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ABSTRACT

This evaluation sampled 150 pairs of schools (50 pairs of high schools and 100 pairs of elementary schools) eligible for ESAP funds, randomly designating one school from each pair as a control school to receive no ESAP funds and using a flip of the coin to so designate. The first volume of the report comprises four chapters and seven appendices. Chapter 1 has as main purposes (i) to describe the study in terms of experimental design, sampling, data collection, analysis method, and overall logic of analysis, and (ii) to determine how ESAP funds were translated into activities undertaken by each school. Chapters 2 and 3 report the evaluation results--Chapter 2 studying ESAP's impact on student attitudes toward integration, and Chapter 3, ESAP's effect on student achievement. Chapter 4 briefly states the conclusions of the study and their implications for policy recommendations. The first 3 appendices (A, B, and C) are analyses of the material in Chapters 1-3. Appendix D is an analysis of the achievement test used, E describes the scales constructed, and F the sample. Appendix G presents intercorrelations among the program variables. The main finding of the study was that black male students in the experimental schools had achievement scores one-half grade level higher than those in the control schools. Among the recommendations were: that programs like the ESAP should be maintained, federal pressure to eliminate classroom segregation should be maintained, and federal policy regarding achievement grouping should be more flexible. [Some of the tabular materials are not clearly legible due to the print quality in the original.] (Author/RJ)

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SOUTHERN SCHOOLS

An Evaluation of the Effects of The Emergency School Assistance Program and of School Desegregation

Volume I

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AN OVERVIEW OF THE RESEARCH FINDINGS

In the 1971-72 school year, the Emergency School Assistance Program (ESAP) provided $64 million in aid to desegregated schools, almost entirely in the South. The aid was limited only to the extent that it was for activities "designed to achieve successful desegregation." At the same time, the Office of Planning, Budgeting, and Evaluation of the Office of Education obligated some $700,000 for this ESAP evaluation--ESAP-II, as the 1971-72 program was called.

The evaluation is interesting for three reasons: first, because the results of the evaluation show some positive gains in achievement for black male high school students as the result of ESAP-II; second, because the evaluation provided an opportunity to pursue some general questions about quality of education; and third, because this is the first large-scale federally funded evaluation in the area of education which used a genuine experimental design.

This final report of the evaluation is divided into two volumes. Volume I contains the body of the report, which has four chapters: an introduction, a discussion of the effects of ESAP and of school characteristics on student attitudes toward integration, an analysis of the effects of ESAP and school characteristics on tests of achievement, and a set of recommendations; these are followed by a series of technical appendices. Volume II of the report consists of a group of working papers that analyze some important issues related more generally to school desegregation, and includes copies of the questionnaires.

The Methodology of the Study

The evaluation began when the Office of Planning, Budgeting, and Evaluation sampled 150 pairs of schools (50 pairs of high schools and 100 pairs of elementary schools) that were eligible for ESAP funds and randomly designated one school from each pair as a control school for an experiment. These 150 control schools received no ESAP funds; they were studied in order to compare them to the 150 similar schools which did receive funds.[1] In each pair, the school that received funds is different from the one that did not only because a flip of the coin chose one and not the other. Consequently, when we studied the schools a few months later, we could be almost certain that any difference between the ESAP-funded schools and the control schools was the result of ESAP. There is, of course, the possibility that the experimental schools were generally superior to the control schools when the study began; but this possibility would depend on the coin flip choosing the better of the two schools repeatedly, and is no more likely than the chance that a gambler could flip a fair coin and have it come up heads 35 times in 50 tosses.

It is difficult to overstate the importance of the experimental design. Had there not been an experiment, we would have had to compare schools that were deemed worthy of ESAP funds to those that were not; no matter what statistical tricks we attempted to make the two groups comparable, the question of whether or not the differences we believed to be the result of ESAP were due to some other differences between the two schools would have always remained open.

An experimental design is politically difficult; this experiment involved saying no to 150 school principals. For this reason it is important to report that the experiment was administratively a success. Most school superintendents were willing to cooperate; to our knowledge, there was little adverse community reaction as a result of the experiment.

In addition to the experimental design, a more conventional cross-sectional analysis was conducted in which the 214 experimental and control schools were combined with an additional 341 schools (making a total of 194 high schools and 361 elementary schools) and an analysis, along the lines of the well-known Equality of Educational Opportunity study,[2] was

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[1] In the final analysis, after various pairs were deleted for methodological reasons, there were 39 pairs of high schools and 68 pairs of elementary schools.

[2] James S. Coleman et al., Equality of Educational Opportunity (Washington: U.S. Government Printing Office, 1966).

carried out. Data were collected by interviewing ESAP Program Directors and school principals, administering questionnaires to teachers, administering achievement tests and questionnaires to students, conducting telephone interviews with community leaders, and collecting observational data from interviewers.

The Effects of ESAP

The principal finding of the study is that black male students in the high schools that were designated as experimental schools and received ESAP funds had achievement test scores that were approximately one-half grade level higher than black male students in the matched control schools that received no ESAP funds. As we noted earlier, this result might occur because the "coin flipping" procedure used to select experimental and control schools systematically selected schools with higher achievement as experimental schools. Since statistical procedures determining the probability of this happening indicate that there is one chance in a hundred that ESAP did not cause a gain in achievement, we feel confident in attributing this result to the presence of ESAP in the schools.

By the same token, we can conclude that there is no evidence in this study to indicate that ESAP raised the achievement of elementary school students, white students, or black high school females.

The experimental design also permits us to determine relatively precisely what the experimental schools did with their ESAP funds. Each school received an average of less than $10,000. Elementary schools used the money for teacher's aides, counseling, in-service education for teachers, and remedial programs. High schools did some of the same things, but also spent ESAP funds trying to improve the quality of race relations in the schools through strengthening extracurricular activities, conducting in-service educational programs for faculty, and conducting and organizing programs in intergroup relations for students.

Thus, the big difference between high schools, where ESAP raised achievement, and elementary schools, where it did not, is that high schools spent funds attempting to change the way in which schools handled the racial issue. Some of the evidence points to the likelihood that ESAP succeeded because a change in school race relations resulting from ESAP changed the motivation of black students. It is important to note the difference in the levels of confidence we have in the two statements we have made: we are fairly certain that ESAP raised achievement test scores of black male high school students; we are confident, but by no means certain, that this was because of improvements in the schools' racial climate affecting the motivation of these students.

The Effects of School Characteristics on Students

The cross-sectional analysis provided an opportunity for further research that both illuminated some new issues and gave meaning to the experimental design results. Only two student characteristics were analyzed in detail: student attitudes toward integration, and student achievement test scores.

Student Attitudes toward Integration

It is commonly assumed that Southern schools experienced desegregation as a painful overturning of traditional ways of race relations, and our data bear this out. While elementary school race relations seem surprisingly good (in these desegregated schools, two-fifths of the white students and one-half of the black students in fifth grade claimed that one of their three best friends is of the other race), high schools are experiencing some serious problems. In general, high school students are uncomfortable in the presence of large numbers of students of the other race, but there are things a school can do to help the transition. Our most important finding is that schools whose principals and teachers take liberal positions on racial issues had students who were more favorable to integration. We also found that urban schools that developed programs to improve intergroup relations succeeded in helping white students in particular to accept desegregation.

A statistical procedure, factor analysis, was used to divide the schools into different types. We found that some schools emphasized innovative programs in curriculum organization and emphasized human relations activities, other schools emphasized a cluster of activities all related to guidance, counseling, and social work, and a third group of schools emphasized basic instructional services. The data indicate that schools that stressed curriculum organization and intergroup relations activities had students who were noticeably more favorable to integration than those that emphasized guidance and counseling or basic instructional services.

There has been considerable discussion of the danger that supposedly desegregated schools will in fact segregate black and white students into different classrooms as a result of achievement grouping. These data provide the first empirical analysis of that issue, and the results are complex. We found that there was a moderate amount of segregation of classrooms in elementary schools and that, as might be expected, the more segregated the school's classrooms, the more unfavorable were the attitudes of students toward integration. We also found that ability-grouped elementary schools had students with more unfavorable attitudes toward integration even if the ability grouping was conducted in such a way as to minimize classroom segregation. Thus we conclude that both achievement grouping and classroom segregation have unfortunate effects on the racial attitudes of elementary school students.

At the high school level we do not find such a pattern. There is no evidence that schools with high levels of ability grouping or high levels of classroom segregation had students with more unfavorable attitudes toward integration. The only high schools where classroom segregation and grouping had negative effects on student attitudes were schools that were both rural and conservative in their approach to race relations; otherwise, there were no negative effects. We hypothesize that achievement grouping is not harmful to racial attitudes for high school students in part because grouping insures that students with somewhat similar abilities and interests will associate with each other. We also found that very few schools use ability grouping to segregate students in non-academic activities.

Achievement Test Scores

As we expected, student characteristics had the greatest effect on achievement test scores, and the addition of special educational programs had little effect. This is not to say that "schools do not make a difference." We did find that characteristics of teachers and principals made a difference, and that some factors that might affect the motivation or morale of students made a difference.

Although the kinds of programs that are usually thought of as innovations aimed at improving the quality of education were on the whole unsuccessful, we did find one exception to this pattern. One-tenth of the high schools studied had a staff person designated as an audio-visual specialist, and these schools had high white and black achievement, even after careful statistical controls were implemented to match these schools to others in terms of factors such as social background of students and region of country. These 20 high schools were contacted by telephone and more careful information regarding their audio-visual activities was solicited. While the results cannot be interpreted as a firm recommendation, the data strongly suggest that a heavy use of audio-visual equipment in order to individualize instruction has a definite positive impact upon achievement.

Recommendations

In summary, this evaluation study makes six major recommendations for federal policy. Briefly, they are as follows:

1. Programs similar to ESAP should be maintained.
2. It seems quite likely that widespread use of media and tools for individualized instruction will be quite effective; additional evaluative research should be done in anticipation of increased funding in this area.
3. Elementary schools that choose to do achievement grouping should modify their methods of doing so; federal pressure to eliminate classroom segregation should be maintained.

4. Federal policy regarding achievement grouping in high schools should be more flexible.

5. There is a definite possibility that adoption of new innovations in the area of ungraded classrooms, team teaching, individualized instruction, open classrooms, and the like, and increased use of human relations activities, will have positive effects on the motivation and racial attitudes of urban elementary school students; such programs should be evaluated with a new experiment, and if the evaluation is positive, such programs should be incorporated in future federal legislation.

6. There is a definite possibility that federal pressures on local school districts for reform in the area of race relations are effective in improving the quality of education. These efforts should be evaluated, and if the evaluation is positive, they should be intensified.

The first recommendation follows directly from the fact that ESAP had positive impact on schools, and presumes that programs similar to it will have similar positive effects. The second recommendation calls for further experimental research dealing with the usage of audio-visual equipment as the next step toward establishing a federal program for increased funding in this area. The third and fourth recommendations are drawn from the cross-sectional analysis of the impact of achievement grouping and classroom segregation on student attitudes toward integration.

The fifth recommendation is based on our study of programs not funded by ESAP. We found that human relations activity and classroom reorganization to incorporate new innovations in curriculum are effective in improving attitudes toward integration in urban elementary schools. We found, however, that ESAP did not fund these activities in elementary schools, as they did in high schools, and therefore we recommend that experiments be done to determine need for human relations programs in elementary schools. The sixth recommendation is based on the study's finding that schools with more liberal racial policies had higher student motivation and more favorable student attitudes toward integration, and assumes that federal pressure, in requirements for such activities as biracial advisory commissions, has helped bring this about.

These six recommendations are described in considerably more detail in Chapter 4 of the report. In addition, that chapter contains a recommendation that federal evaluation programs use experimental designs wherever possible, and makes a series of specific technical recommendations regarding their methodology.

CHAPTER 1

INTRODUCTION

A Description of the Emergency School Assistance Program

The Emergency School Assistance Program (ESAP) was a small, temporary program of federal aid intended to help schools make the difficult transition from racial segregation to integration. The program was created and funded under the provisions of six existing legislative authorities, for school years 1970-71 (called "ESAP-I") and 1971-72 (called "ESAP-II"), in order to provide immediate assistance to desegregating school districts until the Emergency School Aid Act was passed by Congress. In school year 1971-72, $64 million was granted to 452 school districts under ESAP-II; the great majority of these were in the South.[1] All were desegregated, and many were under court order to desegregate further during 1971-72. This report is an evaluation of ESAP-II, although the term "ESAP" is used in the report for brevity. Although the larger Emergency School Aid Act (ESAA) has now replaced ESAP, this evaluation remains relevant because the

[1] Three priority groups were established for funding under ESAP-II. Priority I districts were those required to take new or additional steps respecting desegregation pursuant to a court order or order under Title VI of the Civil Rights Act of 1964 issued or modified on or after April 20, 1971 (the date of the United States Supreme Court decision in the case of Swann v. Charlotte-Mecklenburg Board of Education). Priority II districts were those required to take new or additional steps in 1971-72 although the Title IV plan or court order was issued prior to April 20, 1971. Priority III districts were those which had received ESAP grants the previous school year. The effect of these funding priorities was that the vast majority of grants were made to school districts in the South and Southwest, where the school systems had undergone the most litigation and experienced the most pressure to desegregate.

large Basic Grants program of ESAA authorizes activities very similar to those funded by ESAP.

The ESAP regulations permitted school districts to spend ESAP funds on a wide range of activities related to desegregation. In the wording of the ESAP regulations, funds were awarded for activities "designed to achieve successful desegregation and the elimination of all forms of discrimination." The regulations listed 27 examples of such activities, ranging from projects "promoting understanding among students, school staffs, parent and community groups" to "minor remodeling of existing facilities." The regulations specifically mentioned intergroup relations, community relations, school staff in-service education, employment of teacher's aides, remedial projects, counseling, and innovations in curriculum and school organization. Thus the program was specific only in its target--improving desegregated schools--but not in its means; the program suggested that any of a wide variety of tactics might succeed.

The schools in our sample received an average of $10,000 each; they could (and did) spend that money on any of a wide variety of school activities. Some used the money to provide remedial services for underachievers; others to provide in-service education for their staff preparatory to desegregation; still others used the funds to hire teacher's aides or guidance counselors. Since ESAP had defined its goal very broadly ("to contribute to achieving and maintaining desegregated school systems"), all these activities clearly fit within the intention of the program. The primary purpose of this research project is to evaluate the contribution that ESAP made. In order to make this evaluation, 100 high schools and 200 elementary schools were randomly selected in experimental-control pairs of schools so that a genuine experimental design was available. An additional 100 high schools and 200 elementary schools were studied to provide a cross-sectional study of 600 schools.

We have found, through this analysis, that ESAP funds did make a difference in the kinds of projects schools undertook. Elementary schools that received ESAP funds had more teacher's aides, more counseling, more in-service education for teachers, and more remedial programs. High schools purchased instructional equipment, employed teacher's aides, and tried to adapt the school to new needs resulting from desegregation by modifying the curriculum, strengthening extracurricular activities, and conducting in-service educational programs for faculty. There is an important difference between high schools and elementary schools: high schools spent ESAP funds to change the way in which the school dealt with racial issues, but elementary schools did not.

