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ABSTRACT

Several recent studies have shown that when black and white students work together on biracial learning teams, they make more cross-racial friendships than students in traditional classrooms. This study is a secondary analysis of one of these studies, conducted to discover for whom the effects of cooperative learning are the greatest. The sample was 402 seventh and eighth grade students in twelve inner-city English classrooms. Classes were randomly assigned to team learning or control classes for a ten week period. The team learning classes used Student Teams-Achievement Divisions, a cooperative learning technique described by R.E. Slavin. Results indicated that the treatment increased cross-race friendships equally for students of different sexes, races and achievement levels. Further analyses revealed that new cross-race friends tended to be mutual instead of unreciprocated friends and to be among the first six friends named on the sociometric questionnaire rather than more distant choices. (Author/MK)

Cooperative Learning and Interracial Friendships

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through four programs to achieve its objectives. The Studies in School Desegregation program applies the basic theories of social organization of schools to study the internal conditions of desegregated schools, the feasibility of alternative desegregation policies, and the interrelation of school desegregation with other equity issues such as housing and job desegregation. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large-scale study of the effects of open schools, has developed Student Team Learning Instructional processes for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The School Process and Career Development program is studying transitions from high school to post secondary institutions and the role of schooling in the development of career plans and the actualization of labor market outcomes. The Studies in Delinquency and School Environments program is examining the interaction of school environments, school experiences, and individual characteristics in relation to in-school and later-life delinquency.

This report, prepared by the School Organization program, investigates whether or not a cooperative learning technique (STAD) increases cross-racial friendships equally for blacks and whites, boys and girls, and high achievers and low achievers.

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Abstract

Several recent studies have shown that when black and white students work together on biracial learning teams, they make more cross-racial friendships than students in traditional classrooms. This study is a secondary analysis of one of these studies, conducted to discover for whom the effects of cooperative learning are the greatest. The sample was 402 seventh- and eighth-grade students in twelve inner-city English classrooms. Classes were randomly assigned to team learning or control classes for a 10-week program. Results indicated that the treatment increased cross-race friendships equally for students of different sexes, races and achievement levels. Further analyses revealed that new cross-race friends tended to be mutual instead of unreciprocated friends and to be among the first six friends named on the sociometric questionnaire rather than more distant choices.

In the past few years, there has been increasing study of the internal conditions of desegregated schools and of programs designed to achieve positive student outcomes within these schools. Among the most promising strategies for improving race relations and achievement in desegregated schools are cooperative learning techniques in which students work in multiracial learning teams and are rewarded for cooperative group performance. Positive effects of cooperative learning programs on achievement have been described by DeVries and Slavin (1978), Lucker et al. (1977), Slavin (1978), and others. However the strongest and most consistent positive effects of cooperative learning strategies have been on race relations in desegregated schools (DeVries, Edwards, and Slavin, 1978; Slavin, 1979; Aronson, 1978; Johnson and Johnson, 1977). Researchers have found that when students of different races or ethnicities work together in cooperative learning groups, they are more likely to name one another as friends than are students who do not work in cooperative learning groups. The formats of these cooperative learning techniques have varied widely, but positive effects on race relations have consistently been found.

Although the overall positive effects of cooperative learning techniques on race relations have been well documented, little is known beyond the crude effects. The present study conducts a secondary analysis of data collected by Slavin (1979) to examine the details of cross-race friendship choices. We will investigate two major aspects of the interracial friendships caused by cooperative learning techniques. First, we will determine whether the cooperative learning technique employed in this experiment worked equally well for subgroups

of students, in particular, boys and girls, blacks and whites, and high and low achievers. The general learning theory underlying cooperative learning techniques leads to the prediction of no differences between sexes and races in the effectiveness of the experimental treatment. However, following earlier research in this area (Slavin, DeVries and Hulten, 1975) we expect the treatment to heighten the salience of achievement in the experimental classrooms because good students would help teams achieve high group scores in the team competition. We expect consistently high achievers to be the focus of many new friendship choices, and as a result, to make and receive more new cross-race friendships than low achievers.

The second purpose of this analysis is to examine the structure of cross-race friendship choices. First, we will determine whether new cross-race friendships are mutual or unreciprocated. Second, we will examine the order of cross-race friendships. Hallinan (1979) has suggested that students typically name about six best friends on sociometric questionnaires. Choices will be classified as close if they were among the first six made by students, and as distant if they occurred seventh or later. Both mutuality and closeness are measures of the "strength" or "weakness" of friendship ties (Granovetter, 1973). Compared with weak contacts, strong contacts take more time, involve more emotional intensity and intimacy, and require more reciprocal exchange of services. Mutual choices are strong ties, while weak contacts are often unreciprocated. Close choices are strong ties, while more distant friendships may be strong or weak. It is known that most friendships occur between students of the same race (Schofield,

1978). Most already existing cross-race friendships among the students in this study will probably be weak--relatively distant and more often unreciprocated than same-race friendships. But the intensive, regular contact between races mandated by the cooperative team experience should stimulate strong interracial friendships. We expect that the experimental treatment will increase close, mutual, cross-race friendships.

