disturbed scales were less socially interactive with their peers. In addition, these children interacted more negatively and were not as well liked by their peers in comparison to children receiving lower ratings. Multiple regression analyses (maximum R^2) carried out for each factor revealed that the three main dimensions of the PBQ accounted for 31% of the variance for Factor 1, and 34% of the variance for Factor 2. All correlations were independent of chronological age, mental age, and IQ ($p>.05$). Separate analyses of variance carried out on the mean scores for each of the four PBQ dimensions did not reveal any significant effects across the three groups ($p>.05$).

Table 2

Correlations Between Ratings by Mothers on the Preschool Behavior Questionnaire and Each of the Two Peer Interaction Factor Scores

	Nonhandicapped Older		Nonhandicapped Younger		Mildly Delayed	
Behavior Problem Dimensions	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
Hostile-Aggressive	−.48*	.52**	.04	−.12	−.16	.28
Anxious-Fearful	−.46**	.52**	.23	−.23	−.09	.26
Hyperactive-Distractible	−.17	.23	−.12	.04	−.40	.35
Total Behavior Disturbed	−.47*	.53**	.11	−.18	−.18	.38

*$p<.05$; **$p<.01$

Discussion

The results of the present study provide additional evidence indicating that the behavior problem dimensions assessed on the Preschool Behavior Questionnaire are associated with children's peer relations, but further suggest that this relationship may be limited to children who are at least four years old. Ratings on the PBQ by mothers of 4-year-old nonhandicapped children for the

Hostile-Aggressive, Anxious-Fearful, and Total Behavior Disturbed dimensions were related clearly to both positive and negative features of their child's peer-related social interactions occurring in playgroups. These findings are similar to those obtained by Rubin and Clark (1983) in which teachers rated 123 4-year-old children. In fact, the correlations between PBQ ratings were much higher in the present study than in the Rubin and Clark (1983) investigation (Rubin & Clark, $M = .24$; present study, $M = .42$). It is interesting to note that the measures of peer-related social interaction were very similar in both studies, although the use of composite measures in the form of factor scores in the present investigation may have accounted, in part, for the higher correlations that were obtained.

Accordingly, the overall finding that ratings of behavior problems, presumably based on observations of children primarily in the home and in neighborhood settings, corresponded in a predictable pattern to relationships with peers in a playgroup setting for the 4-year-old nonhandicapped children argues for the cross-situational generality of ratings of young children's behavior problems. Given the correlational nature of these data, a number of explanations for these relationships are possible. However, it appears reasonable to suggest that perhaps the most logical alternative is that even relatively minor behavior problems found in a nonclinical sample of young children are capable of disrupting the processes associated with appropriate peer interactions and can lead to negative relationships with other children. One major concern, however, relates to the fact that it was not possible to evaluate the discriminant validity of the Hostile-Aggressive and Anxiety-Fearful dimensions in terms of their pattern of peer interactions since these dimensions were highly correlated with one another ($r = .76$, $p < .001$). It may well be the case that these two behavior problem dimensions overlap extensively for individual children. It is also possible, however, that parents tend to perceive children with any behavior problem in overall negative terms (all three dimensions were significantly intercorrelated with one another), thereby reducing the usefulness of the separate scales of the PBQ.

It is also important to note that these findings did not address the issue of the comparability of parent and teacher ratings on the PBQ. Unfortunately, comparisons of the factor structure for ratings by mothers in this study with those of the teacher-rated standardization sample (Behar & Stringfield, 1974) could not be carried out since the sample size was not sufficient for this type of an analysis. Moreover, the mean scores for our nonhandicapped sample were similar to the parents' ratings obtained in the Gray et al. (1981)

study, i.e., much higher than that of the standardization sample (Behar & Stringfield, 1974). Accordingly, although the ability of the overall scores on the PBQ to discriminate between deviant and nondeviant samples through parent ratings appears to be uncertain, the relationships of these scores within samples to other behavioral characteristics such as peer relations do appear to be meaningful.

The fact that these relationships were not obtained for the nonhandicapped 3-year-olds must be considered. It is possible that mothers of the 4-year-olds, having had more experience with their children than parents of the younger children, and perhaps realizing the persistent nature of the behaviors they have been observing, were more willing to identify the behaviors described on the PBQ as being typical of their child. Arguing against this explanation is the fact that the mean ratings obtained for each of the PBQ measures for the two nonhandicapped groups were highly similar, although there was less variability in the ratings for the younger children. Alternatively, it is possible that the less differentiated peer-related skills of the younger children prevented observers in the playgroups from distinguishing reliably among variations in child-child social interactions, thereby reducing any potential correlations to relationships with peers.

The absence of significant correlations between behavior problems and peer interactions for mildly delayed children is more of a concern since previous research with delayed children has indicated that behavior problems, as assessed by teacher ratings on the PBQ, do in fact correspond to difficulties in peer relationship (Guralnick & Groom, 1985). However, it is important to note that those mildly delayed children who were considered to have substantial behavior problems were excluded from the present study. This procedure appeared to be successful, since despite a tendency to be rated higher by mothers on all dimensions of the PBQ, no significant differences on the PBQ across the three groups were obtained. In addition, this more homogeneous sample of mildly delayed children was similar in developmental level to the nonhandicapped 3-year-olds and had even less well-developed peer interaction skills. Accordingly, the absence of any observed relationship between behavior problems and peer relations may have occurred for reasons similar to those described for the nonhandicapped 3-year-olds. Future research utilizing larger samples of developmentally delayed children with less restrictive exclusion criteria followed longitudinally should provide a better perspective of this issue.

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