The Organization of the Report

This study is aimed at answering two major questions. First, did ESAP make a difference? Second, and perhaps more important, what kinds of things were done (or could have been done) with ESAP money to improve schools? Answering these questions means looking at individual activities and trying to decide which ones work.

This, the first volume of the final report, presents the findings of our study of the effects of ESAP activities and other projects on improving the racial climate of schools as well as on raising academic achievement. The second volume is a more general study, examining the effects of desegregation and the way in which school characteristics affect school quality.

Volume I consists of four chapters and seven appendices. This chapter has two main purposes: (1) to describe the study, in terms of the experimental design, sampling, data collection, analysis method, and the overall logic of the analysis, and (2) to determine how ESAP funds were translated into activities undertaken by each school. The kinds of projects now in the schools, both those developed with ESAP funds and those funded by other federal, state, or local sources, are discussed.

Chapters 2 and 3 report the results of the evaluation. Chapter 2 studies ESAP's impact on students' attitudes toward integration, and Chapter 3 examines ESAP's effect on students' achievement. The reader who wishes a brief overview may read the introductions of those two chapters. Chapter 4 briefly states the conclusions of the study and their implications for policy recommendations. The first three appendices present additional analyses: Appendix A is a discussion of the experimental design and its analysis; Appendix B presents in detail the regression analysis which evaluates the impact of programs on achievement; and Appendix C presents the regression of program impact on attitudes toward integration. Appendix D is a methodological analysis of the achievement test. Appendix E describes the scales constructed for the analysis. Appendix F describes the sample. Appendix G presents the intercorrelations among the program variables, and a factor analysis of programs.

The Experimental Design

The method of the study is a combination of an experiment and a cross-sectional analysis. The fact that this evaluation is based on a genuine experiment--the random allocation of ESAP funds to some schools while keeping others as controls--cannot be stressed too strongly. Now that our analysis is over, it seems clear that we would have great difficulty evaluating ESAP without the experiment. This is not to say that the more traditional cross-sectional approach is useless; there are many things we can do in that form of analysis that cannot be done by experiment. Consequently, we have used that form of analysis as well. The important difference between an experiment and a cross-sectional analysis of "natural" data has to do with establishing causal direction.

It is common knowledge that an experimental design is preferable to a nonexperimental study. The situation is not quite this simple--a conventional multivariate analysis is a useful adjunct to an experiment--but it is certainly true that in evaluating ESAP, an experiment is almost the only technique that will work.

It is important to observe that experimental and nonexperimental research have much in common. In all research, we wish to show that a "cause" variable affects some "result" variable. Ideally, we do this by locating two subjects identical in all respects, save that the cause variable is present for one subject and is not for the other. If at a later time the two subjects are found to differ on the result variable, we can conclude that the only possible explanation is that the cause variable did make the difference in the result. We then replicate our finding by performing the same study on additional pairs of subjects. This logic of research is most easily met by experimental research.

It is rarely possible, however, to conduct experiments in human behavior, because we cannot simply administer the cause factor to subjects as if it were an injectable drug. In many cases, we cannot do so because we don't know how. We cannot, for example, study the effects of high achievement motivation on future income, because we do not know how to manipulate motivation. In other cases, we cannot administer a treatment without infringing upon the rights of subjects. For example, we cannot assess the impact of educational attainment on income by randomly prohibiting a control group from attending school. In still other cases, we cannot treat some subjects and not others because the sponsoring agency is unwilling to irritate the "deprived" group. There are other factors that make experimental treatments rare, but in part experimental treatments are uncommon because they are a new idea, which is only now becoming popular in evaluation.

In the absence of an experimental design, we would have had to locate subjects that did and did not possess the cause variable, to see if those that had the cause factor were more likely to also have the result. These "cause-present" and "cause-absent" subjects might differ in a variety of other ways; to overcome this problem, a great deal of statistical research has gone into developing multivariate analysis routines. These routines are designed to estimate statistically what would have happened if the subjects that differed on the cause factor had been matched on other characteristics. There are a host of procedures, ranging from cross-tabulation and standardization, to analysis of covariance, partial correlation, and multiple correlation, which all work to match the group of people for which the cause factor is present to another group for which it is not. Some procedures consist of dividing the cause-present and cause-absent groups into subgroups that are matched on other relevant characteristics (the "control variables"), and comparing the cause-present and cause-absent halves of each subgroup. Other procedures attempt to adjust the scores of each subject on the result variable to discount the effects of those variables on which the cause-present and cause-absent groups are mismatched. No multivariate method, however, can overcome three critical problems:

1. The two groups are matched only on known, measurable variables. If the two groups differ in some unanticipated way, or differ on a characteristic that cannot be measured, the technique fails.

2. The multivariate method is weakened by the measurement error on the control variables.

3. Interpretation of the analysis requires that the researcher specify in detail the time-ordering of the cause, result, and control variables. This is frequently impossible to do; sometimes statistical analysis can help us choose between alternate time-order models, but usually it cannot.

The last problem, the time-ordering problem, can be partly solved by the use of a longitudinal design comparing measurements of causal variables at one time with changes in the result variable in the next time period. It is unfortunate that longitudinal designs, like experiments, are rare in policy research.

The problems mentioned above are sufficiently difficult to make an evaluation of ESAP impossible without an experiment. If we were simply to compare ESAP-funded schools with schools that did not receive ESAP funds, we would have great difficulty selecting the control variables for the analysis, and even more difficulty convincing ourselves that we had not omitted the most important ones. This would not be important if the ESAP effect were quite large; we could argue that the unmeasured mismatch between ESAP and non-ESAP schools could not be large enough to produce such a great difference between the two kinds of schools. It is almost inconceivable, however, that ESAP's effects would be this large. The same argument applies to the problems of measurement error. Even more difficult is the problem of causal direction. Suppose we found that ESAP-funded schools had worse race relations than non-ESAP schools. A reasonable explanation would be that school districts allocated funds to schools with the most serious problems, and that the poor quality of race relations caused the presence of ESAP funds, rather than the other way around. Because of problems such as these, it would probably be impossible to evaluate ESAP.

An experiment neatly avoids such problems. If a group of subjects (in our case, schools) are randomly divided into two groups, and the cause variable is administered to one, then, within the constraints of sampling theory, the two groups must be similar on all other characteristics (known and unknown). This means that a multivariate analysis is unnecessary, and that it is unnecessary to administer a pretest to the two groups in order to verify their similarity. (Either a pretest or a multivariate analysis can be added to reduce error, hence making a smaller sample size acceptable.)

The basic design of this study is a "post-test-only control group design."[2] Campbell and Stanley observe that pretesting of the experimental and control groups is often done, but is not necessary:

> For psychological reasons, it is difficult to give up "knowing for sure" that the experimental and control groups were "equal" before the differential experimental treatment. Nonetheless, the most adequate all-purpose assurance of lack of initial biases between groups is randomization. Within the limits of confidence stated by the tests of significance, randomization can suffice without the pretest. Actually, almost all of the agricultural experiments in the Fisher tradition are without pretest.[3]

Experimental designs, however, also have their limitations. First, an experiment can only test a small number of variables, as only a small number of treatments are usually administered. In our case, the experiment can tell us only whether ESAP made a difference, since the simple existence of ESAP funds is the only treatment. Since remedial reading was not a randomly assigned treatment, we must fall back on a cross-sectional analysis

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[2]Donald T. Campbell and Julian C. Stanley, <u>Experimental and Quasi-Experimental Designs for Research</u> (Chicago: Rand McNally and Co., 1966), p. 25.

[3]<u>Ibid</u>.

to determine whether or not remedial reading is more effective than human relations activities. Second, experiments require that a period of time elapse between the administration of the treatment and the measurement of the effect. In this sense, they are like panel studies, which require a lapse of time between two measurements. This means that our experiment can only measure the short-run impact of ESAP; to assess the long-term impact of some school programs, we must use cross-sectional analysis.

The Logic of the Evaluation

There are serious problems in evaluating ESAP. The ESAP projects that were evaluated by the experimental design had been in existence only about six months. ESAP grants were for one year, and the 1971-72 grants were not received in most schools until after the school year began; our data were collected before the year was over. Thus, the programs that were evaluated were of very short duration. Furthermore, ESAP was a relatively small program, representing an investment of considerably less than 5 per cent of the total school budget. This amount was, in many cases, dwarfed by other federal programs, particularly Title I. ESAP was also a diffuse program; the analysis of it required the evaluation of teacher's aides in one school district, guidance counselors in another, and so forth. Even the intent of the program varied in important ways from one school to another. In some cases, ESAP was merely incorporated into the overall educational curriculum of the school, in others it represented an opportunity for innovation. In some school districts, a large fraction of the ESAP budget was devoted to activities intended to increase cognitive skills, in others it was used to work on problems of race relations.

Thus, for a variety of reasons, we defined our study more broadly than we would the usual evaluation. The primary purpose of the ESAP evaluation was to determine which activities were most successful and which least, in order to make a recommendation about how future funding could be directed to areas of the highest potential payoff. It is unlikely, however, that an activity funded by ESAP would be drastically different in style or results from a similar activity funded by Title I. We therefore assumed that, once ESAP funds were spent to acquire additional staff or facilities for a particular school, neither the teachers nor the principal of that school would continue to be aware of the funding source. Consequently, we decided to carry out an evaluation of all activities occurring within the schools, regardless of the funding source. Thus, this study is nearly as much an evaluation of Title I as it is of ESAP. We also felt that in order to understand why particular activities had an impact on students, or why desegregation had certain effects, it would be necessary to understand the workings of the school as a whole. As a result, considerable effort was devoted to measuring characteristics of the principal and teaching staff, and to describing the intangible aspects of the school. Finally, we chose to divide the evaluation equally between achievement test results and changes in attitudes toward integration.

The analysis can be separated into four questions, as shown in Figure 1. Each question is represented graphically by a directed line; the two solid lines represent an analysis of the experiment, and the two dotted lines refer to the multivariate cross-sectional analysis. The first question concerns whether or not ESAP affected the operation of the school. Were ESAP funds used to increase such projects as remedial reading programs, guidance activities, and human relations efforts? Here the experimental design is important. Without it, we would virtually be forced to take the school administrator's word that the program funds made a difference. The second question is, did ESAP affect achievement and attitudes toward integration? This question can also be answered by the experiment. While the issue seems simple--are the scores higher in the experimental schools?--we have done the analysis in a somewhat more sophisticated fashion than necessary in order to get the most accurate estimates of the ESAP effect.

The third question concerns the impact of all sorts of activities, regardless of the funding source. If ESAP had no effect, is this because all school programs are valueless, or did ESAP fund the wrong activities? Or did they, perhaps, fund the right activities with too little money or for too short a period of time? If ESAP did have an effect, can we determine which of the many activities ESAP provided explain ESAP's success? To answer these questions, we must embark on a multivariate cross-sectional analysis, using a larger sample.

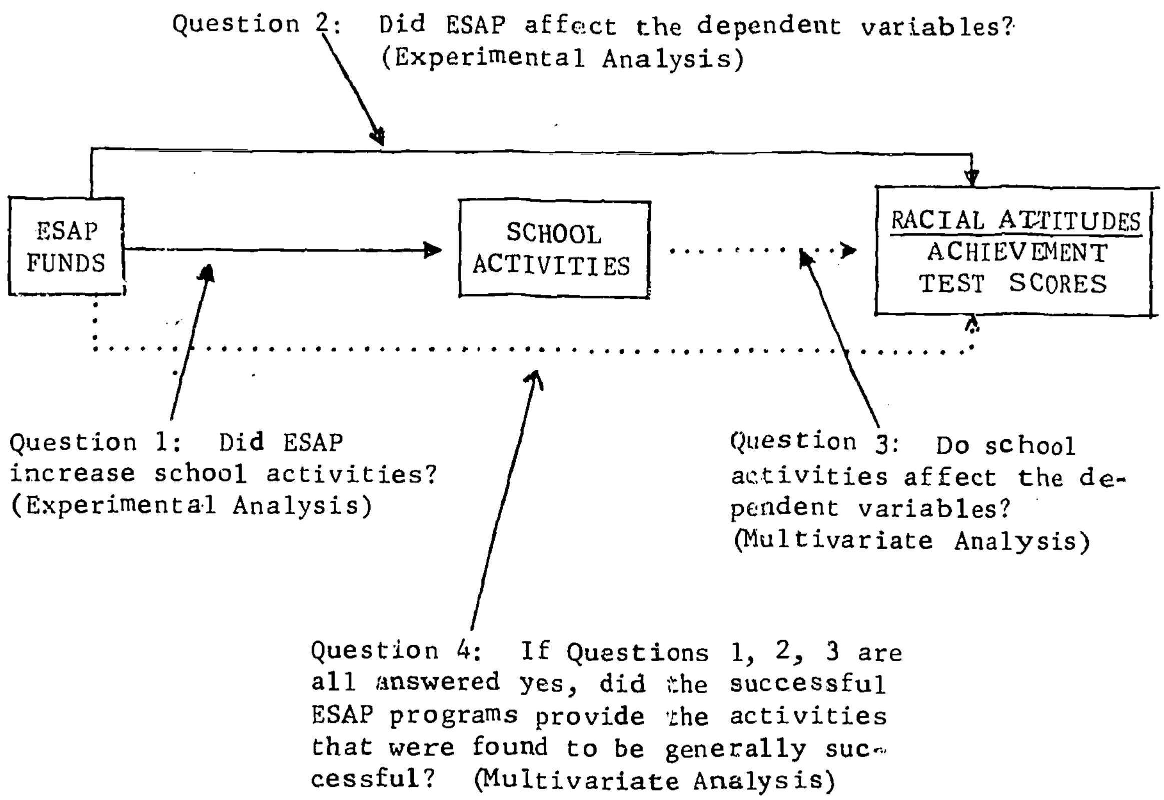

Figure 1.--The Three-Step Evaluation Design

Finally, there is a fourth question. We did find that ESAP provided a measurable increase in school activities, and that ESAP had an effect on school achievement. Also, the analysis of school activities did show that certain activities aided achievement. The final question is essentially a consistency check on this positive evaluation of ESAP: Do the ESAP projects that led to achievement gains turn out to be the kinds of activities that the multivariate analysis found to be successful? This cross-sectional analysis, in which each unit is a matched pair of schools from the experimental design, is the most complex analysis, but it serves to validate the assumptions of the preceding analysis. It will verify that the experimental results are not mere sampling error, and that the assumptions underlying the multivariate analysis are sound.

The Sample

The sample consists of 598 schools, selected from 103 Southern school districts that received ESAP funds.

The sampling procedure is described in detail in Appendix F. Briefly, it is as follows: As school districts were awarded funds by ESAP, they were sampled, and the selected districts were notified by the Office of Planning, Budgeting, and Evaluation that they would be required to participate in the evaluation. Larger school districts were oversampled at this stage.

School districts were requested to send a list of the individual schools that they thought should receive ESAP funds. They were asked to group these schools into pairs, based on similarity of pupil characteristics. The Office of Education then randomly selected 100 pairs of elementary schools and 50 pairs of high schools, and randomly designated one school in each pair as a control. To increase the sample for the regression analysis, an additional 200 elementary schools and 100 high schools were randomly selected from the same districts. In the selection of this supplementary group, schools in the first year of desegregation were oversampled.

