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ABSTRACT

This study examined developmental changes in children's own-race and cross-race sociometric ratings, using a longitudinal design. Subjects were 38 black and 116 white children. They were tested in third grade in 1973 and again in sixth grade in 1976. These children had experienced racially integrated education from kindergarten onward. In addition, to assess the possibility of cohort differences, 52 black and 153 white third-grade children were tested in 1976. A roster-and-rating sociometric technique was used. Children were asked how much they liked to play and work with each of their classmates. The major finding was that the influence of race on sociometric ratings increased over age. However, omega-squared analyses indicated that the effect of race was much smaller than the effect on sex. There was little evidence of cohort differences. (Author)

A DEVELOPMENTAL STUDY OF SOCIOMETRIC CHOICES IN INTEGRATED CLASSROOMS[1]

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Sociometric methodology has been used extensively to study the influence of race on children's peer relations. The first sociometric studies conducted in integrated classrooms generally found that children show preference for playmates of their own race and that children show increasing own-race preference as they grow older (Criswell, 1937, 1939; Moreno, 1934). Results of a more recent study indicate a similar pattern of increasing own-race preference with age for both black and white children, with evidence of almost complete polarization by fourth grade (Bartel, Bartel & Grill, 1973).

Findings of these studies are based on cross-sectional designs. In a short-term longitudinal study, conducted by Shaw (1973), fourth-, fifth-, and sixth-grade children made more own-race choices than would be predicted based on the distribution of black and white children in their classrooms. No significant changes in choice patterns occurred at four month or one year follow-up testing. In a more extensive longitudinal study Gerard, Jackson, and Conolley (1975) studied children in kindergarten through sixth grade over a six year period. The data are presented separately for younger children (K-3), and for older children (4-6). Results indicate that for both groups own-race choices predominated and there was an increase in own-race preference with age.

One noteworthy aspect of the cross-sectional and longitudinal studies to date is that they have typically employed the nomination type of sociometric technique. Children are asked to name a specified number of friends, playmates, or seating companions. A child's score is the number of nominations received from peers. This type of sociometric measure may provide an unduly negative picture of children's cross-race relations. It may be that children generally accept or like their cross-race peers, yet may not select them as best friends or particularly desired playmates.

An alternative sociometric measure is the roster-and-rating method (Oden & Asher, 1977; Roistacher, 1974; Singleton & Asher, 1977). Each child rates each of the other class members on a 5-point scale according to some defined criterion (e.g., how much they like to play with each of their classmates). This type of measure seems to index how well a child is liked or generally accepted rather than how many best friends the child has. Its use may provide a different picture of cross-race relations than is obtained from the nomination measure. It could be that children generally accept children of a different race even though they don't select them as best friends.

In addition to the conceptual distinction between nomination and rating methods, the rating method has the methodological advantage of having somewhat better test-retest reliability (Oden & Asher, 1977). This occurs because a child's score on the rating method is the average of many children's ratings and is relatively unaffected by one or two children shifting their opinions of the child from one time of testing to the next.

The present study assessed children's cross-race relationships using a roster-and-rating sociometric measure. Children were asked how much they like to play with each other and how much they like to work with each other. The study was conducted in part to help the participating school district monitor the progress of integration in their schools. The sixth-grade children were the first cohort group in the district to have experienced integrated education throughout their school careers.

Of particular interest in this study were possible developmental changes or secular changes in children's race preferences. The sociometric measures were administered to third-grade children in 1973 and again to the same children when they were in sixth grade in 1976. In addition, a new group of third-grade children was tested in 1976.

Although the major focus of the present study was on the influence of race on peer relations, the effects of sex were also examined. Previous researchers have reported that the great majority of children's sociometric nominations are same-sex choices (e.g., Bonney, 1954; Gronlund, 1959). Roster-and-rating sociometric measures also indicate considerable influence of sex on children's acceptance of one another (Singleton & Asher, 1977). The relative influence of race and sex on children's peer preferences across age and time was investigated in the present study.

In summary, the present study examined sociometric ratings of children in third- and sixth-grade who had been in integrated classrooms since kindergarten. Two roster-and-rating questionnaires were used; children used 5-point scales to indicate how much they liked to play and to work with each of their classmates. Developmental and secular changes in the effects of race and sex on sociometric ratings were examined.

