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# Socialization in a Mixed-Age Experimental Program

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Social participation was examined in an experimental multiage program in which preschoolers, kindergartners, and school-agers were enrolled for 2 months. The rates at which each child dispensed and received positive and negative social behaviors from peers in each of the three age groups were recorded during 10 5-min open instruction periods. The data revealed that in the mixed-age setting preschoolers showed a preference for kindergartners over preschoolers or school-agers, whereas the kindergartners and school-agers showed a preference for their own age mates over non-age mates. The data are discussed with respect to the benefits of mixed-age socialization.

Data have been presented in support of mixed-age socialization (e.g., Allen & Feldman, 1976; Furman, Rahe, & Hartup, 1979; Shatz & Gelman, 1973; Suomi & Harlow, 1972). For example, researchers have shown that the presence of younger children may foster the development of caretaking behaviors (Whiting & Whiting, 1975), prosocial behaviors (Furman et al., 1979), communicative skills (Shatz & Gelman, 1973), and intellectual skills among older children (Allen & Feldman, 1976). Similarly, it has been argued that younger children are exposed to a more socially diverse peer group (Konner, 1975) and to older, more competent peers. Thus, younger children are potentially in a position to learn various social and cognitive skills through peer tutoring and through the observation and imitation of more competent behaviors.

A basic concern in the literature on cross-age socialization remains, however, with respect to the nature and degree of social interactions that occur among children in a heterogeneous classroom. Obviously, in order for children to benefit from age-group admixtures, meaningful social interaction is a necessary prerequisite. Several researchers have begun to examine the influence of heterogeneity of age grouping on the social behavior of young children (see Graziano, French, Brownell, & Hartup, 1976; Lougee, Grueneich, & Hartup, 1977). Unfortunately, a majority of these studies have been conducted in laboratory settings where children were observed in dyads or triads, and, thus, they tell us very little about children's interactions in classroom settings. Nonetheless, they do indicate that mixed-age interactions are different from same-age interactions in important ways (see Hartup, 1977).

Goldman (1981) examined the forms of social participation in classrooms with heterogeneous and homogeneous age groups. She found that children in the mixed-age classrooms engaged in more solitary play and spent less time in parallel play and teacher-directed activities than children in same-age classrooms. There were no significant differences between 3- and 4-year-olds in the amount of time spent in the types of social play within mixed-age classrooms. Roopnarine and Johnson (1983) found that parallel play was evidenced more often between cross-age play partners than between chronological age mates. Other studies have shown that social interaction within mixed-age classrooms was more common among same-age rather than among cross-age peers (Parten, 1933).

Given the importance of cross-age socialization and the limited number of studies on cross-age peer interaction in naturalistic settings, we sought to further examine children's

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behaviors toward peers in a mixed-age setting. Unlike previous studies (Goldman, 1981; Parten, 1933; Roopnarine & Johnson, 1983), however, we focused on children's rates of dispensing and receiving positive and negative behaviors rather than the forms of play in which they engaged. Our objective was to provide more descriptive information on the social participation of preschoolers, kindergartners, and school-agers in our experimental classroom. Based on the findings of previous research on ungraded classrooms (Day & Hunt, 1975), it was expected that age would have a major influence on the social participation of the three groups of children in our experimental program.

## Method

### *Subjects*

Twenty-three 3- to 8-year-old children ($M$ = 62 7 months) were participants in this study The children (15 boys and 8 girls) were enrolled in an 8-week, multiage experimental program at the University of Wisconsin preschool laboratory Eight of the children were preschoolers (4 boys and 4 girls; $M$ = 49 37 months), 9 were kindergartners (8 boys and 1 girl; $M$ = 59.88 months), and 6 were school-agers (3 boys and 3 girls; $M$ = 86 months). Because contacts with age mates and non-age mates are quite common outside of regular classrooms (cf Barker & Wright, 1955; Ellis, Rogoff, & Cromer, 1981), the diversity in the chronological ages of the children was deemed a desirable characteristic of our sample. The children were from middle-income backgrounds. Twenty-two children were white, and one was Afro-American.

### *Setting Variables*

The children were enrolled in a multiage program designed to assess the effects of integrating school-aged and preschool-aged children. The program had an educational as well as a recreational focus, which involved both indoor and outdoor activities. The indoor facilities included two classrooms equipped with standard preschool and school-related materials. The enrollment in the program was restricted to 23 children because it was considered an ideal size for effective instruction. The children met from 9:00 a.m. to 1:00 p.m. 4 days a week for 8 weeks during a summer. The teacher–child ratio was 1 to 5. All of the teachers were women. The teachers planned activities that would appeal to children in all three age groups. They primarily assumed a managerial or supervisory role during the observation sessions.