An analysis of possible sample biases revealed one serious problem. Eighteen school districts withdrew from the evaluation after they were notified which schools had been selected as controls. It seems quite possible that the districts that withdrew from the sample were those in which the control was a school with serious racial or academic problems. The superintendents in these areas might have felt that they could not deprive these schools of federal funds. Conversely, a superintendent might have reconsidered withdrawing from the study when the control school turned out to be one which did not "need" funds as badly as other schools in his district. The Office of Education was clearly authorized to refuse funds to school districts that refused to participate in the evaluation, but the authorization was less than clear regarding the issue of control schools. A number of school superintendents must have suspected (correctly) that they could refuse to cooperate and still be funded. Thus there is a possible bias in the design toward the experimental school being more "needy."

Several efforts were made to determine whether such a bias existed, with mixed results. An analysis of covariance, which can correct for certain kinds of bias, was performed on the experimental design. The results of that analysis suggest that it did indeed correct for a bias. On the other hand, a reading of the correspondence with the 18 lost districts (summarized in Appendix F) shows little evidence of bias. Our interpretation of the data is that a bias does exist, but that it is not very large, and was partly corrected in the analysis of covariance.[4]

In summary, the execution of the experimental design was reasonably successful, and yielded a sample which, while not strictly representative of all Southern school districts, is sufficiently diverse. The sample seems to differ from a representative sample of schools in only two ways. First, larger school districts were oversampled, so that schools in large and

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[4]It should be noted that the remaining uncorrected bias has the effect of slightly understating ESAP's effect. If "needy" schools were more likely to get funds, then ESAP schools should show lower achievement and worse racial attitudes; thus the effect of the bias is to make our analysis more conservative.

medium size cities were approximately twice as likely to fall in the sample than if it had been drawn in a strictly random fashion. Second, because of the way in which ESAP funds were awarded, and the manner in which the sampling was conducted, almost all the schools under study are biracial and are therefore likely to be newly desegregated. Hence, there is a distinct possibility that the analysis would not hold true for totally segregated black or white schools, for schools with a long history of desegregation, or for Northern schools. The reader should exercise caution in interpreting the descriptive statistics of the sample, since they are not representative of all Southern schools.

The Data Collection

The data used in this report were gathered from the following sources; sampling procedures are described in Appendix F.

In each school:

Questionnaires and achievement tests filled out by three randomly sampled classes of students (usually three fifth grade classes in elementary schools, or three tenth grade English classes in high schools). An average of 55 students completed the questionnaires in each school.

Questionnaires completed by 10 teachers in each school.

A personal interview with the school principal.

In each school district:

An interview with the administrator in charge of the expenditure of ESAP funds.

Four community leaders (by telephone interview).

Taken together, the questionnaires that were used in each school described the way in which ESAP funds were used, the school's special programs and supplementary personnel, the social background of the students, the quality of race relations, some aspects of the school's "social climate," and the performance, attitudes, and aspirations of the students.

The interview with the school district ESAP director was used to determine how ESAP funds were allocated, both in the district and in each school. The four community leader interviews were designed to give us a description of community factors (such as the level of civil rights activity) that might affect the schools. In almost all cases, the four community leaders were two blacks and two whites active in the community, but with no professional connection to the school system.

The school principal was asked to describe the programs and staffing of the school, and to give some statistical data, such as the dropout rate and the number of guidance counselors. We also asked attitudinal questions dealing with racial prejudice, perception of the quality of the teachers, and the like.

The ten teachers were selected so as to maximize the possibility that the students studied would have been taught by those teachers. The teachers' questionnaire focused on the teachers' attitudes toward their students, and on their perceptions of the quality of race relations and of the classroom climate. Measures of racial prejudice and attitudes toward teaching in general were also taken.

The questionnaire administered to the students dealt with their perceptions of their school and teachers, and their participation in various remedial programs. They were also asked a series of attitudinal questions related to motivation, happiness, and orientation toward school. After the questionnaire was administered by the interviewer, the students took a one hour achievement test. We used a short version of the Educational Testing Services' STEP battery. Ten to fifteen items were selected from each of five subtests of the fourth and ninth grade STEP batteries. The subtests were reading comprehension, language, mathematical concepts, mathematical computation, and science. If we had been interested in individual achievement, the standard five hour version of the test would, of of course, have been preferable. But for our purpose--the analysis of the mean achievement--the reliability range of the one hour test (.84 to .91) was quite satisfactory.[5] We had excellent results from the tenth grade questionnaire and achievement test, and the fifth grade white student data are of qood quality. However, an apparently large response error in the attitude questionnaire greatly hampers our ability to interpret the fifth grade black data. This problem is discussed in detail in Appendix D.

The Analysis Method

After the data were coded and edited for internal consistency, they were aggregated to the school level. For each school, a file was built containing the data from the interview with the principal, the percentage of teachers in the school giving particular responses to the various questions, and the percentage of students of each race who gave particular answers on the various attitudinal questions and on the achievement test. In addition, the data gathered at the school district level, from the interviews with the community leaders and the ESAP director, were disaggregated, and included in the file of every school in the school district. Thus, the final data base consisted of approximately 700 variables for the sample of 400 elementary schools and 200 high schools.

The experimental design results were evaluated by a multivariate analysis of covariance (see Appendix A). Beyond this, the analysis was conducted by a team of social scientists, and each analysis differs somewhat from every other, according to the personal style of the analyst. On the whole, we think this has provided a useful check on the analysis.

Much of the analysis is done by using stepwise multiple regression. The reader should be warned that any multivariate analysis procedure can only be interpreted with proper concern for the methodological problems inherent in the technique. We have made a considerable effort to avoid presenting the reader with uninterpretable regression equations. Because

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[5] Reliability was measured by the Kuder-Richardson formula 20. See Appendix D.

of multicollinearity, we have been very cautious about adding variables to an equation when they were already partially represented. We have avoided using long equations, and have found in most cases that the sign of the zero-order correlation is not reversed when the variable is entered in the appropriate regression equation. We are relatively optimistic that our regression analyses are sound, but one can never be completely optimistic about this method.

In the regression analysis, and in other analyses in which the dependent variable is a student characteristic, each case (i.e., school) is weighted to reduce sampling error that might occur because of the small number of students sampled in each school. If n is the number of students of a particular race interviewed, the weight assigned to that school is $\frac{n}{n+k}$, where k is the ratio of the within-school variance to the between-school variance (usually approximately equal to three). The actual within-school/between-school variance ratio for achievement for each race and grade was used as the weight. (For a discussion of this, see Appendix B.)

Tests of significance are not given major consideration in this report, and we often interpret results that fall below traditional levels of statistical significance. We do this only under two conditions. First, when prior theory leads us to the strong expectation that the relationship shown is in fact reasonably close to the truth. Second, and more important, we usually have at least four independent observations, since, when we separate by race and grade, we have four different groups of students. Often, we separate them further into rural and urban schools. In some cases, therefore, we have as many as eight comparisons. A relationship that holds for several subgroups is persuasive even when one or more of the observations is not statistically significant.

We close this discussion by pointing out the two most important characteristics of this type of analysis. First, it is an analysis of schools. We are not concerned with determining which students have favorable attitudes toward integration, but rather which schools have students who are, on the average, more favorable to desegregation. Our report is fundamentally intended to help make policy, and it is these between-school differences that are most likely to be of interest to policy-makers. By aggregating the results to the school level, we greatly simplify some of the horrendous problems that accompany analysis of schools. For example, we greatly reduce the effect of response error at the individual level. While this is true for the achievement test, it is even more true for the attitude variables.

Second, our analysis is conducted separately for each race. This simplifies the statistical problems of the analysis. For example, if the races were combined, a very large fraction of the reported level of racial attitudes of students would be "explained" by the racial composition of the school; black students are much more sympathetic to integration than are white students. This finding is not a school effect at all, and hence is not relevant to this study. By separating whites and blacks, we also greatly reduce the apparent impact of social class. Within each race, social class, as we have measured it, explains only 50 per cent or less of the total between-school variance in achievement. Had we combined both groups, we would find SES "explaining" a much larger fraction of between-school variance.

In addition, we are assuming throughout this report, that white and black students are affected in different ways by school variables. For example, we would assume that the race of the principal, if it has any effect, would have a stronger effect on students of one race than on those of the other.

How ESAP Funds Were Used

As we have said earlier in this report, ESAP funds were added to total school budgets, and there is no difference in practice between an activity that ESAP funded and an identical activity funded by Title I, or by state and local taxes. We cannot, therefore, say precisely what percentage of a given activity was bought with ESAP money, nor can we say which activities were created because ESAP could be used for one activity, thereby freeing funds for another. We can say, however, which activities are in operation, and with the experimental design, we can compare the experimental and control schools. If an activity is found proportionately more often in ESAP-funded schools than in the matched controls, we can surmise that ESAP money was used directly or indirectly for this purpose. Thus, the first function of the experimental design is to give us good information about the way in which ESAP funds were used, although even this will not tell us the precise magnitude of the activity or the percentage of the total of ESAP funds that were spent on the project. Table 1.1 presents the percentage of experimental and control schools that have various activities for either the fifth or tenth grade.

The data are taken from the interviews obtained from the administrator responsible for ESAP and the principal of each school. For example, the ESAP director was asked, for each school in our sample, how many remedial reading specialists were paid from ESAP funds during the 1971-72 school year. This question was used to count 20 other kinds of specialists and 12 different types of supplies or equipment. Other questions inquired about teacher in-service education projects, and activities and personnel that were provided at the district level from which the sample schools might benefit.

The principal was not asked any questions about ESAP. Instead, he was asked questions such as, "How many full-time and part-time remedial reading teachers are currently working at this school?"[6] The principal was then asked to select from a checklist the activities present in the school--such as remedial reading--and asked, "Considering the size, composition, and needs of your student body, tell me if the program is large enough or too small," "Did your school have remedial reading last year (1970-71)?" and "Is this program available to fifth graders (tenth graders)?" The principal was also asked seven questions about receipt of funds for supplies and physical plant improvements. In all, the principal's questionnaire defines 43 variables, some with more than one coding procedure.

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[6] Wordings of questions asked of the principal are given in Appendix E.

This means that we are able to search through 60 activity variables for effects.

TABLE 1.1

ESAP'S IMPACT ON THE SCHOOL DISTRICT: PERCENTAGE OF SCHOOLS IN DISTRICTS WHERE ESAP FUNDS WERE USED FOR SPECIFIC ACTIVITIES

ESAP-Funded Activity	Per Cent
Teacher in-service education	84
Non-ethnic classes, materials	73
Other materials	66
Personal community activities	64
Teacher's aides	61
Administration	54
Non-personal community relations	44
Remedial programs	37
Student-to-student activities	31
Counseling support	31
Counseling	31
Ethnic classes, materials	28
Remedial personnel	27
Comprehensive planning	10
Facilities	07
Busing	01
Other	18

In Tables 1.1 and 1.2, the schools are weighted to make the sample representative of ESAP-funded Southern schools. (These are the only tables in the report weighted in this way.) A few of the percentages in Table 1.2 are obtained from other sources and are not weighted; they are indicated by an asterisk.

Table 1.1 presents an overview of the data. Two skilled coders read all of the ESAP administrators' questionnaires and determined whether any ESAP funds were spent in particular school districts for each of 17 different activities.[7]

The table indicates that ESAP funds were indeed spent in a variety of ways. Teacher in-service education appears in districts that include 84 per cent of all the schools. Most districts also spent funds to supplement their curriculums generally: 73 per cent on general coursework (exclusive of ethnic-oriented courses such as black studies) and 66 per cent on "other" miscellaneous materials. Sixty-four per cent of the schools are in districts that spent funds to develop personal contact with the community, increasing the acceptance of desegregation (personal community activities).

Sixty-one per cent of the schools were in districts that employed teacher's aides. Skipping down the table, we see that 31 per cent of the districts used ESAP for counseling, and 31 per cent for counseling support. Many, but not all, districts used ESAP funds for remedial work; 37 per cent for remedial programs, 27 per cent for remedial personnel. Thirty-one per cent of the districts used ESAP to develop extracurricular activities and other projects that would bring students together (student-to-student activities). Ethnic studies classes were instituted or expanded in 28 per cent of the districts. The small percentage of schools using funds for school buses reflects federal policy of low priority for transportation expenditures.[8]

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[7] The categories are those used by Resource Management Corporation in their evaluation of ESAP-I, although the coding procedure is probably not identical. See RMC, Evaluation of the Emergency School Assistance Program, report #UR-163 (Resource Management, Bethesda, 1971).

[8] One should not assume that this restriction actually reduced the amount of busing in these districts. If districts were under court orders that required busing, this restriction only meant that non-ESAP funds were used.

In summary, Table 1.1 indicates a diffuse pattern of ESAP expenditures with heavy emphasis on teacher in-service training, community relations, and teacher's aides, and moderate emphasis on remedial education and counseling activities.

Table 1.2 presents a great deal of data, from several different sources, regarding the activities funded by ESAP in the schools in our sample. The table is divided by topic. Under each topic, the first entry (or entries) are data reported by the director of the ESAP program in the district; these data indicate the percentage of experimental schools that received a certain kind of aid. These figures, in the upper part of each section, are sometimes very hard to interpret, and they are likely to exaggerate the impact of ESAP funds. If a single community relations worker is employed in a large school district, it would be technically correct, but misleading, to say that ESAP provided community relations services for every school in the district. For this reason, the data in the lower part of each section of Table 1.2 are more useful. These data are taken from principals' reports of the presence of activities or personnel, regardless of the funding source, in the experimental and control schools. If the ESAP directors report that funds were spent on a certain activity, it follows that the experimental schools should have more of this activity than the control schools. If this is not the case, ESAP's contribution in this area must be negligible.

Remedial Programs

The data indicate that ESAP was used to develop new remedial projects, or to strengthen existing ones, in a small number of elementary schools. The ESAP administrators reported that 6 per cent of the elementary schools received funding for a remedial reading project, and that 9 per cent received a remedial reading specialist. Eight per cent received funds for tutoring, and 1 per cent for remedial math. The school differences are consistent with this: 10 per cent more of the experimental elementary school principals report having a remedial reading specialist, 16 per cent more report a remedial reading project, and 8 per cent more report tutoring.

TABLE 1.2

SCHOOLS RECEIVING ESAP FUNDS FOR SPECIFIED ACTIVITIES
AND SCHOOLS HAVING SPECIFIED ACTIVITIES

(Per Cent, except where indicated)

Activity	Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
	Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Remedial Programs								
ESAP purchased:								
Reading program in school (EREADY)	6	6						
Math program in school (ERMATY)	1	4						
Remedial reading specialist (ERR72X	9	4						
Tutoring (ETUTRY)	8	5						
School Differences:								
Remedial reading specialist (RR729X)			55	45	10	44	57	-13
Remedial reading program (READSY)			62	46	16	61	53	8
Remedial math specialist (RM729X)			14	13	1	26	32	- 6
Speech therapist (SP729X)			56	65	- 9	16	24	- 8
Tutoring program (TUTRSY)			46	38	8	32	29	3
Remedial scale:* (READSY + teacher reports learning about remedial + teacher reports extra reading time for poor readers)			38	35	3	-	-	-

*Variable not weighted.