METHOD

Subjects. The children who participated in the study were from the twelve elementary schools of a moderate size midwestern city. The longitudinal sample was made up of children tested in the third grade in 1973 and again in the sixth grade in 1976. There were 227 children in the original 1973 third-grade sample (Singleton & Asher, 1977). In order to include as many of these children as possible in the follow-up study, the sociometric test was administered to all of the sixth-grade children in the district in May of 1976. The children were in 37 sixth and combination fifth-sixth grade classrooms. Fifth-grade children in combination fifth-sixth grade classrooms were included in the sixth-grade sample. The total number of fifth- and sixth-grade children tested was 897. Of the original 1973 sample of 179 white children, 72% were still enrolled in the school district in 1976. Of the original 1973 sample of 48 black children, 85% were still enrolled in 1976. Only those children who had received sociometric ratings from white males, white females, black males and black females could be included in the analyses. Thus children in classrooms with no black males or no black females, or a child who was the only black male or black female in a class could not be included in the sample. As a result, complete longitudinal data were available for 154 children including 63 white males, 53 white females, 18 black males and 20 black females. Of the sample, 25% were black and 75% were white.

The time-lag comparison samples consisted of the 227 third-grade children tested in 1973 and 205 third-grade children tested in 1976. In the 1973 sample there were 95 white males, 84 white females, 19 black males and 29 black females. Of the sample, 21% were black and 79% were white. For the 1976 third-grade sample, the third grade or combination third-fourth grade classroom that contained the largest number of black children was selected from each of the twelve elementary schools. Fourth-grade children in combination third-fourth grade classrooms were included in the third-grade group. In one of the twelve schools, the only third-grade classroom contained no black males. Therefore, that classroom could not be included in the analyses. Since the focus of the study was on black and white children's peer relations, data from seven Oriental, Indian and Spanish children were not used.

Complete data were available for 205 children including 78 white males, 75 white females, 23 black males and 29 black females. The sample was 25% black and 75% white. This was similar to the racial composition in the district at the third-grade level (22% black and 78% white).

Materials. The sociometric instrument consisted of two 5-point rating scales, each accompanied by an alphabetical roster listing the names of all class members. The question "How much do you like to play with this person at school?" was typed on the first scale along with five faces ranging from frowning to smiling to depict the meaning of the numbers on the scale. The question on the second scale was "How much do you like to work with this person at school?" (Figure 1).

Procedure. In 1973 the sociometric test was administered by the first author. In 1976 the first author, one female graduate student, one male graduate student, and one male undergraduate student served as testers. The three additional testers were trained by showing them a videotape of the first author administering the sociometric test, and then having the testers rehearse the procedure. Testers were provided with written instructions to be used in the classroom. Three schools were randomly assigned to each of the four testers. Due to illness, one of the testers collected data in half of the classrooms in a fourth school. The resulting number of classrooms assigned to each tester was 9, 14, 12 and 13 for Testers 1, 2, 3, and 4 respectively. The data were collected over a two-week period in May, 1976. Testers returned to administer the sociometric questionnaire to absentees. After completion of testing the average number of absentees per classroom was less then one-third of a percent.

The children were given the following instructions by the tester: "I am interested in some information about your class. I would like to find out how well you know each other and I would like to know who you like to work with and who you like to play with. You will be able to tell me who your friends are in this classroom. We won't be doing this out loud in a group, but you'll let me know your choices by marking them down on some papers I will give you. You can be honest because I won't show anyone else in the class your answers. I will be the only one

to see them." After this introduction, the play scale was distributed. The use and meaning of the 5-point scale was explained using examples of food (e.g., How much do you like ice cream, spinach, etc.?). When the children appeared to understand how to use the scale, the class rosters were distributed. The children were given examples of play situations at school: recess, free time before class, and time spent in the playground. The tester did two examples, using fictitious names, together with the class. Then the children were instructed to circle one number next to each classmate's name. When everyone was finished, the scales and rosters were collected and new scales and rosters were distributed for the work ratings. The distinction between work and play was discussed. Examples of work situations included doing math, science, reading, or going to the library during school hours.