### *Procedure*

*Behavioral observations* The observations did not begin until the children had been together for 4 weeks. Each child was observed indoors for 10 5-min periods during the morning open instruction sessions. Thus, there was a total of 230 observations over the last 4-week period. The order of the observations was randomized such that each child was not observed more than once each day.

The observer used a checklist to record children's activities with peers. Using a time-sampling technique, the observer watched for 20 s and then recorded the absence/presence of interaction for the next 10 s. The observer noted the target child's activity and with whom he or she was engaging in any form of social interaction. For each time-sampling unit of interaction the observer marked whether the target had dispensed to or received positive or negative social behaviors from preschoolers, kindergartners, or schoolagers by an a priori classification of peer behaviors. This classification of behaviors adapted from Furman and Masters (1978) included the following:

1 Positive social interaction—help giving, gift giving, directing, invitations to play, acceptance of directions and gifts, imitating, praising, and teaching.

2 Negative social interaction—Rejection of an activity, taking or damaging property, disapproval, fighting (physical attacks and threats).

Neutral behaviors were not recorded because we could not reliably code them during our initial observations. Play partners were identified by name. Thus, it was possible to code whether a preschooler, kindergartner, or schoolager was dispensing or receiving positive and negative social behaviors. Each child was observed for a total of 100 20-s time-sampling units

Four observers shared responsibility for all observations. Before the start of the study, the second author trained observers by having them record children's social interaction during the open instruction sessions. These initial observations continued until interobserver agreement was at least 80%. Because this took about 3 weeks, it provided the observer with enough time to learn the children's names and for the children to become acquainted with the observer's presence Thereafter, interobserver checks were made on 25% of the observations by having two independent observers simultaneously record the children's behaviors. Interobserver agreement was calculated by dividing the number of agreements by agreements plus disagreements. Nonoccurrences of behaviors during observations were not included as agreements. The mean interobserver agreement for the positive behaviors was 83% and 87% for the negative behaviors

*Data analysis* To assess differences in rates of dispensing and receiving positive and negative behaviors among the three groups of children, a comparison was made between observed percentages of interaction and percentages indicating the rates of dispensing and receiving behaviors if playmate selection had occurred on a random basis To calculate observed percentages, tabulations were made indicating the number of time-sampling units each child dispensed positive and negative behaviors to and received positive and negative behaviors from preschoolers, kindergartners, and school-agers. Based on these scores, observed percentages were calculated as the number of times a child in an age group was observed dispensing and receiving behaviors from a member of a particular age group divided by the total number of behaviors dispensed or received by children in the target group. For example, in assessing the rates at which preschoolers dispensed behaviors to kindergartners, the observed percentage would be the number of times a preschooler was observed dis-

pensing behaviors to a kindergartner divided by the total number of behaviors dispensed by preschoolers. These observed percentages were compared with their corresponding "availability quotients." The availability quotients for each of the target groups represented the percentage of playmates who would have fallen into each age group if selection of playmates would have occurred on a random basis. The availability quotients were derived from baseline figures, which indicated the exact number of playmates of each age and sex who were available to each child during the observations (Goldman, 1981). Observed percentages and their corresponding availability quotients were computed for total rates of dispensing and receiving behaviors for each of the target groups. The observed proportions and their corresponding availability quotients were compared using $Z$ scores (Bakeman, 1978). Following Bakeman (1978) a $Z$ score of at least 2 indicated a meaningful difference between proportions.

## Results

### *Patterns of Interaction in the Mixed-Age Classroom*

*Age preferences.* The rates at which children in each group dispensed to and received positive and negative behaviors from peers are presented in Tables 1 and 2.[1] The analyses of the differences between proportions revealed that preschoolers dispensed to ($Z = 4.85$) and received positive behaviors from kindergartners significantly more than would have been expected by chance ($Z = 2.14$). By contrast, kindergartners dispensed positive behaviors to other kindergartners significantly more than would have been expected by chance ($Z = 4.16$). Finally, school-agers dispensed to ($Z = 4.83$) and received positive behaviors from other school-agers significantly more than would have been expected by chance ($Z = 4.17$).

*Sex preferences.* Given the strong same-age preferences among the kindergarten and school-aged children and the possibility that the findings on age preferences might have been confounded by the unequal number of boys and girls in the classroom, especially for kindergartners, analyses were conducted to determine the salience of same-sex and opposite-sex interactions within the respective age groups. Little segregation on the basis of sex was found among the three groups of children. The preschoolers, kindergartners, or school-agers did not interact with same-sex or opposite-sex peers within or across age groups at a significantly greater than chance level (all $Zs < 1.50$).[2]

Table 1
*Rates of Dispensing Positive and Negative Behaviors for the Three Groups of Children*

| Age category | Positive behaviors | Negative[a] behaviors |
|---|---|---|
| Preschoolers dispensing to preschoolers | 10 | 2 |
| Preschoolers dispensing to kindergartners | 51 | 5 |
| Preschoolers dispensing to schoolagers | 9 | 4 |
| Kindergartners dispensing to preschoolers | 20 | 19 |
| Kindergartners dispensing to kindergartners | 45 | 23 |
| Kindergartners dispensing to schoolagers | 10 | 5 |
| Schoolagers dispensing to preschoolers | 9 | 7 |
| Schoolagers dispensing to kindergartners | 26 | 9 |
| Schoolagers dispensing to schoolagers | 37 | 8 |

*Note* Figures represent the number of time-sampling units over which behavior occurred.