Sample and Design

The sample consisted of 402 seventh- and eighth-grade students in two inner-city Baltimore junior high schools. Five English teachers administered the treatments to a total of twelve classes; four taught one experimental and one control class, and one taught two experimental and two control classes. The classes were randomly assigned to treatments within teachers. Overall, the sample had 245 white students and 157 blacks. The proportion of blacks and whites in each treatment was the same, 60% white, 40% black.

Treatments

1. Experimental. The experimental classes studied a ten-week language mechanics unit using Student Teams-Achievement Divisions, or STAD, a cooperative learning technique described by Slavin (1978). In STAD, students are assigned to 4-5 member learning teams composed of high and low achievers, blacks and whites, and boys and girls, in roughly the same proportion as that of the entire class. The classes follow a regular schedule of teacher presentations, team work on worksheets, and individual quizzes. The quiz scores are summed within each team to form a team score, and the successful teams are recognized in a weekly class newsletter.

2. Control. In the control classes, students studied the same ten-week language mechanics unit on the same schedule as the experimental classes, but did not work in teams or receive newsletters.

Measures and Analysis

Student friendships were measured by the following sociometric question: "Who are your best friends in this class? Name as many as you wish." Students were provided with 24 blank lines on which to indicate their choices. The same instrument was given as a pre- and posttest. Achievement was measured on pre- and posttests with the Hoyum-Sanders Junior High School English Test. Students were split into high and low achievement groups at the median pretest score of 77.

The present analysis uses two strategies. First, the effectiveness of the treatment across subgroups of students will be assessed in multiple regressions. Posttest cross-race choices will be regressed on the treatment variable, the individual characteristics of sex, race and achievement, and the control variables of pretest cross-race choices and total choices made or received. The second strategy employs analyses of covariance to examine treatment effects on the mutuality and closeness of posttest cross-race choices, controlling for pretest cross-race choices and total choices made or received.

Results

Cross Race Choices Made and Received

Consistent with the results reported by Slavin (1979), there was a significant treatment effect on posttest cross-race choices made, controlling for pretest cross-race choices made. The regressions are summarized in Table 1, and the means in Table 2 confirm that students in the experimental group increased their choices made across races while

the control group made fewer cross-race choices from pre- to posttest. The individual characteristics of achievement, sex and race did not affect posttest cross-race choices made, and there were no significant interaction effects. Finally, the regressions were repeated with the additional control of total posttest choices made, but the results did not change.

There was also a significant treatment effect on posttest cross-race choices received, controlling for individual characteristics and pretest choices received as shown in Table 1. Students in the experimental group received more cross-race choices on the posttest than those in the control group, as indicated by the means in Table 3. There was also an achievement effect on post cross-race choices received. High achievers in the control group lost fewer cross-race choices, and in the experimental group actually received more cross-race choices than low achievers. There were no significant interaction effects. When total posttest choices received was added as a control variable and the regressions repeated, the achievement effect disappeared.

To more fully understand these achievement effects the total choices received from both races were analyzed. Students received fewer total friendship choices on the posttest than on the pretest due to an artifact of missing data. Many more students were missing on the post-test (N=140) than on the pretest (N=81), so the average number of total choices received by all students decreased on the posttest. There was a significant achievement effect on total choices received on the post-test. High achievers in the experimental group received more total choices on the posttest as on the pretest, while high achievers in the

control group received slightly fewer choices. Low achievers in both treatment conditions received far fewer choices on the posttest than they had received on the pretest. There were no significant interaction effects. The fact that a decrease in popularity occurred for low achieving students in both control and experimental groups suggests that it was a function of a similarity between treatment groups or, more likely, due to some cause external to the experimental manipulation. Thus, the greater number of cross-race choices received by the high achieving students in the experimental group was not independent of their overall increase in popularity during the course of the experiment.

Mutual and Unreciporcated Cross-Race Choices

A question of major interest is whether the new cross-race choices resulting from the experimental treatment were mutual or unreciprocated choices. There was a significant treatment effect on mutual cross-race choices made, controlling for pretest mutual cross-race choices and total choices made [$F(1,229) = 18.22$, $p < .001$]. The means in Table 4 indicate that mutual cross-race choices increased from pre- to posttest in the experimental group, while they decreased in the control group. Similarly, there was a significant treatment effect on mutual cross-race choices received from pre- to posttest, controlling for pretest mutual cross-race choices received and total choices received [$F(1,398) = 24.67$, $p < .001$]. In the experimental group students received nearly as many mutual cross-race choices on the post- as on the pretest, while control group students showed a marked decline. There were no significant treatment effects on unreciprocated cross-race choices made or received. There were also no treatment effects on total mutual or unreciprocated choices made or received.