-Data not applicable or not computed.

TABLE 1.2--Continued

Activity		Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
		Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Teacher's Aides									
ESAP purchased:									
Aides in school	(ETE72X)	35	17						
School Differences:									
Aides program	(AIDESY)			64	58	6	49	41	8
Aides in school	(TE729X)			84	73	11	54	42	12
Median number of aides (in school with aides only)	(TE729X)			2.3	2.6	- .3	2.7	1.9	- .8
Aides scale:* (teachers report having aide + report aide works with students + teachers report having time to be alone during day)				22	12	10	29	26	3
Counseling Activities									
ESAP purchased:									
Counselors	(EGU72X)		6						
Counselor's aides	(EC072X)		3						
School Differences:									
Counseling program	(GUIDSY)			30	18	12	87	86	1
Counselors (mean)	(GU729X)			.27	.17	.10	2.26	2.30	- .04
Counselor's aides	(CO729X)			-	-	-	20	13	7

TABLE 1.2--Continued

Activity	Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
	Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Teacher In-Service Education and Human Relations Programs								
ESAP purchased:								
In-service education (TRAINE)	61	50						
Specific to desegregation (TDESEE)	40	24						
Specific to remedial (TREMEE)	7	7						
In-service program in this school (TRAINE)	4	1						
Minority history course (EMHISY)	-	9						
Parent-school relations activity (EPAREY)	15	19						
Student relations activity (ESRELY)	10	11						
Community relations personnel in this school (ECR72X)	-	5						
Human relations literature (ELITRZ)	25	23						
School Differences:								
Teacher in-service education			93	83	10	84	81	3
Mean per cent of teachers reporting participating in in-service education			70	67	3	65	57	8

TABLE 1.2--Continued

Activity	Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
	Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Mean per cent of teachers reporting:								
Over 1 week in-service education (TTIMET)			40	38	2	28	28	0
In-service education was valuable (TEVALT)			58	55	3	48	55	- 7
In-service education changed their teaching techniques (TCHANT)			47	52	- 5	43	46	- 3
Learned about teaching reading this year (LNREDT)			48	50	- 2	20	14	6
Learned about discipline this year (LNDIST)			51	55	- 4	41	50	- 9
Learned about intergroup relations this year (LNRELT)			50	58	- 8	51	56	- 5
Learned to be less afraid of other ethnic groups this year (LNCONT)			48	53	- 5	48	52	- 4
Learned about minority history this year (LNHIST)			35	30	5	34	28	6
Learned to handle heterogeneous classes this year (LNHANT)			55	60	- 5	52	52	0

TABLE 1.2--Continued

Activity	Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
	Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Parent-school relations activity (PARESY)			63	63	0	61	41	20
Student relations activity (SRELSY)			51	56	- 5	70	57	13
Teacher relations activity (TRELSY)			50	54	- 4	64	40	24
Minority history course (MHISSY)						29	31	- 2
Biracial student committee (COMMSY)						78	69	9
Multiethnic curriculum scale:* (CREVSY + minority history + multiethnic texts + teachers report learning new materials + teachers report learning about minority groups)			28	24	4	55	45	10
Extracurricular activities								
School Differences:								
Extracurricular activities geared toward minority students (XACTSY)						19	8	11
Late school bus for after-school activities (XBUSSY)						26	13	13
Extracurricular scale:*(XACTSY + Bl,W students report high participation + teacher reports of increased participation + principal's report on athletic teams)						55	55	0

TABLE 1.2--Continued

Activity	Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
	Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Curriculum Revision, Classroom Organization								
ESAP purchased:								
Curriculum revision (ECREVY)	7	10						
Demonstration classroom (EDEMNY)	2	-						
School Differences:								
Curriculum revision (CREVSY)			44	44	0	70	47	23
Demonstration classrooms (DEMNSY)			18	12	6	-	-	
Ungraded classrooms (UNGRSY)			16	35	-19	-	-	
Team teaching (TEAMSY)			33	32	1	-	-	
Special classes for underachievers (UACHSY)			33	27	6	65	50	15
Achievement grouping of classes (GRRMSY)			27	39	-12	75	75	0
Achievement grouping within classrooms (GRCLSY)			80	84	- 4	-	-	
Classroom organization scale:* (DEMNSY, UNGRSY, UACHSY, GRRMSY, GRCLSY + teachers report ungraded classes + teachers report learning new methods or discipline techniques or techniques for handling heterogeneous classes)			16	35	-19	39	45	- 6

TABLE 1.2--Continued

Activity		Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
		Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
Scale: Team teaching + teachers report team teaching				53	60	- 7			
<u>Vocational programs</u>									
ESAP purchased:									
Vocational programs	(EVOCSY)		2						
School Differences:									
Vocational programs	(VOCTSY)						95	85	10
Vocational education specialist	(VO729X)						86	95	- 9
Scale: (VOCTSY + VO729X)							23	36	-13
<u>Other Specialists</u>									
School Differences:									
Social work programs	(SOCWSY)			60	60	0	50	50	0
Social worker	(SO729X)			18	26	- 8	18	8	10
Psychologist	(PS729X)			26	17	9	15	10	5
Truant officer/ home visitor	(TR729X)			46	49	- 3	22	33	-11
Music teacher	(MU729X)			60	72	-12	76	97	-20
Drama/speech teacher	(DR729X)			11	15	- 4	40	56	-16
Gym teacher	(GY729X)			63	63	0	93	96	- 3
Nurse	(NU729X)			48	60	-12	52	46	6
Librarian	(LI729X)			81	85	- 4	96	98	- 2

TABLE 1.2--Continued

Activity		Schools Receiving ESAP Funds		Elementary Schools with Various Activities			High Schools with Various Activities		
		Elementary Schools	High Schools	Experimental	Control	Difference	Experimental	Control	Difference
<u>Equipment</u>									
ESAP purchased:									
Instructional equipment	(EMACHZ)	14	13						
Audio-visual supplies	(EAVUSZ)	27	15						
School Differences:									
Audio-visual specialists	(AU729X)						11	14	- 3
<u>Supplies</u>									
ESAP purchased:									
Textbooks	(ETEXTZ)	5	16						
Teaching materials	(ETMATZ)	52	44						
Testing materials	(ETESTZ)	11	14						
Recreational materials	(ERECRZ)	4	3						
School Differences:									
New textbooks	(TEX12Z)			37	34	3	24	24	0
New testing materials	(TST12Z)			37	38	- 1	26	26	0

Only one difference is negative: fewer experimental schools have speech therapists. The experimental-control differences, however, do not mean that these are highly developed programs; when we look at teachers' reports of the amount of remedial work in the schools (the remedial scale) we see only negligible gains.

In high schools, we see little evidence that ESAP stengthened the remedial projects. ESAP directors report that they provided remedial reading projects in 6 per cent of the schools, but employed remedial reading specialists in only 4 per cent. ESAP did provide a few remedial math programs (in 4 per cent of the schools). When we compare the experimental high schools to their controls, we see that experimental schools are more likely to have remedial reading programs and tutoring. These differences are not large, however, and the experimental schools are less likely to have remedial reading or math personnel, or speech therapists.

Teacher's Aides

The major use of ESAP funds for personnel seems to be for teacher's aides. The ESAP directors report that one-third of their elementary schools and one-sixth of their high schools received aides as a result of ESAP funding. In elementary schools, the impact shows, not in the number of aides per school (there is no difference between the experimental and control schools), but in the higher percentage of schools that have aides. In high school, ESAP apparently resulted in both an increase in the number of schools with aides, as well as an increase in the number of aides per school.

Guidance Programs

ESAP funds were used to employ a few additional high school counselors. However, results from the principal's questionnaire indicate that ESAP funds were often spent on elementary school counseling. The experimental elementary schools are much more likely to have counseling programs than the control schools. Apparently, the counseling programs were usually small; therefore, a relatively low level of ESAP funding had a very noticeable impact. In the control schools there is one counselor for every six schools, while in the experimental schools there is slightly over one counselor for every four schools. In high schools, there is little difference between the experimental and control schools, indicating that ESAP funds were not spent on counseling in those grades.

Teacher In-Service Education and Human Relations Activity

We saw in Table 1.1 that 84 per cent of the districts invested some funds in in-service education. While these districts did not develop in-service educational opportunities for teachers in every school, they must have done so in a great many, since 61 per cent of the elementary schools and 50 per cent of the high schools had ESAP-funded teacher-education activities. In some cases the training was designed to prepare staff for desegregation; in other cases it was intended merely to implement other ESAP-funded programs. Remedical work was a focus of in-service education in only 7 per cent of the schools. In nearly every case, the in-service education program was set up to serve a number of schools simultaneously; only 4 per cent of the elementary schools and 1 per cent of the high schools report teacher education specifically for their school. This data would lead us to expect large experimental-control differences in the amount of teacher education. In fact, however, we see only small differences between the experimental and control schools in both the amount of education reported by the principal, and in the number of teachers who report receiving any training. Furthermore, neither elementary nor high school teachers in the experimental schools are at all more likely to report that they learned anything related to educational or racial issues in the school. The elementary and high school teachers in the experimental schools show only one consistently positive difference over those in control schools; they know more minority group history. But this could easily be the result of other ESAP activities, not teacher in-service education. For most of the items, there are slight negative differences between experimental and control schools, probably due to sampling error.

In conclusion, it appears that the funds expended for teacher in-service education did not result in any difference between experimental and control schools. We can see three possible explanations for this, with no way to determine whether any of them are correct:

1. ESAP spent little money on teacher in-service education, at least relative to the amount of funds from other sources. The high percentage of teachers in the control schools who spent over a week in in-service education indicates that even without ESAP, this type of project is a major expense. Since our evaluation of ESAP makes no attempt to assign costs to various activities, we don't know whether ESAP contributed small or large amounts of money to in-service education.

2. ESAP-funded in-service education was ineffective. This would explain why teachers in experimental schools were not more likely to report learning new things. Unfortunately, our data do not permit us to construct an argument either for or against this hypothesis. It is also dangerous to assume that teachers' reports of learning new things is highly correlated with what they in fact have learned.

3. ESAP funds for in-service education were spent on teachers in the control schools. It should be noted that almost all of these activities took place in centralized locations, with teachers from many schools participating. Proper administration of the experimental design would require that teachers in the control school be prohibited from attending ESAP-funded sessions. While we have no data on this, it seems plausible, a priori, that some administrators would ignore the experimental design.[9]

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[9]The issue gets even more complicated if multiple sources of funds were used, since teachers in control schools should have been permitted to attend only that portion of the in-service education sessions funded by non-ESAP monies.

In elementary schools, ESAP provided only a small amount of human relations activity, with no discernible impact on the schools. For example, 15 per cent of the elementary schools were supposedly affected by parent-school relations programs, but the experimental schools do not report having these programs more often than the control schools. In high schools, however, we see a very sharp difference between the experimental and control schools in human relations activity, indicating that ESAP's greatest impact was in this area. Experimental high schools report having programs to improve intergroup relations among teachers in 64 per cent of the schools. It seems likely that ESAP directors classified these teacher relations programs as in-service education in some cases. This would explain why, for high schools, ESAP directors reported more teacher education and less human relations, while high school principals reported more human relations and less teacher education.

Extracurricular Activities

A few districts used ESAP funds to support extracurricular activities in high schools. Other funds were apparently not used in this area, so that the experimental-control differences are quite sharp. Principals in experimental high schools are twice as likely as those in the control schools (19 per cent to 8 per cent) to report that they have made a systematic effort to involve minority students in extracurricular activities. These principals are also twice as likely to report scheduling a bus to take students home after after-school activities. There is no evidence, however, that these efforts have actually succeeded in involving more students in extracurricular activities. Students in experimental schools are not more likely to say they are involved in extracurricular activities, and when this and other items are combined in a scale, no experimental-control difference appears. It appears that ESAP funds for extracurricular activities were aimed, not at developing more extracurricular activities of a general nature, but at developing black-oriented activities for a small number of students.

Curriculum Reorganization

The data indicate that ESAP funds were used to reorganize the curriculum in high schools but not in elementary schools. There is a sharp experimental-control difference in high schools (70 per cent of the experimental high schools reorganized their curriculum, compared to 47 per cent of the control schools). This reorganization was apparently not the result of instruction from the ESAP administrator's office, since that office reports ESAP-funded curriculum revision in only 10 per cent of the high schools and in none of the elementary schools.

Curriculum reform in elementary schools is highly fashionable now, with considerable national discussion of open classrooms and individualized instruction. The movement is focused around maximizing student freedom. ESAP funds are apparently not being used for this type of curriculum reform. Indeed, the control schools are more likely to have ungraded classrooms. While this is probably a mere sampling error, there are some rather unplausible hypotheses as to why the presence of ESAP funds would hinder the development of ungraded classrooms.

Vocational Programs, Other Specialists, Equipment and Supplies

The last part of Table 1.2 indicates a series of areas either where ESAP funds were not used, or where ESAP funds, relative to other sources of funding, made only a negligible contribution. For example, we see no evidence of ESAP expenditures for vocational education in high schools. In addition, we see that experimental schools do not differ from control schools in the presence of various types of school supporting staff people, from social workers to librarians. In nearly ever case, the experimental schools have fewer specialists per pupil than do the control schools. (This may be sampling error; if there is a selection bias in the experimental design, as mentioned earlier, that bias might cause these differences. We consider that unlikely, however, since it is hard to imagine why "music teachers-per-student" is the best measure of that bias.) Finally, we see that ESAP funds were used to provide some audio-visual equipment and teaching materials. A comparison of the experimental and control schools, however, suggests that ESAP monies played only a minor role, since the percentage of experimental and control schools receiving materials does not differ. Thus, the evidence is unclear; we do know that many districts spent ESAP funds for teaching materials, but we do not have evidence about how much money they spent.

It is difficult to summarize Table 1.2, in part because there are simply too many activities. Therefore, we will first attempt to reduce the number of variables in Table 1.2 through a factor analysis.

Clusters of Activities: A Factor Analysis

In order to gain an understanding of the relationships among the school projects, all activities questions from the questionnaire administered to the principals were factor-analyzed. The results are shown in Appendix G, along with a correlation matrix for the projects. The results are summarized in Tables 1.3 (for the fifth grade) and 1.4 (for the tenth grade).

In the factor analysis, 43 items were used: 19 giving counts of types of personnel, 18 on the presence or absence of certain activities, and 6 dealing with the provision of supplies and improvements in the physical plant. Since we are not dealing with questions of the use of ESAP funds, our analysis includes the entire sample of schools.