RESULTS

The Longitudinal Sample. Play and work ratings were each analyzed using a 2X2X2X2X2 (Race of Giver X Sex of Giver X Race of Receiver X Sex of Receiver X Grade) analysis of variance. Race of Giver, Sex of Giver and Grade were the repeated measures factors in the design. Race and Sex of Giver refer to the race and sex of the child doing the rating. Race and Sex of Receiver refer to the race and sex of the child who is being rated. Each child's scores were the ratings he (she) received from white males, white females, black males and black females at each grade level. Race bias in peer ratings would be reflected in a significant Race of Giver X Race of Receiver interaction. Sex bias would be reflected in a significant Sex of Giver X Sex of Receiver interaction.

Play. The average play ratings received by children in each race and sex group in third and sixth grades are presented in Table 1. Own-sex ratings were higher than cross-sex ratings for males and females of both races in third and in sixth grades; the interaction of Sex of Giver X Sex of Receiver was highly significant, $F(1,150)=530.98$, $p < .001$. The three-way interaction of Sex of Giver X Sex of Receiver X Grade was not significant, $F(1,150)=3.51$, indicating that children's sex biases did not change between third and sixth grades. Own-race ratings were

TABLE 1

Average Play Ratings by Race and Sex
in Third and Sixth Grades

	White Receiver				Black Receiver			
	Male (n=63)		Female (n=53)		Male (n=18)		Female (n=20)	
Grade	3	6	3	6	3	6	3	6
Giver								
White								
Male	3.94	3.75	2.02	1.96	3.92	3.44	1.77	1.88
Female	2.21	1.92	3.88	3.71	1.98	1.88	3.38	3.26
Black								
Male	4.26	3.77	2.39	2.50	4.42	4.24	2.67	3.35
Female	2.88	2.55	3.94	3.49	2.76	2.91	4.05	4.64

TABLE 2

Average Work Ratings by Race and Sex
in Third and Sixth Grades

	White Receiver				Black Receiver			
	Male (n=63)		Female (n=53)		Male (n=18)		Female (n=20)	
Grade	3	6	3	6	3	6	3	6
Giver								
White								
Male	3.70	3.52	1.98	1.96	3.03	2.86	1.79	1.78
Female	1.95	1.85	3.51	3.59	1.71	1.61	2.98	2.95
Black								
Male	4.20	3.62	2.34	2.31	4.19	4.19	2.58	3.20
Female	2.77	2.13	3.66	3.54	2.51	2.53	3.97	4.28

higher than cross-race ratings for black and white children in third and sixth grades; the interaction of Race of Giver X Race of Receiver was significant, $F(1,150)=31.55$, $p < .001$. However, the three-way interaction of Race of Giver X Race of Receiver X Grade was also significant, $F(1,150)=7.24$, $p < .01$, indicating a change in children's race preferences over grade. Examination of the means in Table 1 shows that own-race preference became stronger over age, particularly for the black children.

Other significant results were that black children gave higher ratings to everyone than white children did, $F(1,150)=116.28$, $p < .001$; white children received higher ratings than blacks in the third grade while black children received higher ratings than whites in the sixth grade, $F(1,150)=7.09$, $p < .01$; and males received higher ratings than females in the third grade while females received higher ratings than males in the sixth grade, $F(1,150)=7.57$, $p < .01$.

Omega-squared analyses provide perspective on the relative magnitude of the race and sex effects on the play ratings. Omega-squared analyses indicate the amount of variance accounted for by each of the factors and their interactions. With unequal cell sizes and repeated measures factors, as in the present design, Omega-squared analyses provide only an approximation of the variance accounted for by each of the factors. The Sex of Giver X Sex of Receiver interaction accounted for 51.7% of the variance. The Race of Giver X Race of Receiver interaction accounted for only 2.2% of the variance and the three-way interaction involving grade accounted for less than 1% of the variance. Thus the effect of race on the ratings of playmates, although statistically significant, was small compared to the effect of sex.