Close and Distant Cross-Race Choices

There was a significant treatment effect on close cross-race choices made [F (1,229) = 8.13, $p < .01$]. The means in Table 5 show that students in the experimental group made more close cross-race choices on the posttest than the control group, controlling for pretest close cross-race choices made and total choices made. There was also a significant treatment effect on close cross-race choices received [F (1,398) = 9.03, $p < .01$]. The experimental group received more close cross-race choices on the posttest than the control group, controlling for pretest close cross-race choices received and total posttest choices received. These means are also displayed in Table 5.

There were no treatment effects on distant cross-race choices made, but there was an effect on distant cross-race choices received [F (1,398) = 8.63, $p < .01$]. The means in Table 5 indicate that the experimental group received more distant cross-race choices on the posttest compared with the control group, controlling for pretest distant cross-race choices received and total posttest choices received.

Discussion

Treatment Effects for Subgroups of Students

The results of this study amplify and elaborate the conclusions of Slavin's (1979) earlier analysis. These results show that the STAD cooperative learning technique employed in this experiment had similar race relations effects for boys and girls, blacks and whites, and high and low achievers--no differences in cross-race choices made or received were found across student subgroups. Particularly interesting is the failure of our hypothesis that high achievers would attract more cross-race choices. High achievers in the experimental group received more cross-race choices, but this was a result of their general increase in

popularity from pre- to posttest because the increase became nonsignificant when total popularity was controlled. Also, low achievers in both control and experimental groups became markedly less popular during the course of the experiment. We must conclude that this effect was due to some cause external to the experimental treatment--it is unlikely that control and experimental treatments would have increased the salience of achievement equally.

In retrospect, a feature of the STAD cooperative learning technique may have diluted potential popularity differences between high and low achievers. In STAD, students' performances are compared with peers of equal achievement levels on previous tasks. Thus every student has a roughly equal chance to score points for his or her team and the importance of a student who starts out with a reputation as a high achiever is diminished. An interesting topic for future research would be to examine the characteristics of students who consistently score high in STAD competitions to see if they were originally high or low achievers, and to determine whether or not they became more popular as a result of the STAD experiment.

This analysis revealed that cross-race choices received (as well as cross-race choices made) were increased by the treatment. Although this result was expected, it had not previously been demonstrated. This result suggested that the new cross-race friendships tended to be mutual, strong relationships, which was confirmed in the analysis of mutual cross-race choices.

The Strength of Cross-Race Friendships

There were significant tendencies for new cross-race choices resulting from the experimental treatment to be mutual and close. As a result of the treatment, the experimental group made and received more mutual cross-race

choices than the control group, although the treatment did not affect unreciprocated cross-race choices. Similarly, the experimental group made and received more close-race choices on the posttest, compared with the control group. These results clearly suggest that the treatment stimulated new cross-race friendships that were strong rather than weak. Although this result was expected, it is somewhat surprising that five class periods a week for ten weeks of biracial cooperative learning could produce increases in close interracial friendships. This indicates that the impact of the cooperative team experience is dramatic in terms of fostering interaction and subsequent friendship among students of different races.

There is an interesting asymmetry in the treatment effects on close cross-race choices compared with distant cross-race choices. Students in the experimental group made more close cross-race choices but also received, in return, both close and distant cross-race choices. Based on Granovetter's (1973) discussion of strong and weak choices, Karweit, Hansell and Ricks (1979) have suggested that the stimulation of new distant interracial friendships may be just as important for increasing racial cooperation as close relationships. Strong friendships produce cohesive friendship groups, but weak friendships can be instrumental in providing connections between groups. Thus, while the new strong interracial friendships stimulated in cooperative learning teams clearly improved race relations, the new distant cross-racial friendships may be as important, if they foster connections and cooperation between naturally occurring racial groups outside of the classroom.

This raises two issues for further research. First, a long-term longitudinal follow-up is necessary to establish the longevity and

stability of new cross-race friendships inspired by cooperative learning techniques. Clearly, a desirable goal is the creation of conditions which foster enduring interracial friendships. A second focus for future research is the relationship between friendships formed in cooperative teams and naturally occurring friendship structures both in and outside of classrooms. It was impossible to investigate student clique structures in this sample because of missing sociometric data and attrition from the pre- to posttest. Given that the cooperative team experience increases contact and interaction between students of different races, we would expect a more diffuse, less hierarchical network structure in the experimental classrooms, with race less important as a criterion of clique membership.

The conclusion that STAD would work equally well across race, sex and achievement groups in all desegregated schools cannot be drawn from any single study, but the results presented here empirically support its usefulness as a general technique for improving race relations.