Because the program variables are identified using three different question formats, there is a noticeable tendency for both factor analyses to form separate factors according to format. Thus, for example, the first factor of the fifth grade analysis includes only counts of the number of specialists in the school since all the counts of this variable were gathered using a similar questionnaire format (see

TABLE 1.3

THE PRINCIPAL FACTORS OF FIFTH GRADE ACTIVITIES

Variables in Factor (loadings in parentheses)	Name and Description of Factor
Factor 1: Music teachers per student (.81) Gym teachers per student (.60) Counselors per student (.62) Librarians per student (.64) Administrators per student (.65) Speech therapists per student (.51)	Auxiliary Personnel: Non-Instructional Distinguishes schools which have high per-pupil expenditures for traditional supporting staff
Factor 2: Parent-school relations program (.59) Student relations program (.61) Teacher relations program (.61) Team teaching (.39) Demonstration classes (.39) Curriculum revision (.39)	Intergroup Relations, Curriculum Reorganization Human relations programs plus innovations in classroom organization
Factor 3: Remedial reading specialists per student (.53) Remedial reading program (.58) Testing material (.41) Teacher's aides program (.48) Teacher's aides per student (.47) Counselors per student (.26)	Basic Instructional Services Remedial programs, teachers aides: this is a modification of the school to maximize cognitive development according to conventional methods
Factor 4: Psychologists per pupil (.61) Social work program (.52) Speech therapist per pupil (.39) Social workers per pupil (.49) Home visitors per pupil (.26)	Social Work and Guidance Provision of social work support

Appendix E). The personnel that have the heaviest loadings on this factor are those filling traditional roles--music teachers, librarians, administrators. Any "good," well-staffed school, regardless of its ideological bias, is likely to have these positions.

All of the other three fifth grade factors reflect alternative strategies for improving education--human relations and curriculum reorganization (factor 2), basic instructional services (factor 3), and social work and guidance (factor 4). The strategies are not incompatible, but they are in conflict to the extent that many educators would argue for one of these factors in opposition to the others.

The core of factor 2 is human relations work with parents, students, or teachers. Also attached to this factor are three variables that measure the degree to which the school is involved in innovations of classroom organization. Team teaching loads on this factor, and ungraded classrooms are correlated with it, although its factor loading is below our criterion level. The data suggest that the main thrust of innovation in elementary school teaching is toward individualized instruction, reducing monotony, and establishing more one-to-one teacher-student contact. Apparently this orientation toward school reform is often associated with reformist racial activities as well.

Factor 3 emphasizes cognitive development and remedial work. Teacher's aides load on this factor, as does counseling. Achievement grouping is loaded on this factor, but below our criterion level. Thus, the overall "tone" of this factor suggests a traditional ideology.

The fourth factor may represent a different strategy, with a therapy-based, or interventionist ideology. All of the items loading on this factor deal with providing social workers or psychologists.

As we have seen, the fifth grade variables group into factors in part because the various activities share the same goals or use similar techniques, and in part because of the way in which otherwise unrelated activities stem from the same ideological orientation.

The tenth grade factors (Table 1.4) are less clear. The first factor represents a combination of human relations projects, instructional equipment, and in-service education. (Two of these activities also fit together into the second factor of the fifth grade analysis; two other variables, achievement grouping and counseling, fit in the third fifth grade factor.) All of the variables listed in the tenth grade factor 1 are from the same section of the Principal's questionnaire, and the factor may be partly the result of the response set created by the common format of the questions. For example, the heaviest loading of any non-personnel variable is human relations literature. If this variable had not come from another part of the questionnaire, it would be in factor 1.

Intergroup relations variables appear in the first and the third factors. In factor 3, they are combined with variables describing the provision of school materials and physical remodeling. To some degree, the variables in factor 3 may reflect the reorganization of the school district, and may reflect new desegregation as well. Similarly, social workers load on both the second and fourth factors. In factor 2, they are part of a general remedial strategy very similar to factor 3 in the fifth grade. In factor 4, they combine with other variables in a "therapeutic" strategy, which includes, interestingly, music teachers.

The three principal dimensions of the fifth grade factor analysis--human relations, remedial programs, and social work--appear in the tenth grade factor analysis as well, but the rotation of the factors does not succeed in placing each of the components uniquely into one group. As noted earlier, however, it is very likely that the differences between the two factor analyses are a function of the response set of the three different question formats. The first factor in the fifth grade analysis had an organizing principle related to the number of

TABLE 1.4

THE PRINCIPAL FACTORS OF TENTH GRADE ACTIVITIES

Variables in Factor (loadings in parentheses)	Name and Description of Factor
Factor 1: Counseling program (.58) Student relations program (.57) Instructional equipment (.68) Teacher in-service education (.64) Achievement grouping (.45) Teacher relations program (.57)	Intergroup Relations Human relations programs, plus in-service training (which is often focused on human relations). But why does instructional equipment and achievement grouping fit in this dimension?
Factor 2: Teacher's aides per student (.79) Speech therapist per student (.56) Remedial reading specialist per student (.41) Aides program (.52) Social workers per student (.55)	Basic Instructional Services, Social Work Variables are all remedial staff, teacher's aides, or social work activity.
Factor 3: Textbooks (.57) Testing materials (.48) Additional space (.46) Renovations (.43) Human relations literature (.39) Teacher relations (.40) Student relations (.35)	Intergroup Relations plus Materials and Physical Plant All the supplies and renovations variables, plus intergroup relations programs
Factor 4: Psychologists per student (.55) Social workers per student (.53) Counselors per student (.50) Music teachers per student (.49)	Social Work Music teachers is an interesting addition to this factor.

specialists, and this may have permitted that analysis to separate the other activities more neatly. There is another difference between the fifth and tenth grade analyses. There is no organized high school classroom reform movement to parallel the ungraded class-team teaching movement in elementary schools, so these items, which help define the fifth grade factors, are missing.

The results of the analysis indicate that groups of projects cohere and may in fact represent manifestations of alternative theories of education or alternative ideological biases. Part of our analysis will be to determine if any of these alternative sets of projects seem preferable to others.

Conclusion: Is There a Pattern to ESAP Expenditures?

We may now examine the activities purchased by ESAP and ask two questions: Are the various activities consistent ideologically? Are they consistent in reflecting constraints that derive from the method of funding?

For elementary schools, the answer seems to be yes on both counts. Three major ESAP expenses--remedial programs, teacher's aides, and counseling--are all part of factor 3, basic instructional services. The other two areas of expenditure, teacher in-service education and teaching materials, are consistent with an emphasis on basic instructional services. It seems fair to characterize the elementary school ESAP program as a traditional program oriented toward cognitive development.

This pattern of expenditures is also what one would expect for a small program with short-term funding received during the school year. New professional staff could not be employed because of lack of time. For the same reason, major educational reforms could not be financed without more stable, long-term sources of funding. Consequently, funding constraints almost necessitate that ESAP be used to employ non-professionals, to buy blocs of time of existing professional staff to be used for in-service education, to purchase supplies and materials, and for administrative purposes.

The high school pattern is much more complex, much less traditional, and more inconsistent. One plausible way to fit the ESAP expenditures into the factor analysis is to argue that ESAP expenditures are limited to factors 1 and 2, intergroup relations and basic instructional services. One major ESAP expense, teacher's aides, has the heaviest loading of factor 2, and four ESAP-funded projects, in-service education, counseling, and student and teacher relations work, all relate to factor 1. Curriculum revision, the other item heavily funded by ESAP, does not appear in any factor.

ESAP did not result in the employment of additional professionals in the high schools; the pattern of high school expenditures, like that of the elementary schools, reflects the constraints of short-term funding.

If we ask why ESAP funds were used differently in high schools and elementary schools, the most compelling answer is that high school students are less passive than elementary school students. Being less passive, they are not only likely to create a more unpleasant racial situation, but are also likely to make sure that the school administration pay attention to any situation created. If elementary school teachers and principals believe that race relations are a problem, they can still reason that the solution to the problem is to change the students. This could occur through more or less traditional remedial programs. In high schools, it seems likely that school administrators must admit that race relations are a problem, and that their chances of changing their students are slim. Therefore, we argue that the elementary schools consider ESAP an opportunity to do what they prefer to do--basic instruction--while the high schools see it as an opportunity to do what they must do--change their curriculum and their staff's behavior.

CHAPTER 2

STUDENT ATTITUDES TOWARD INTEGRATION

Introduction and Overview

To judge whether the Emergency School Assistance Program was successful in making desegregation work, we might first examine whether or not it resulted in more favorable student attitudes toward desegregation. School race relations can be measured in many ways; we have chosen to study the degree to which students of each race approve of and want social and educational integration, and the degree to which they accept the ideal of racial equality. A brief overview of our analysis in this chapter is presented below.

The black students studied would be classified, by most standards, as being pro-integration. For example, three-quarters of the black high school students say they would like to have more white friends. White students, however, appear to be neither overwhelmingly pro- nor anti-integration. Slightly less than half of the white students would prefer an integrated school to an all-white one; about half say they would like to have more black friends. White fifth grade attitudes are generally more favorable toward integration than white tenth graders.

The attitudes of high school students are strongly related to certain characteristics of the school they attend. The data indicate that the school can be a liberalizing force on white students. Generally speaking, white students are more favorable toward integration when they have had more experience with school desegregation, when the faculty holds pro-integration attitudes, and when the school operates in a clearly nondiscriminatory fashion. In addition, white attitudes are more favorable toward desegregation when whites are a very clear majority or a very small minority of the total student body and when there is little racial tension in the school. Thus, some circumstances appear to be more conducive than others to developing or sustaining pro-integration attitudes.

We found that ESAP programs did not make student attitudes toward integration more favorable. This, however, oversimplifies a complex story. In high schools, ESAP often funded human relations programs, which did result in urban white student attitudes becoming more favorable toward integration (this is particularly true of programs aimed at changing teachers' behavior). The data seem to indicate, however, that other ESAP-funded programs, such as remedial and counseling programs, are associated with less favorable white student attitudes toward integration.

There is some evidence that black high school students in ESAP-funded schools believe their teachers to be pro-integration; this seems to make black students like school more, but it does not make them more favorable to integration, mainly because black students are so strongly pro-integration that there is little reason to expect attitudes to become much more favorable. Schools with middle-class black students, particularly in cities in the Upper South, are experiencing a decline in black student pro-integrationist sentiment. Whether this is a sign of new militancy or simply a scaling-down of previously unrealistic attitudes, the result is to make the racial attitude scale used here an incomplete criterion with which to evaluate gains in black attitudes.

Elementary schools also affect student attitudes; urban schools that emphasized human relations had white students who were more favorable to integration, and urban schools that adopted some of the new ideas in classroom organization had similar positive effects on black attitudes. However, ESAP did not usually fund these programs and hence had little effect on student attitudes in elementary schools.

The school can affect student attitudes toward integration in other ways. Early experience of integration helps; in both rural and urban areas, white high school students and both black and white elementary school students have higher pro-integration scores if they began integration in early grades. Generally, children are more favorable to integration if their teachers and principal are relatively unprejudiced and appear to like integration.

Elementary schools that separate children by ability either within classrooms or between classrooms have students with lower scores on the integration attitude scale. However, we found some rather interesting consequences of high school ability grouping. It is ordinarily assumed that grouping, since it tends to racially resegregate students in most cases, is an obstacle to successful desegregation. This is an assumption that has never before been tested; to our knowledge no previous study has made careful statistical comparisons between racial attitudes in different kinds of schools. These data indicate that in liberal high schools, ability grouping did not worsen racial attitudes of either black or white students.

The Dependent Variable: Attitudes toward Integration

An integration attitude scale was developed for both fifth and tenth grade pupils from the responses to several questionnaire items. The original questions, the responses, the scoring values for scale construction, the mean percentages of each student group giving pro-integration responses for each item,[1] and the standard deviations of the distribution of school percentages are shown in Table 2.1. As the table indicates, the tenth grade scale has three items, and the fifth has two. For tenth grade students, the mean percentage of favorable responses for each of the component items of the scale is more than twenty points higher for blacks than for whites; for fifth graders, the means are closer together.

The scale item intercorrelations, presented in Table 2.2, show that the tenth grade intercorrelations are higher for whites than for blacks. The average school scale scores are presented in Table 2.3. The scales are constructed by simply adding the scoring values for the responses to each item[2] and then computing a school mean. In this table, and in succeeding

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[1]Technically, the percentages given in Table 2.1 are school means; i.e., we computed the percentage giving the pro-integration response in each school and then computed the mean across schools (weighted, as always, to discount schools with few students of the race being studied). This differs only slightly from the overall percentage we would have obtained had we simply pooled the students, irrespective of school.

[2]The sum is multiplied by 3.33 to increase the range and eliminate the need to work with decimals.

TABLE 2.1

ATTITUDES TOWARD INTEGRATION, BY GRADE AND RACE

Question Number	Question (Scoring Value in Parentheses)	School Mean for Each Item (Per Cent); School Standard Deviations in Parentheses: Tenth Grade, White	Tenth Grade, Black	Fifth Grade, White	Fifth Grade, Black
10/43 5/18	If you could choose the kind of school you would go to, would you pick one with: All white students (0) All black students (0) A mixture of different kinds of students (2) . . . . Other (0) Blank (0)	41.9% (±19.2)	61.7% (±18.8)	47.4% (±19.9)	56.9% (±19.8)
10/45 5/28	Would you like to have more friends who are of a different race? Yes (2) . . . . No (0) Blank (0)	48.6% (±17.1)	75.7% (±14.6)	Not used in fifth grade	
10/53	How uncomfortable do you feel around students of a different race? Generally very uncomfortable (1) Generally somewhat uncomfortable (2) Occasionally somewhat uncomfortable (3) Not at all uncomfortable (4). . . Blank (3)	22.0% (±13.8)	49.9% (±16.8)	Not used in fifth grade	
5/33	In general, do you think that white people are smarter than black people, that black people are smarter than white people, or do you think a person's color doesn't have anything to do with how smart he is? White people are smarter (0) Black people are smarter (0) Color doesn't have anything to do with smartness (2) . . . . Blank (0)	Not used in tenth grade		91.7% (± 8.4)	88.6% (±11.2)

Note: The percentages are for the most favorable response to each question, as indicated by the dotted line. Numbers in parentheses after each response indicate scoring value used in scale construction; see Table 2.3.

TABLE 2.2

ITEM INTERCORRELATIONS, INTEGRATION ATTITUDE SCALE

(Whites below Diagonal, Blacks above Diagonal)

Fifth Grade	Choose School	Color/ Smartness
Choose a school with a mixture of different kinds of students		.43
Color doesn't have anything to do with smartness	.39	

Tenth Grade	Choose School	Like More Friends	Not Uncom-fortable
Choose a school with a mixture of different kinds of students		.34	.22
Like more friends of a different race	.81		.20
Not at all uncomfortable with students of a different race	.50	.48	

tables in this chapter, the schools have been divided into rural and urban subgroups, based on information in the County and City Data Book giving the per cent of the population in the county that was urban in 1960. Schools in counties that were 66 per cent or more urban are classified as urban; the remainder are classified as rural. The number of schools in each subgroup is given in the table.

Table 2.3 indicates that white high school students are much less in favor of integration than black students: the difference is over 2 standard deviations in rural areas, and about 1 standard deviation in urban areas. In contrast, the fifth grade white student attitudes are only slightly less liberal than those of black elementary school children. The main reason for this increasing racial difference among older students is that white tenth graders are not as liberal as white fifth graders.

TABLE 2.3

AVERAGE SCHOOL INTEGRATION ATTITUDES, BY GRADE AND URBANISM

(Standard Deviation Given in Brackets; Number of Schools in Each Subgroup Given in Parentheses)

Urbanism	Tenth Grade		Fifth Grade	
	White	Black	White	Black
Rural . .	13.5 [±2.6] (97)	19.0 [±2.2] (86)	9.1 [±1.7] (137)	9.3 [±1.8] (125)
Urban . .	16.8 [±2.6] (64)	19.4 [±2.6] (59)	9.4 [±1.7] (162)	10.0 [±1.6] (145)
Range of actual scores	7-26	6-26	0-13	1-12

Note: See Table 2.1 for scale items and scoring values. Scale value is the sum of the scoring values times 3.33; if more than one question is unanswered, the score is not computed.