Work. The average work ratings received by children in each race and sex group in third and in sixth grades are presented in Table 2. The results for the work variable are similar to the results for the play variable, although children rated each other lower for work than for play. Own-sex ratings were higher than cross-sex ratings for males and females of both races in third and in sixth grade; the interaction of Sex of Giver X Sex of Receiver was highly significant, $F(1,150)=433.80$, $p < .001$. The three-way interaction of Sex of Giver X Sex of Receiver X Grade was not significant, $F(1,150)=0.19$, indicating that children's sex biases did not change between third and

sixth grades. Own-race ratings were higher than cross-race ratings for black and white children in third and in sixth grades; the interaction of Race of Giver X Race of Receiver was significant, $F(1,150)=46.66$, $p<.001$. The three-way interaction of Race of Giver X Race of Receiver X Grade was also significant, $F(1,150)=8.37$, $p<.01$; there was an increase in own-race preference over grade, especially on the part of black males and females.

Other significant results were that black children gave higher ratings to everyone than white children did, $F(1,150)=150.84$, $p<.001$; and males received higher ratings than females in the third grade while females received higher ratings than males in the sixth grade, $F(1,150)=7.22$, $p<.01$.

Omega-squared analyses again show that sex accounted for more of the variance in sociometric ratings than race. The Sex of Giver X Sex of Receiver interaction accounted for 45.8% of the variance. The Race of Giver X Race of Receiver interaction accounted for only 3.4% of the variance, and the three-way interaction involving grade accounted for less than 1% of the variance. Thus, like the play ratings, the effect of race on the work ratings was small compared to the effect of sex.

The Time-Lag Comparison Samples. To assess possible secular changes in children's race preferences the 205 third-grade children tested in 1976 were compared with the 227 third-grade children tested in 1973. A 2X2X2X2X2 (Race of Giver X Sex of Giver X Race of Receiver X Sex of Receiver X Cohort) analysis of variance was used to analyze the data. Race and Sex of Giver were the repeated measures factors in the design. Analyses were done separately for the two dependent variables, play and work.

The average play ratings received by children in each race and sex group in the two cohorts are presented in Table 3. The data for the work ratings are presented in Table 4. Of particular interest here are the possible interactions of the cohort factor with the race and sex variables. On the play measure, none of the interactions involving cohort were significant (Sex of Giver X Sex of Receiver X Cohort, $F(1,424)=2.30$; Race of Giver X Race of Receiver X Cohort, $F(1,424)=2.29$).

On the work measure, the Sex of Giver X Sex of Receiver X Cohort interaction was not significant, $F(1,424)=0.48$. However,

TABLE 3

Third-Grade Children's Play Ratings by Race and Sex

	White Receiver				Black Receiver			
	Male		Female		Male		Female	
Cohort	1973 (n=95)	1976 (n=78)	1973 (n=84)	1976 (n=75)	1973 (n=19)	1976 (n=23)	1973 (n=29)	1976 (n=29)
Giver								
White								
Male	3.83	3.75	2.02	2.31	3.91	3.58	1.84	2.27
Female	2.16	2.10	3.79	3.99	1.96	1.94	3.40	3.48
Black								
Male	4.17	3.94	2.37	2.69	4.45	3.73	2.67	2.31
Female	2.90	2.90	3.91	4.17	2.74	2.72	4.03	4.07

TABLE 4

Third-Grade Children's Work Ratings by Race and Sex

	White Receiver				Black Receiver			
	Male		Female		Male		Female	
Cohort	1973 (n=95)	1976 (n=78)	1973 (n=84)	1976 (n=75)	1973 (n=19)	1976 (n=23)	1973 (n=29)	1976 (n=29)
Giver								
White								
Male	3.57	3.50	2.00	2.18	3.06	3.19	1.76	1.98
Female	1.97	1.99	3.49	3.77	1.69	1.73	2.97	2.99
Black								
Male	4.06	4.23	2.26	2.45	4.24	3.54	2.55	2.22
Female	2.66	2.30	3.56	3.86	2.47	2.10	3.85	3.89

there was a significant Race of Giver X Race of Receiver X Cohort interaction, $F(1,424)=4.42$, $p<.05$, and a significant four-way interaction with Sex of Giver, $F(1,424)=4.39$, $p<.05$. These interactions resulted from black children, particularly black males, giving higher ratings to whites than to blacks in the 1976 cohort.