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Table 1

Regressions of Cross-Race Posttest Choices Made and Received on Treatment and Individual Characteristics, Controlling for Pretest Cross-Race Choices

Variable	Unstandardized Beta	Standardized Beta	Increment in R^2
	Cross-Race Choices Made (N=204)		
Treatment	1.043*	.151	.023
Achievement	.654	.095	.008
Sex	.165	.024	.001
Race	-.453	-.065	.027
Pre Cross-Race Choices Made	.647*	.643	.425
Constant	.437		
R^2	.483		
	Cross-Race Choices Received (N=267)		
Treatment	.835*	.168	.028
Achievement	.591*	.119	.015
Sex	-.120	-.024	.001
Race	-.185	-.037	.022
Pre Cross-Race Choices Received	.641*	.633	.424
Constant	-.010		
R^2	.489		

*Unstandardized beta is at least twice its standard error.

Note: In this and the following tables, treatment is coded 0=control, 1=experimental; achievement, 0=low, 1=high; sex, 0=girls, 1=boys; race, 0=black, 1=white.

Table 2

Mean Cross-Race Choices Made

	Control		Experimental	
Group	Pre	Post	Pre	Post
Entire Sample	2.93 (154)	2.37 (133)	3.54 (167)	3.87 (129)
Boys	2.74 (78)	1.82 (66)	3.43 (68)	4.27 (56)
Girls	3.12 (76)	2.91 (67)	3.63 (99)	3.56 (73)
Whites	2.38 (95)	1.94 (82)	3.03 (97)	3.44 (73)
Blacks	3.81 (59)	3.06 (51)	4.26 (70)	4.43 (56)
High Achievers	3.07 (56)	2.66 (53)	3.82 (72)	4.19 (64)
Low Achievers	3.06 (54)	2.15 (46)	3.10 (60)	3.66 (58)

Note. Ns in parentheses.

Table 3

Mean Cross-Race Choices Received

	Control		Experimental	
Group	Pre	Post	Pre	Post
Entire Sample	2.61 (173)	1.82 (173)	2.59 (229)	2.18 (229)
Boys	2.50 (88)	1.53 (88)	2.15 (109)	1.84 (109)
Girls	2.72 (85)	2.12 (85)	2.98 (120)	2.48 (120)
Whites	2.12 (106)	1.47 (106)	2.14 (139)	1.78 (139)
Blacks	3.37 (67)	2.37 (67)	3.27 (90)	2.79 (90)
High Achievers	3.18 (61)	2.38 (61)	3.45 (77)	3.53 (77)
Low Achievers	2.58 (57)	1.56 (57)	2.96 (72)	2.50 (72)

Note. Ns in parentheses.

Table 4

Mean Mutual Cross-Race Choices Made and Received

Controlling for Total Choices Made or Received

	Control		Experimental	
Choice Type	Pre	Post	Pre	Post
	Choices Made			
Mutual	6.08 (154)	5.39 (118)	5.85 (167)	5.43 (115)
Unreciprocated	3.94 (154)	4.49 (118)	4.64 (167)	4.80 (115)
Cross-Race Mutual	1.64 (154)	.98 (118)	1.57 (167)	1.73 (115)
Cross-Race Unreciprocated	1.46 (154)	1.74 (118)	1.82 (167)	1.80 (115)
	Choices Received			
Mutual	5.00 (173)	3.52 (173)	4.58 (229)	3.34 (229)
Unreciprocated	3.19 (173)	2.88 (173)	3.61 (229)	3.02 (229)
Cross-Race Mutual	1.34 (173)	.52 (173)	1.23 (229)	1.12 (229)
Cross-Race Unreciprocated	1.16 (173)	1.13 (173)	1.44 (229)	1.14 (229)

Note. Ns in parentheses.

Table 5

Mean Close Cross-Race Choices Made and Received

Controlling for Total Choices Made or Received

	Control		Experimental	
Choice Type	Pre	Post	Pre	Post
	Choices Made			
Close	5.59 (154)	5.69 (118)	5.42 (167)	5.69 (115)
Distant	4.90 (154)	4.64 (118)	5.09 (167)	4.60 (115)
Cross-Race Close	1.21 (154)	1.02 (118)	1.31 (167)	1.41 (115)
Cross-Race Distant	1.88 (154)	1.74 (118)	2.07 (167)	2.09 (115)
	Choices Received			
Close	4.57 (173)	3.75 (173)	4.13 (229)	3.44 (229)
Distant	3.63 (173)	2.64 (173)	4.07 (229)	2.96 (229)
Cross-Race Close	1.02 (173)	.63 (173)	1.00 (229)	.93 (229)
Cross-Race Distant	1.46 (173)	1.04 (173)	1.67 (229)	1.38 (229)

Note. Ns in parentheses.