For example, both fifth and tenth graders were asked whether they thought whites were smarter than blacks.[3] Ninety-two per cent of the fifth graders said "color doesn't make any difference." But for tenth graders, this percentage had dropped 77 per cent; nearly three times as many tenth graders said that whites are smarter. There are several possible explanations for this finding. It may be that the younger of these two groups is more liberal as a result of experiencing school integration earlier; when they become tenth graders, they will give more liberal responses than the present group of high school students. It may be that whites become more prejudiced in adolescence, as part of the adolescent search for identity. Finally, it may be that the older students are simply more candid; after all, black high school students do not generally perform as well on written tests.

[3] Note that the "which race is smarter" question was included in the integration attitude scale for fifth graders, but not for tenth graders. The longer tenth grade questionnaire provided other items that more closely measured the concept of acceptance of integration, and those other items were used instead.

The other item asked of both fifth and tenth graders, whether they would prefer an integrated or a segregated school, shows a slight tendency for fifth graders to be more favorable to integration: 47 per cent would prefer an integrated school, compared to 42 per cent of the tenth graders.

Differences Between Schools

In answer to the question--"Are there genuine differences between schools in attitudes toward integration?"--the results of our analysis indicate that the differences between schools are quite large at both the elementary and high school levels.

As is customary, we express differences between aggregate units in terms of the ratio variance between units to the total variance--the total being the sum of the variance within units and the variance between units. The results for racial attitudes are shown in Table 2.4: the between-school variance is about 15 per cent of the total variance.

TABLE 2.4

PER CENT OF VARIANCE IN RACIAL ATTITUDES
BETWEEN SCHOOLS, BY RACE AND GRADE

Grade and Race	$\frac{\sigma^2 \text{ between schools}}{\sigma^2 \text{ (total)}}$
Fifth grade white	13.6
Fifth grade black	16.3
Tenth grade white	17.9
Tenth grade black	13.2

Many readers will look at this table and say that "only" 15 per cent of the variance lies between schools; that schools do not make a difference. In our opinion, this is a quite incorrect interpretation of the table. To assess the magnitude of the white high school differences, let us convert the integration attitude scale into more easily interpreted units and then look at the actual distribution of school scores. In order to obtain the maximum score on the scale, all of the students in a school must say they are comfortable around students of the opposite race, that they want more friends of the opposite race, and that they would prefer attending an integrated school to a segregated one. Conversely, for a school to receive the lowest score, all of its students must give negative answers to these three questions. Since the three questions are weighted approximately equally, the mean score can be converted into the average percentage of students in a school giving pro-integration responses to these three questions. When we do this, we find that in the average high school, 45 per cent of the white students give pro-integration responses.[4] We also find that the distribution of school scores has a standard deviation of 15.3 percentage points.

What does a standard deviation of 15 per cent mean? A hypothetical example may illustrate. If we divided our 200 high schools into 10 deciles (the 20 schools with the most anti-integration attitudes expressed by white students grouped into the lowest decile, the next 20 into the second decile, and so on, with the 20 schools whose students were most pro-integration grouped into the tenth decile), and computed the percentage of students in each decile giving pro-integration responses, we would obtain the results shown in Figure 2.1 (assuming a normal distribution, a reasonably safe assumption in these data). Of course, we must get a line moving from lower left to upper right. The real question is this: Are the differences between the schools small, so that the curve has a shallow slope, or are they large, so that the slope is steep? In the highest tenth of the schools, 70 per cent of the white students give pro-integration responses; in the lowest tenth, only one white student in five expresses favorable attitudes on these questions. The figure shows that the differences between schools are substantial. If we were to plot the other three groups, we would see similarly strong differences.

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[4]In this example, we used the first two items of the attitude scale: 41.9 per cent of the whites prefer an integrated school and 48.6 per cent say that they want more black friends. See Table 2.1.

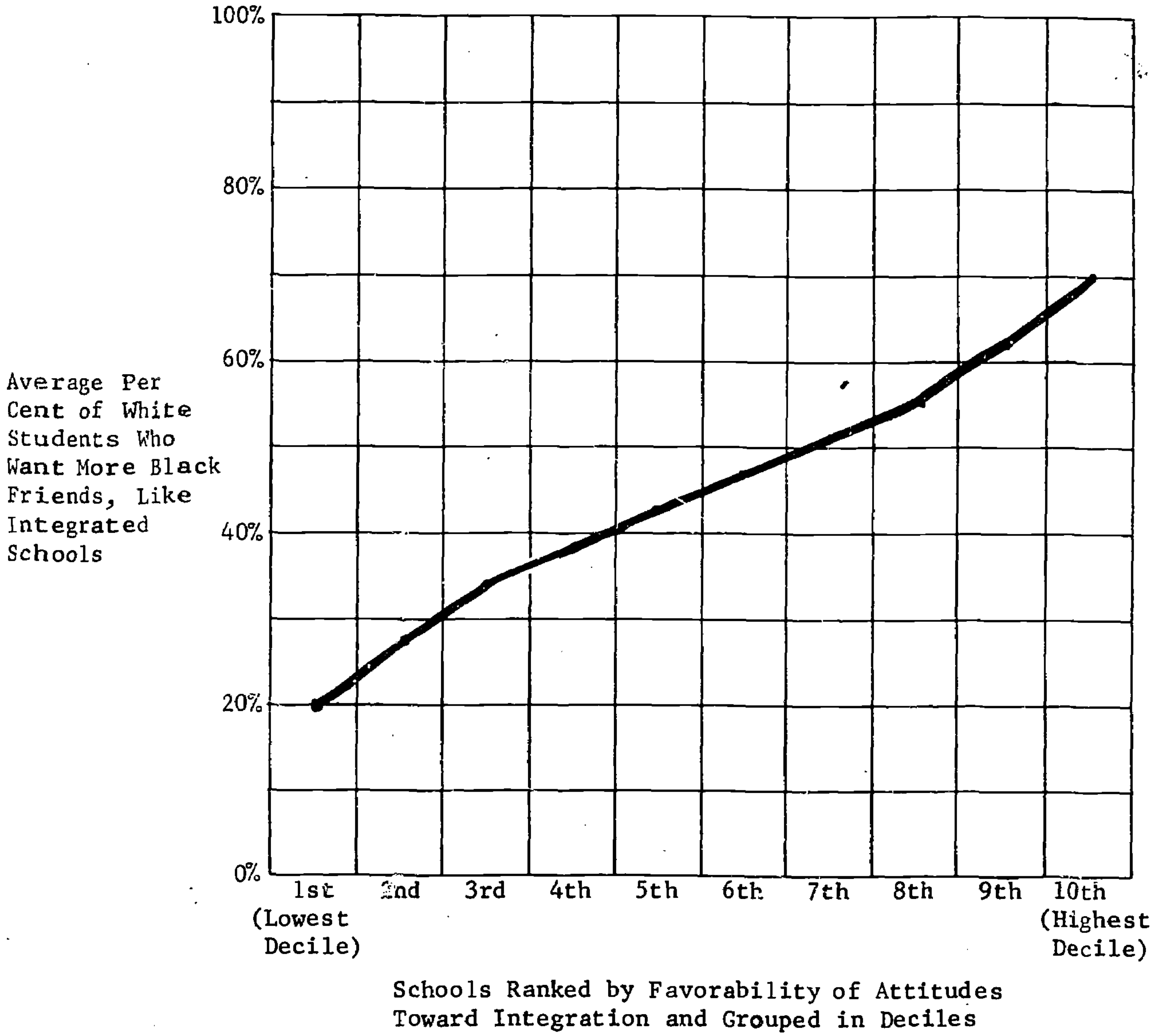

Figure 2.1.--The Difference between High Schools in White Student Attitudes toward Integration

Merely establishing that differences exist between schools does not mean that the schools can influence these differences--they may be entirely due to differences in the social composition of the student body. Thus, our next task is to investigate the impact of school factors in general, and the impact of the school student body composition in particular, to see if this will explain these large differences.

The Effects of Community Characteristics, the Extent and Timing of Desegregation, and Student Social Characteristics

In order to understand the causes of school differences in racial attitudes, we undertook a lengthy search for the best predictor variables. The procedure we chose was to build the best possible multiple regression equations, using a small number of the approximately 300 variables tested, for each combination of grade, race, and urbanism of the student body.

The equations were generated by first computing the correlation coefficients of the integration attitude scores (the same scale used in Table 2.3) of the eight subgroups with every variable in the study. All significant variables were located, and all which were logically prior in their effect to any program input were combined in stepwise multiple regression equations controlling on region,[5] racial composition of the student body, and the socioeconomic status of the opposite race. All variables that failed to contribute .5 per cent additional variance uniquely were discarded. This procedure was carried out in full for each of the eight subgroups.

Racial composition, region, and the social status of both races were forced into every equation. The percentage white of the student body was entered as a quadratic term, to permit the solution to reflect any curvilinear relationship. The resulting equations are presented in Appendix C.

Perhaps the most interesting question we can ask of these data is whether the student's attitude toward integration is affected by the racial composition of the school he attends. The answer seems to be no for black

[5] Deep South (Louisiana, Mississippi, Alabama, Georgia, S. Carolina) vs. Upper or Peripheral South (Texas, Oklahoma, Tennessee, Virginia, N. Carolina, Florida).

students in both fifth and tenth grades: there are essentially no differences between the attitudes of black students in predominantly white schools from those in predominantly black schools. As we said earlier, black students favor integration, and their views seem unaffected by their actual experience with integration. For white fifth graders, the relationship between racial composition and attitudes toward integration seems too complicated to interpret. For this group, it is not obvious that integration has any "real" effect on attitudes.

There is a clear pattern for white high school students: white attitudes toward integration are more favorable when there is either a small minority or clear majority of whites in the school, especially in the rural schools. The explanation for this pattern seems to be this: white attitudes are good when there are a minority of whites, since those whites who strongly opposed integration have transferred out of the school. White attitudes are less positive and there is a higher level of tension in a racially balanced school, because each race is more threatening to the other in the struggle among groups of equal size for ascendancy in the school. Finally, white attitudes are good when there is a large majority of whites, because they are less threatened by blacks and, consequently, their attitude toward them is more positive.

While there are important differences between black and white students, elementary school and high school students, and urban and rural schools, there are two generalizations that apply to all eight student subpopulations: (1) racial attitudes are better when the achievement of the group in question is higher; and (2) student attitudes are better when there is little tension in the school.

There are four conclusions that can be drawn from examining the regression analysis of black attitudes:

1. In every case, blacks have better attitudes toward integration when staff attitudes are supportive.

2. With the exception of fifth grade rural blacks, black social class has an effect on black attitudes ranging from slightly to strongly negative, although black student attitudes are still more pro-integration than are those of whites. The negative effect is much greater in urban than in rural areas.

3. Urban blacks--particularly tenth graders--are more pro-integration in communities where there has been black civil rights activity.

4. Early integration has a positive effect for all fifth graders.

Similarly, there are four conclusions that can be drawn from the white student regression analysis:

1. As discussed earlier, tenth grade white racial attitudes are better when there is either a very small proportion of whites in the school, or when the per cent white is more than 60.

2. The attitudes of white students are better the longer their experience of integration.

3. Whites are more favorable to integration when some of the following school or community characteristics prevail: an integrated parent-teacher organization, integrated school student elite, black civil rights activity.

4. The attitudes of white students are much stronger when they receive support from pro-integration staff attitudes. There is a suggestion that schoolwide activities are more important for tenth graders, while in-classroom integrated activities are more salient for fifth graders.

The equations presented in Appendix C merit more than the brief discussion presented here. For the purposes of this chapter, however, we are primarily interested in generating control variable equations that will improve our estimates of the effect of ESAP and of various school activities. Some major variables in the control equations that we decided to use are briefly summarized in Table 2.5; the table indicates the percentage of variance explained by the equations and the principal components of the equation for each of the eight groups.

The equations presented in Table 2.5 were used in the regression analysis that follows, and were the basis for the selection of covariates in the analysis of the experimental design. (In Appendix C, longer equations, including variables not logically prior to ESAP, such as teacher behavior, are also shown.)

TABLE 2.5

CONTROL EQUATIONS FOR PRO-INTEGRATION ATTITUDES

Grade, Race, and Urbanism	Per Cent Variance Explained	Major Causes of Pro-Integration Attitudes
Fifth grade black urban	14	Low SES, early desegration, much desegration occurring
Fifth grade black rural	21	Early desegration, much desegregation occuring, little white resistance
Tenth grade black urban	31	Southern, much civil rights activity in community, large school, low SES
Tenth grade black rural	11	White protests, low per-pupil expenditures
Fifth grade white urban	32	Early desegregation, high SES, community biracial committee is active
Fifth grade white rural	54	Northern, early desegregation, desegregation in the school this year, black principal
Tenth grade white urban	51	Early desegregation, high SES, previously black school, mostly white faculty, black protest about schools, much civil rights activity in community, predominantly white or black school
Tenth grade white rural	35	Previously black school, Northern, early desegregation, predominantly white or black school

ESAP and Attitudes toward Integration: Results of the Experiment

The results of the experiment indicate that ESAP did not alter the attitudes toward integration (as they are measured here) of either white or black students.[6] The experiment was analyzed with a multivariate analysis of covariance (a detailed description of the analysis appears in Appendix A). Briefly, the technique is as follows. Mean attitude scores for white and black males and females were computed for each elementary school and each high school. One could simply compare the grand mean of the set of experimental schools with that of the control schools, but to do so would be to produce a weaker analysis than is necessary. By using an analysis of covariance, it is possible to improve on this technique in two ways.

First, the data can be "blocked" with each pair representing a different block. Blocking allows us to test the significance of the difference between the experimental school and its matched control school in the same school district. A simple test of significance for the experimental-control difference would compare the difference between the two means to the standard deviations of the two groups; the smaller the within-group variability, the more impressive a difference between the two groups becomes. Much of the within-group variance, however, results from differences that lie between pairs--racial attitudes in Mississippi are very different from those in Virginia--so that blocking each pair separately computes a variance for the control group and the experimental group that removes this between-district variance.

Second, an analysis of covariance uses a preliminary regression analysis to remove the effects of control variables that influence racial attitudes. If we know that the integration attitudes of white students are more favorable in schools that were black schools before desegregation, then, in comparing the experimental school to the control school, it makes

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[6] The fifth grade analysis uses a three item attitude toward integration scale, including the item "Would you like to have more friends who are of a different race?" (see Table 2.1); everywhere else in this chapter a two item scale is used, a result of an error in setting up the computer calculation. It seems likely that this error, although regrettable, has no noticeable effect on the interpretation.

sense to determine whether the racial histories of the two schools are different and to remove this effect.