In summary, there was only limited evidence of secular change with respect to race and sex influences on play and work ratings. It appears that on the work ratings black children, particularly black males, became more positive toward interacting with white children and somewhat less positive toward interacting with black children.

DISCUSSION

The results of this study, like those of previous research, indicate that own-race preference increases with age. On both the play and work sociometric questionnaires sixth-grade children expressed more own-race preference than did third-grade children. Interestingly, the change over age differed for white and black children. In third grade, the race effect was somewhat stronger for white children than for black children. In sixth grade, however, there was a larger increase in black children's own-race preference. Other recent research also has found this pattern of change over age (Gerard, et al., 1975).

One purpose of the present study was to examine developmental changes in cross-race relations on a measure which indexed acceptance rather than "best friendship". While it is the case that children showed own-race preference, the degree of bias was small compared to that obtained in studies using friendship nomination sociometric measures (e.g. Bartel, et al., 1973). Although children in the present study rated members of their own race higher, they still gave rather positive ratings, even in sixth grade, to cross-race classmates. These data are encouraging, particularly if the social objective of integration is cross-race acceptance as well as the more difficult-to-achieve objective of cross-race friendships.

One way to appreciate the relatively small degree of race bias in children's ratings in the present study, is to compare the effect of race bias with the effect

of sex bias. Sex accounted for a much greater share of the variance in children's ratings than did race. Children rated cross-sex members of the class rather low while giving own-sex members rather high ratings. Interestingly, there was no change over age in children's preference for same-sex interaction. The effect was quite strong in third and in sixth grades on both the play and work questionnaires.

Although the data on race bias can be interpreted more positively than those from previous studies using friendship nomination techniques, it is evident that cross-race relationships among the children were deteriorating over age. The data indicate that additional years of interracial contact, without interventions designed specifically to improve cross-race relations, do not result in a more truly integrated school experience. The increase in racial separation between third and sixth grades suggests that the later elementary school years may be a particularly important period for efforts aimed at improving cross-race acceptance.

A number of investigations have sought to increase children's cross-race acceptance by designing classroom curricula which encourage cooperation. This approach has been effective with fifth-grade children (Blaney, Stephen, Rosenfield, Aronson, and Sikes, 1977), junior high school students (Cohen, Lockheed and Lohman, 1976; DeVries and Edwards, 1974), and high school students (Weigel, Wiser and Cook, 1975). Future developmental studies, including even younger children (e.g. third grade), could indicate the age at which such interventions are most effective. It is especially important that future studies include long-term follow-up data on children's cross-race relations. It appears from research on children's friendships, that modifications of the classroom environment have to be maintained in order to produce lasting changes in peer relationships (Asher, Oden and Gottman, 1977).

Finally, the results present an intriguing pattern with respect to possible cohort effects. It appears that third-grade black children in 1976 were more interested in interaction with white children in work situations than were third-grade black children in 1973. That this pattern occurred on the work but not on the play measure is suggestive. The achievement level of black children is generally lower than the achievement level of white children. Perhaps black children's ratings of white children on the work measure in 1976 indicate that the black children are becoming more achievement-oriented. The 1976 sample of third-grade children will be an interesting group to study in future years.

FOOTNOTE

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REFERENCES

Asher, S. R., Oden, S. L. & Gottman, J. M. Children's friendships in school settings. In L. G. Katz(Ed.), Current topics in early childhood education (Vol. 1). Norwood, New Jersey: Ablex, 1977.

Bartel, H. W., Bartel, N. R. & Grill, J. J. A sociometric view of some integrated open classrooms. Journal of Social Issues, 1973, 29(4), 159-173.

Blaney, N. T., Stephan, C., Rosenfield, D., Aronson, E. & Sikes, J. Interdependence in the classroom: A field study. Journal of Educational Psychology, 1977, 69 121-128.

Bonney, M. E. Choosing between the sexes on a sociometric measurement. Journal of Social Psychology, 1954, 39, 99-114.