[a] Analyses revealed that the greater number of negative behaviors dispensed by kindergartners to preschoolers and to other kindergartners was primarily due to the preponderance of boys in the kindergarten group.

## Discussion

This study provides data regarding social participation in an experimental mixed-age classroom. The findings indicate that the mixed-age setting produced different patterns

[1] The data were also subjected to a 3 (age of target) × 3 (age of partner) repeated measures multivariate analysis of variance. The analysis revealed the same playmate preferences for the three groups of children as those found in the analysis controlling for baseline rates of interaction.

[2] This research also explored the relationship between three social-cognitive measures and social interaction with peers in the mixed-age setting. The Preschool Interpersonal Problem Solving Task (Shure & Spivak, 1974), Peabody Picture Vocabulary Test (Dunn, 1959), and a referential communication task (Dickson, Hess, Miyake, & Azuma, 1979) were administered to all children in the classroom. Pearson product-moment correlations conducted on the scores obtained on these tasks and social interaction with peers revealed consistently low and nonsignificant relationships between the two sets of measures. The lack of significant relationships between the measures might be attributed to problems associated with the reliability, validity, and task equivalency of the measures used here (Rubin, 1978; Shantz, 1983) and to the small number of children in our sample.

Table 2
*Rates of Receiving Positive and Negative Behaviors for the Three Groups of Children*

| Age category | Positive behaviors | Negative behaviors |
|---|---|---|
| Preschoolers receiving from preschoolers | 4 | 3 |
| Preschoolers receiving from kindergartners | 18 | 15 |
| Preschoolers receiving from schoolagers | 4 | 5 |
| Kindergartners receiving from preschoolers | 7 | 2 |
| Kindergartners receiving from kindergartners | 22 | 6 |
| Kindergartners receiving from schoolagers | 18 | 7 |
| Schoolagers receiving from preschoolers | 2 | 0 |
| Schoolagers receiving from kindergartners | 7 | 2 |
| Schoolagers receiving from schoolagers | 23 | 1 |

*Note* Figures represent the number of time-sampling units over which behavior occurred.

of interactions among the three groups of children. The preschoolers showed a tendency to interact more frequently with kindergartners (68%) than with either preschoolers (15%) or school-agers (17%). However, the kindergartners interacted more frequently with other kindergartners (42%) than with preschoolers (26%) or school-agers (32%). Similarly, the school-agers showed a preference for their own age mates (52%) over preschoolers (14%) or kindergartners (34%) during social encounters. These patterns of social participation are similar to those found by Lougee et al. (1977) on mixed-age and same-age dyadic interaction in preschoolers in semistructured situations. They also found that the social interaction of older children was lower in cross-age dyads than in same-age dyads, whereas the social activity of younger children was more frequent in cross-age dyads.

The data also suggest that within the experimental classroom, age rather than sex was the major factor influencing playmate selection. This finding is consistent with those in other reports on interactions in classrooms with children of wide age ranges (Day & Hunt, 1975; Green, 1933). The finding is incongruent with those of Goldman (1981), who found that sex rather than age was the salient factor determining choice of playmates within groups of 3 and 4-year-olds. Given the discrepancy between Goldman's findings and our own, it might be that age is a major factor influencing playmate selection among children who are more heterogeneous in terms of age, whereas sex might be a major factor influencing choice of playmates among children who are more homogeneous in terms of age (Roopnarine, in press).

In conclusion, the results indicate that age and not sex was a major factor influencing choice of playmates in our experimental classroom. In terms of social participation, it cannot be determined from these data whether sufficient social interaction occurred among the three groups of children in order for them to benefit from our experimental program. However, the data do suggest that a good deal of cross-age interaction occurred. Both older and younger children were in a position to benefit from the mixed-age program. In particular, preschoolers' preference for kindergartners would suggest that the preschoolers had opportunities to observe the behaviors of the more advanced kindergartners, whereas the kindergartners had opportunities to refine their social skills with their younger counterparts. Likewise, the observed patterns of social interaction between kindergartners and schoolagers would also suggest that both groups of children were in a position to benefit from the mixed-age experience. However, before generalizations or definitive conclusions can be drawn, further research is required to examine qualitative as well as quantitative aspects of peer interaction in mixed-age classrooms. This will enable us to understand the processes involved in the transmission of possible salubrious effects of mixed-age socialization.

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