Finally, the analysis has a third component: a multivariate analysis of covariance. In this technique, more than one dependent variable (in this case, the attitudes of each sex and each race) can be combined into a single overall score (via a least-squares analysis), in order to maximize the differences between the experimental and control schools. A multivariate analysis thus combines several dependent variables without losing each one's individuality; among other advantages, it provides a single test of significance for the experiment, instead of providing the mixed bag of significant and non-significant results one might expect to get from the analysis of several dependent variables.

The control variables used in the regression analysis were modified for the covariance analysis in two ways: (1) we limited ourselves to seven variables to conserve degrees of freedom, and (2) we used the same covariates for blacks, whites, urban, and rural to permit us to pool urban and rural schools (since our schools are paired within the same school district, they are automatically matched on urbanism) and in order to perform analyses of white and black attitudes simultaneously (to permit the multivariate analysis of covariance).

For fifth graders, all seven variables deal with the nature of desegregation: per cent of white and per cent of black students bused, mean number of years of integration for white and for black students, the principal's race, change in school racial composition since last year, and whether the school was white or black before desegregation. For tenth graders, only three variables deal with the desegregation plan, while the other four reflect school staff characteristics and racial policy; they are as follows: mean number of years of desegregation for white and for black students, whether the school was white or black before desegregation, the principal's age and per cent of teachers under age 35, the number of years the principal has been in his position (a powerful but mysterious predictor of student attitudes), and the principal's report of the degree of desegregation of the student council and cheerleaders (which we assume is largely unaffected by the presence of ESAP funds). Note that student characteristics (such as social class) have only very small effects on attitudes toward desegregation and are not included.

The results of the multivariate analysis of covariance are given in Table 2.6. The first column of the table presents the standard deviation of the scale distribution across schools. The second and third columns show the raw means for the experimental and control schools; the difference between the experimental school mean and the control school mean is presented in the fourth column. These differences are all small--never more than one-fifth of the standard deviation given in column 1. In column 5, these differences are adjusted by the analysis of covariance, but the changes are small, and the standard error of the difference (not shown) to which they must be compared, is decreased very little. The result is that none of the eight adjusted differences come even close to significance.

In the note at the bottom of the table, we report the results of the multivariate test, pooling all four of the dependent variables for each grade level. Again, the results are not significant. In conclusion, it appears that ESAP did not affect student attitudes toward integration.

There is no evidence in this analysis that any fault in the experimental design, such as the possible sample bias we discussed in Chapter 1, has affected the analysis.[7] There is, however, some data to suggest that we have selected an incorrect dependent variable. While the integration attitude scale scores show no difference between the experimental and control schools, some other measures of race related attitudes do show a difference. We shall discuss this phenomenon at the end of this chapter and in Chapter 3. For now, we proceed to our next task: finding out what <u>does</u> affect integration attitudes, now that we know that ESAP itself had no overall effect.

The Impact of School Activities on Racial Attitudes: A Regression Analysis

For both the elementary and the high school analysis, we combined experimental and control schools with the supplemental samples into a single

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[7]That is, the difference between the raw attitude scores and the residual scores in the analysis of covariance does not suggest a bias.

TABLE 2.6

ESAP'S EFFECT ON ATTITUDES TOWARD INTEGRATION: THE RESULTS OF THE EXPERIMENTAL DESIGN

Grade, Race, and Sex	Unadjusted Scores			Difference: Experimental Control	Difference Adjusted for Social Background	Significance Level
	Standard Deviation	Mean Experimental	Mean Control			
Fifth Grade:						
White male . . .	2.5	12.8	13.0	-.2	.27	N.S.
White female . .	2.3	13.6	13.8	-.2	-.19	N.S.
Black male . . .	2.8	14.4	14.0	+.4	.56	N.S.
Black female . .	3.8	13.4	14.2	-.8	-.72	N.S.
Tenth Grade:						
White male . . .	2.4	13.3	12.9	+.4	.14	N.S.
White female . .	3.0	14.8	15.1	-.3	-.46	N.S.
Black male . . .	2.5	18.6	18.9	-.3	-.28	N.S.
Black female . .	3.3	19.4	19.0	+.4	.41	N.S.

Note: Multivariate significance test using all four dependent variables comined in a linear model:

Fifth grade: N.S.

Tenth grade: N.S.

cross-sectional multiple regression analysis of 361 elementary schools and 194 high schools. This alternative to the experimental design has certain strengths and certain weaknesses. One of its strengths is its larger sample size. More important, it provides us with a larger repertoire of activities to evaluate, since we can combine those funded by ESAP with those funded by other sources. Finally, with a cross-sectional multiple regression analysis we can examine programs that are of longer duration; if some of the ESAP-funded projects have not had time to achieve their full impact, similar activities funded by other sources may have been in existence longer and may show stronger relationships.

The most important drawback of the regression analysis is that it presents difficulties in drawing logical inferences from the data. In the experimental design, a difference between experimental and control schools could be attibuted to the treatment, but in the regression analysis, a positive correlation between variables is no guarantee that the causal direction is from the independent variable to integration attitudes; it may well be a relationship caused by some unmeasured third variable, or even that the existence of a particular project is itself a result of the positive integration attitudes of the students.

The first step in the regression analysis involved examining the data to find the most important predictors of racial attitudes. This resulted in the control equations described above.

The second step involved placing the control variables in a series of multiple regression equations, with racial attitudes as the dependent variable and one program or activity as the independent variable. The activity variables were based on three sets of questions (described in Chapter 1 and presented in detail in Appendix D). In brief the variables included special personnel (not including regular classroom teachers), programs (such as tutoring, or student relations programs), and equipment or supplies. One variable, tracking, was a scale developed from four questions dealing with ability grouping; the scale is described later in this chapter.

These equations were repeated until all possible activities had been tested for each of the eight grade/race/urbanism combinations. Since there were 43 variables measuring activities in the elementary schools and 45 in the high schools, and since each was tested for two racial groups and two urbanism groups, 352 separate equations [(43 + 45) (2 x 2)] were computed. Thus, the effect of each activity is reflected in the standarized regression coefficient resulting from a statistical model in which that single activity is entered with the control variables. Four-fifths of the standarized regression coefficients of the programs were negative or less than +.07 (in elementary schools) or +.08 (in high schools). The remaining 73 regression coefficients noticeably higher than 0 (although not necessarily statistically significant) were examined. The number of program variables that produced these positive regression coefficients is too large to be easily comprehended; we decided to select 14 of these variables, listed in Table 2.7, by the following criteria: the variable is listed only if (1) it has one standardized regression coefficient (beta) greater than +.18, (2) it has one beta of +.15 or greater and a second beta greater than +.07, or (3) it has one beta of +.12 or greater and two other betas at least +.07.[8] Consequently, the 14 variables listed in Table 2.7 have strong associations with racial attitudes.[9]

Whenever a regression coefficient was between +.030 and +.064 (elementary schools) or +.074 (high schools), a plus sign (+) was entered in the table. Betas between +.030 and -.030 are shown as 0; betas below -.030 are reported as minus (-), no matter what their size. For example, student human relations activities has two large betas reported in Table 2.7. Only the signs of the other six betas, all of which are less than +.065 (elementary schools) or +.075 (high schools), are shown in the table. Only one of these small regression coefficients is over +.030; the remaining five are shown as "0" or negative. In all, there are 30 minus signs, indicating non-negligible negative regression coefficients, out of the 104 signs or values given in the table.

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[8] For significance at the .05 level (one-tailed test), the regression coefficients must be approximately .18 for high schools, .13 for elementary schools. Thus, the criteria used here combine a sense of statistical significance of the individual coefficients with a consideration of the statistical significance of a pattern of consistent positive coefficients (for example, a binomial test would indicate that a pattern of at least seven positive efficients out of eight can occur only nine times in 256 combinations).

[9] A fifteenth activity, ability grouping within classrooms, does not meet these criteria, and is included only for comparison, since the three other grouping variables (classes for underachievers, achievement grouping of classrooms, and tracking) do meet the criteria for inclusion.

TABLE 2.7

IMPACT OF ACTIVITIES ON ATTITUDES TOWARD INTEGRATION: A SUMMARY

Activities	Standardized regression coefficients from a regression of attitudes toward integration on school activity, controlling on other school characteristics							
	Grade, Race, and Urbanism							
	Urban				Rural			
	Fifth		Tenth		Fifth		Tenth	
	Black	White	Black	White	Black	White	Black	White
Human Relations Activities:								
Teacher relations	0	0	-	.19*	+	-	-	.10
Student relations	+	.17	0	.16	0	-	-	0
Intergroup literature	0	.10	.12	.08	+	-	+	-
Classroom Reorganization:								
Demonstration classes	.19*	.07			-	0		
Ungraded classrooms	.29*	+			-	0		
Specialists (per student):								
Librarians	.14*	0	0	-	.16*	+	-	.08
Nurses	.07	.10	-	-	.14*	+	.11	+
Speech therapists	+	0	-	-	.26*	.10	+	+
Gym teachers	0	0	.12	-	.11	+	+	.15
Administrators	+	+	-	-	.23*	.09	.09	.16
Grouping:								
Classes for underachievers	-	0	-	+	.09	0	.17	0
Grouping of classrooms	0	-	+	.21*	-	-	+	-
Tracking			0	+[a]			.14	.13[a]
Grouping within classrooms	-	-			-	-		
Other:								
Text books	-	+	0	-	.15*	0	.10	.17

[a]The two control equations for these two coefficients have been modified slightly. For urban students, the degree of integration of cheerleaders and student council officers has been added, and the percentage of students who were students in the same school last year has been deleted, increasing the r^2 for the control equation to .59. For rural students, one of the two measures of white social status (mother's education) and one of the two measures of white students' previous integration experience (percentage with all previous schooling in segregated schools) has been omitted, decreasing r^2 to .31. The effect of the modifications is very minor; see the detailed analysis of ability grouping, p. 73-91.

*Significant, $p < .05$ (one-tailed).

Note: Blanks indicate activity not applicable to one grade level.

The activities listed in Table 2.7 that seem to have an effect on attitudes toward integration range from the obvious to the unexpected. If we accepted the regression coefficients in Table 2.7 at face value (which we are not willing to do just yet) we would conclude from the first three lines of the table that human relations efforts have a positive payoff for white urban students, and that expenditures for race relations literature have positive payoffs for black tenth graders and white urban fifth and te :h graders. Demonstration classes and ungraded classrooms (lines 4 and 5) seem to have striking positive effects on black students in urban elementary schools. The next five variables in the table all indicate that the addition of certain types of ancillary staff are associated with pro-integration attitudes. For the five categories of specialist personnel presented in the table, 19 of the betas (of a possible 20) are positive for rural areas; there are only 7 positive betas for urban areas.

The next four lines of the table indicate that ability grouping is quite harmful to attitudes in elementary schools. This is not true for high schools; indeed, grouping may actually improve racial attitudes there. This result is counter-intuitive; it is usually assumed that grouping is a device that increases racial segregation and thereby prevents white and black students from interacting.

We are reluctant, however, to conclude that the results of Table 2.7 indicate simple cause-effect relationships; the results are too puzzling. While some of the regression coefficients are rather large (14 coefficients are .15 or higher), suggesting that some sizeable positive effects are present, many of the variables have no obvious a priori relationship to racial attitudes. In addition, the results are never consistent for the urban and rural, the black and white, and the elementary and high school groups. Nearly every line in the table has one or more negative signs. The data are most inconsistent with respect to rural-urban differences: no age-race group has a similar pattern of regression coefficients for urban and for rural school categories. Indeed, for tenth grade white students, the regression coefficients are consistently opposite: of the 12 urban-rural comparisons, in only two cases are both the urban and the rural coefficients above .030.[10] Apparently, the social situation of white high school students in rural areas is radically different than that of white students in urban areas.

The across-grade and across-race comparisons are more consistent. In rural areas, black fifth graders generally seem to be affected by the activity and personnel variables in much the same way as black tenth graders; the same is true of rural whites.

Finally, the regression coefficients for white students tend to resemble those for black students in the same grade and level of urbanism. If we look at the signs of all 44 activity and personnel variables, including those whose effects are too small to be listed in Table 2.7, we find that, in general, a variable that is positively associated with rural white attitudes toward integration is also positively associated with rural black attitudes. These coefficients are all given in Appendix C. The consistency of signs of coefficients describing apparent effects of activities on rural fifth graders is shown in Table 2.8.

TABLE 2.8

COMPARISON OF SIGNS OF REGRESSION COEFFICIENTS FOR 42 ACTIVITY AND PERSONNEL VARIABLES: BLACK AND WHITE RURAL FIFTH GRADE

Sign of Regression Coefficient for Whites Is:	Sign of Regression Coefficient for Blacks Is:	
	+	-
+	18	3
-	13	8

Q = +.57

The Q of +.57 indicates that the signs tend to be the same. Since many activities have a stronger positive effect on blacks than on whites, there are

[10] The measure of association, γ, between the signs of the coefficients for urban and rural tenth grade whites is -.8; the other three urban-rural comparisons have γ's near zero.

13 cases where the black coefficient is positive and the white coefficient is negative. There are only three activities, however, that have negative coefficients for blacks and positive coefficients for whites.[11]

This complex pattern of consistency and inconsistency makes it impossible to interpret the positive associations in Table 2.7 in terms of policy recommendations. We cannot say, for example, that human relations activities improve student attitudes toward integration without first doing further analysis.

As a next step, then, we will summarize the data with a second regression analysis using not individual activities, but instead the factors produced by the factor analysis described in Chapter 1. We will then reexamine Table 2.7, and attempt to select some activity or personnel variables for further analysis.

Summarizing the Impact of Activities Through Factor Analysis

Thus far we have investigated the impact of individual school activities. Investigating each activity individually generates a great deal of data. In this section, therefore, we shall attempt to reduce the total number of activity variables by scaling them using a factor analysis. In Chapter 1 we presented the results of a factor analysis of school activities. The first four factors produced by a factor analysis and varimax rotation of the correlation matrix of all school activities were similar but not identical for fifth and tenth grades. For this chapter, we constructed scales representing each of these four factors. To do so, we used the weights assigned to the major variables defining each activity, and built one cumulative scale to

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[11] In general, the more unsophisticated the student body, the more likely it is that a program will affect both races in the same way. Looking again at the list of program regression coefficients, the measure of association describing the tendency of the regression coefficients for whites and blacks to have the same sign is highest for rural elementary schools (Q = +.57), slightly lower for rural high schools (Q = +.48), much lower for urban elementary schools (Q = +.20), and lowest of all for urban high schools (Q = +.09). Urban high schools are also where the programs are most likely to be apparently counterproductive in terms of black racial attitudes: 57 per cent of the coefficients are negative.

represent each of the four factors for each grade. We then entered these scales as variables in regression equations to predict attitudes toward integration.[12] We used the same control variables as were used in the regression analysis of individual activities discussed in the preceding section. The results are shown in Table 2.9. For clarity, we have reordered the four factors.