Cohen, E. G., Lockheed, M. E. & Lohman, M. R. The center for interracial cooperation: A field experiment. Sociology of Education, 1976, 49, 47-58.

Criswell, J. H. Racial cleavage in Negro-White groups. Sociometry, 1937, 1, 81-89.

Criswell, J. H. A sociometric study of race cleavage in the classroom. Archives of Psychology, 1939, No. 235, 1-82.

DeVries, D. L. & Edwards, K. J. Student teams and learning games: Their effects on cross-race and cross-sex interaction. Journal of Educational Psychology, 1974, 66, 741-749.

Gerard, H. B., Jackson, T. D. & Conolley, E. S. Social contact in the desegrated classroom. In H. B. Gerard & N. Miller(Eds.), School desegregation. New York: Plenum, 1975.

Gronlund, N. E. Relationships between the sociometric status of pupils and teachers' preferences for or against having them in class. Sociometry, 1953, 16, 142-150.

Moreno, J. L. Who shall survive? A new approach to the problems of human interrelations. Washington, D. C.: Nervous and Mental Disease Publishing, 1934.

Oden, S. & Asher, S. R. Coaching children in social skills for friendship-making. Child Development, 1977, 48, 495-506.

Roistacher, R. C. A microeconomic model of sociometric choice. Sociometry, 1974, 37, 219-238.

Shaw, M. E. Changes in sociometric choices following forced integration of an elementary school. Journal of Social Issues, 1973, 29(4), 143-157.

Singleton, L. C. & Asher, S. R. Peer preferences and social interaction among third-grade children in an integrated school district. Journal of Educational Psychology, 1977, 69, 330-336.

Weigel, R. H., Wiser, P. L. & Cook, S. W. The impact of cooperative learning on cross-ethnic relations and attitudes. Journal of Social Issues, 1975, 31(1), 219-244.

FIGURE 1

Sample Sociometric Questionaire With Play and Work Scales Below

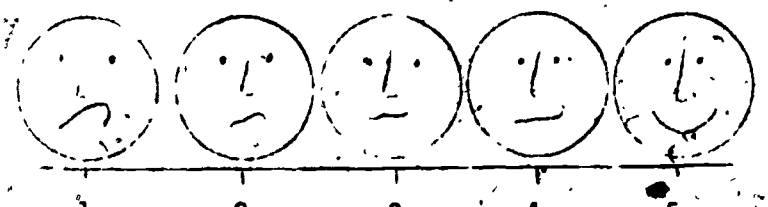
NAME _____

EXAMPLES:

	I don't like to				I like to a lot
TOM BLUE	1	2	3	4	5
SALLY GREY	1	2	3	4	5

JOHN ARMON	1	2	3	4	5
ANDREA BRANDT	1	2	3	4	5
SUE CURTIS	1	2	3	4	5
SANDRA DREXEL	1	2	3	4	5
JEFF ELLIS	1	2	3	4	5
BILL FOX	1	2	3	4	5
DIANE HIGGINS	1	2	3	4	5
HARRY JONES	1	2	3	4	5
[illegible]LL LAMB	1	2	3	4	5
STEVE MURRAY	1	2	3	4	5
JOANNE NORMAN	1	2	3	4	5
PAM RILEY	1	2	3	4	5
JIM STEVENS	1	2	3	4	5

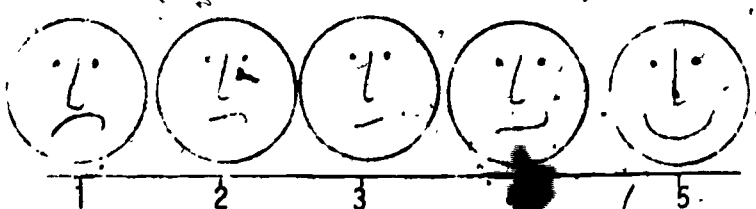
HOW MUCH DO YOU LIKE TO PLAY WITH THIS PERSON AT SCHOOL?



1 2 3 4 5

I don't like to — I like to alot

HOW MUCH DO YOU LIKE TO WORK WITH THIS PERSON AT SCHOOL?



1 2 3 5

I don't like to — I like to a lot