TABLE 2.9

THE IMPACT OF PROGRAM STRATEGIES ON ATTITUDES TOWARD INTEGRATION USING FACTOR ANALYSIS

Grade and Factor	Standardized Regression Coefficients			
	Urban		Rural	
	Black	White	Black	White
Fifth Grade:				
Factor 1: Auxiliary personnel, non-instructional	-.01	.02	.25*	.08
Factor 2: Intergroup relations, curriculum reorganization	.10	.11	.07	-.02
Factor 4: Social work, guidance . . .	.02	-.10	.16*	-.08
Factor 3: Basic instructional services	.09	-.13	.02	-.07
Tenth Grade:				
Factor 3: Intergroup relations, facilities	-.06	.01	-.01	.13
Factor 1: Intergroup relations	-.09	.09	-.06	-.01
Factor 4: Guidance and counseling . .	-.10	-.01	-.15	.04
Factor 2: Basic instructional services	-.15	-.07	-.08	-.02

*Coefficient is positively significant, $p < .05$ (one-tailed test).

Note: Factors described in Chapter 1, pages 35-40.

[12] The analysis is exactly parallel to that of the preceding section: each factor scale is entered alone in a separate equation.

Looking first at the positive coefficients in Table 2.9, the two statistically significant fifth grade rural black findings agree with the findings in Table 2.7, although interpretation remains muddy. Of the other coefficients, the intergroup relations results are the most consistently positive. At the fifth grade level, this factor is positive in three of four cases (the exception being a weak -.02), which parallels the individual program regression findings and strengthens the black student results. This factor includes not only intergroup relations programs but also a combination of team teaching, demonstration classrooms, and curriculum revision, and represents the "progressive syndrome." These are schools that are abreast of contemporary ideas about organization of elementary schools. The elementary school "reform" movement is aimed at improving the motivation and morale of the students, and these data suggest that the movement may be successful.

At the tenth grade level, the two highest coefficients for whites are for the two intergroup relations factors (although the highest, +.13, is raised by textbooks entering this factor). All coefficients for tenth grade blacks are negative, but the intergroup relations factors are less negative. More generally, within each grade/race/urbanization block, intergroup relations factors have the highest ranking (most positive or, for tenth grade blacks, least negative) in six of the eight blocks. In short, the factor analysis results provide some support for the idea that intergroup relations programs will improve attitudes toward integration.

In addition, the results of the factor analysis provide several conclusions based on the negative coefficients. First, no program factors appear to have a positive effect on tenth grade black racial attitudes. Second, the most negative coefficients are those associated with basic instructional services (where six of the eight coefficients are negative). Within each grade/race/urbanization category, basic instructional services factors are the lowest-ranking (most negative or, for fifth grade rural blacks, least positive) in five of the eight blocks. In none of the eight blocks are these factors the highest-ranking in the block. We will not present detailed analysis of basic instructional services programs, but the evidence strongly suggests that they have unfavorable effects on attitudes toward integration.

Third, guidance programs are represented in factor 4 of each grade level, and the coefficients associated with guidance programs are negative in five of the eight blocks. In two of the three blocks where basic instructional services is not the most negative factor, the guidance programs factor is; there are four other blocks where the guidance factor is next to lowest. Thus, in six of the eight tests, guidance has one of the two lowest coefficients (which renders the meaningfulness of the one high coefficient for guidance--fifth grade rural blacks--questionable).

What conclusions can we draw from these findings? In Chapter 1 we observed that these factors seemed to represent the three major ideological stances that might be taken toward education. The basic instructional services factor represents a narrow view of the function of the school, a heavy emphasis on cognitive development. The other factors all involve a concern with motivation, but while intergroup relations and curriculum reorganization represent an effort to change the school to accomodate the needs of students, the social work and guidance factors represent efforts to mold the student to meet the needs of the school. This analysis would indicate that only the intergroup relations and curriculum revision ideology will succeed in improving racial attitudes.

But the data also suggest that nothing will succeed very well in high schools. Although there are a number of positive coefficients for elementary schools, the high school coefficients are always negative for blacks, and only two of the eight white coefficients are as high as +.05. We noted earlier that high school student attitudes are a more serious problem than the attitudes of elementary school students; these data suggest that it is difficult to make any impact on those unfavorable attitudes.

How then shall we interpret Table 2.7? We seem to have developed consistent evidence that the human relations activities may be having an impact; consequently, we will examine these results in more detail in the next section.

There are two other interesting results that we have not pursued in further detail. First, the data suggest that, for rural schools, employing additional staff, simply modernizing the school by providing administrators and various specialized teachers and supporting staff, will have a positive effect. In particular, resources for athletics may be helpful in improving racial attitudes (especially in the light of the achievement gains associated with employing more gym teachers, discussed in Chapter 3). Second, the data suggest that, for urban elementary schools, curriculum change such as team teaching and individualized instruction has a significant impact. Unfortunately, our measures of these activities are not sufficiently detailed or precise to pursue these suggestions.

There is a final set of results shown in Table 2.7 that we will pursue later in the chapter: in high schools, ability grouping is associated with positive attitudes toward integration. This is an important result, especially since it forces us to examine more closely the conventional wisdom of intellectuals and civil rights advocates, which holds that tracking is unqualifiedly harmful.

The Human Relations Activities Effects

As we have seen, Table 2.7 indicates that both teacher human relations activities and student human relations activities have positive correlations with the pro-integration attitudes of tenth grade white urban students. Student relations activities also have a positive effect on the integration attitudes of fifth grade white urban students. There are two other positive relationships: the effects of human relations literature on black urban high school students and of teacher relations programs on white rural high school students.

Table 2.10 presents the data in detail. The key columns are the second, the regression coefficient, and the fifth, the per cent of variance explained uniquely. It is also important to compare the beta to the zero-order correlation coefficient. Since poor measurement of the control variables understates their impact, one should routinely assume that the beta is not as different from the correlation coefficient as it should be.[13] Thus when the third column, the difference between the beta and the correlation coefficient, is positive, the beta is larger than r; with better controls, it should be even larger. Conversely, if (beta-r) is negative,

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[13] We are here assuming random measurement error. See H.B. Blalock, Causal Inferences in Non-Experimental Research (Chapel Hill: The University of North Carolina Press, 1961) p. 149.

TABLE 2.10

IMPACT OF HUMAN RELATIONS ACTIVITIES ON RACIAL ATTITUDES

Group and Program	r	Beta	Beta-r	r^2	Unique Variance Added (Per Cent)	Ratio of Unique Variance Added/r^2
White, High School, Urban:						
Teacher relations activities	.152	.193	.041	.0231	.0314	1.36
Student relations activities	.0[illegible]5	.162	.068	.0089	.0221	2.48
Human relations literature .	.099	.076	-.022	.0097	.0049	.50
Black, High School, Urban:						
Teacher relations activities	.050	-.054	-.104	.0024	.0025	1.04
Student relations activities	-.073	-.017	.056	.0052	.0002	.04
Human relations literature .	.080	.122	.042	.0064	.0130	2.03
White, Elementary School, Urban:						
Teacher relations activities	.017	.009	-.008	.0002	.0000	.00
Student relations activities	.158	.170	.012	.0250	.0274	1.10
Human relations literature .	.152	.100	.052	.0230	.0092	.40
Black, Elementary School, Urban:						
Teacher relations activities	.037	.018	-.020	.0013	.0002	.15
Student relations activities	.078	.036	-.042	.0060	.0011	.18
Human relations literature .	.031	.014	-.017	.0009	.0001	.12
White, High School, Rural:						
Teacher relations activities	.098	.104	.006	.0095	.0104	1.09
Student relations activities	-.004	-.025	-.021	.0001	.0007	7.00
Human relations literature .	.071	-.092	-.163	.0050	.0069	1.38
Black, High School, Rural:						
Teacher relations activities	-.048	-.111	-.063	.0022	.0112	.54
Student relations activities	-.051	-.043	.008	.0025	.0160	.64
Human relations literature .	.092	.050	-.042	.0085	.0019	.22
White, Elementary School, Rural:						
Teacher relations activities	-.119	-.052	.067	.0142	.0024	.17
Student relations activities	-.021	-.063	-.042	.0004	.0035	8.75
Human relations literature	.171	-.060	-.231	.0291	.0002	.01
Black, Elementary School, Rural:						
Teacher relations activities	.007	.061	.054	.0000	.0031	.00
Student relations activities	.003	.009	.006	.0000	.0000	.00
Human relations literature .	.089	.052	-.037	.0075	.0023	.31

controls are pushing the beta down; presumably, better controls would push it down further. Hence, a positive beta with a positive (beta-r) is more impressive than the same beta with a negative (beta-r). Similarly, the last column, which gives the ratio of the unique variance explained to the zero-order r^2, is a valuable guide.

Table 2.10 shows a pattern of positive coefficients for white urban elementary and high school students, and for black elementary school students, both urban and rural: all 12 of the betas are positive. The urban white high school effects are very large, as is one of the white urban elementary school effects. For the two rural white and the two groups of black high school students, 9 of the 12 effects are negative.

At this point, it would be helpful to look more closely at human relations activities. One indication of their content is gained by the correlations of student and teacher relations programs (Table 2.11).

Table 2.11 indicates that if a principal reports that he has an adequate teacher relations project, it is also likely that there will be reports of teacher training, projects to work with parents, and to a lesser extent, curriculum revisions, minority history courses, and an increase in human relations literature in the school. These findings, together with the .51 correlation between teacher relations and student relations projects, indicate that schools that have one of these activities are also likely to have some of the others. This finding suggests, in effect, that these activities are instituted as a package. When a school institutes a human relations effort, it is likely to involve more than one of the following areas: the relations among teachers, the relations among students, the relations between teachers and students, and the relations between the school and parents in the community.

Table 2.11 also provides other evidence on the nature of the programs. For example, positive correlations of student relations projects with both minority history and a student biracial committee suggest that such activities are both academic and social. Teacher programs [illegible] include

TABLE 2.11

CORRELATIONS OF TEACHER AND STUDENT HUMAN RELATIONS PROJECTS WITH OTHER SELECTED ACTIVITIES IN HIGH SCHOOLS

Activity	Correlations with principal's reports of projects to improve intergroup relations among:	
	Teachers	Students
Teacher's reports of in-service service education on instruction of disadvantaged students, desegregation, or intergroup relations	.37	.15
Principal's reports of in-service education	.43	.29
Principal's reports of minority history	.11	.26
Principal's reports of curriculum revision	.05	.28
Principal's reports of parent relations program	.47	.31
Principal's reports of biracial student advisory committee	.29	.32
Principal's reports of human relations literature	.26	.17

Examining tenth grade white urban student effects, we see that while having student or teacher relations programs is positively associated with pro-integration attitudes, student relations programs are negatively correlated with white social class (-.18), early integration (-.25), and white achievement (-.22). Clearly, student relations programs have been initiated in settings that might be conducive to racial conflict and poor racial attitudes. To a lesser extent, teacher relations programs, which had correlations of -.14 with black social class, -.16 with white social class, -.18 with early integration, and -.10 with white achievement, were instituted in similar settings. Hence, the favorable attitudes toward integration in schools with human relations programs comes despite the unfavorable climate.

This interpretation suggests first, potential or actual racial tension in a school; second, the institution of human relations activities to forestall it; and third, an actual reduction in racial tension and improvement in racial attitudes. As with any post hoc explanation, however, this analysis may be spurious. Human relations activities may not follow from potentially volatile situations, and they may not have a direct effect on attitudes. If so, other factors may be compounded. First, the institution of human relations activities may indicate the resolve of a superintendent or principal to maintain good racial attitudes. The human relations activities would then be one small part of an overall effort that may be expressed more forcefully in other ways. Second, teacher relations programs may not be _in themselves_ a cause of better racial attitudes. Teachers may view the programs as indications of the value that superiors place on good racial attitudes and the resolve that teachers _must_ assist in effecting such attitudes. Teachers may feel they are simultaneously being given assistance in improving their interpersonal relations and covertly being _ordered_ to improve them. A similar form of constraint may obtain between teachers and students. Students are given educational materials to change their _attitudes_ but they may also be under pressure from staff to change their _behavior_ or to maintain satisfactory behavior. Finally, the teacher programs are positively correlated (.18) with the presence of civil rights activities in the district, so that teachers may also be under direct or indirect pressure from the community.

Two processes may therefore be working concurrently: (1) Teachers may be under pressure from the principal and perhaps the superintendent to improve their racial interrelations; pupils may be under similar pressure, particularly from teachers. (2) Human relations programs may be both a direct means of educating school teachers and pupils to have better racial attitudes and an indicator of other direct and indirect pressures to effect better racial attitudes. In sum, caution must be exercised in drawing the conclusion that pro-integration attitudes are increased by good human relations [illegible].

strongly related to civil rights activity often aimed at achieving integration, simply do not respond to such efforts. The programs themselves may be geared to white students, who more often come from segregationist families and both need and can profit from human relations efforts in the schools.

The Effect of Ability Grouping

We saw in Table 2.7 that ability grouping was associated with less favorable attitudes toward integration for elementary school students, but not for high school students. There is even a slight tendency for tracked[14] high schools to have more favorable attitudes toward integration on the part of both white and black students. We noted that this result is counter-intuitive, that most scholars would assume that ability grouping, because it segregated students, would sustain prejudiced attitudes. We will see that this argument against grouping must be refined for fifth grade students, and that it is almost completely inadequate for high schools.

First, let us examine in more detail the direct effects of achievement grouping on attitudes toward integration. Table 2.12 presents the data. The upper half of the table presents the high school results, using a scale of tracking (described later in this section).[15] All four of the standardized regression coefficients are positive,[16] but only two are above .08, and

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[14] Tracking and grouping are used interchangeably here, although we realize that in technical usage, the words sometimes have different meanings.

[15] The principal's report of the extent of achievement grouping in high schools is not used here, since it is a much less reliable measure than the tracking scale. While the regression results for this variable yield the same general conclusion as those for achievement grouping, results for tenth grade white rural students are strikingly inconsistent (see Table 2.7).

[16] We noted earlier that the control equations used for white high school students in this analysis differ slightly from those used elsewhere in this chapter. In all, a number of different analyses, using slightly different equations and different independent variables were carried out. [illegible]

TABLE 2.12

THE EFFECTS OF ACHIEVEMENT GROUPING ON RACIAL ATTITUDES

Group and Program	r	β	$\beta - r$	r^2	Unique Variance Added	Ratio: Unique Variance Added/r^2
High School:[a]						
White urban	.055	.065	.010	.0030	.0033	1.1
White rural	.229	.130	-.099	.0522	.0140	.27
Black urban	-.025	.016	.041	.0006	.0002	.35
Black rural	.036	.135	.099	.0012	.0148	11.40
Elementary School:[b]						
White urban	-.155	-.123	.032	.0240	.0140	.58
	-.061	-.199	-.058	.0036	.0134	3.72
White rural	-.101	-.067	.034	.0101	.0037	.37
	-.083	-.081	.002	.0068	.0074	1.09
Black urban	.052	.027	.006	.0027	.0005	.18
	-.144	-.160	-.016	.0208	.0227	1.09
Black rural	-.144	-.079	.064	.0205	.0054	.26
	-.180	-.152	.029	.0325	.0207	.63

[a] Tracking scale used.

[b] First figure is for achievement grouping of classrooms; second figure is for grouping within classrooms.

one of these is questionable. For white rural students, the zero-order correlation coefficient is a very large .23, which drops under controls to a beta of .13. Since we always assume that the effects of controls are understated, we suspect that a "true" regression coefficient under perfect controls would be considerably smaller. Thus, we conclude that achievement grouping may have a positive effect on high school student attitudes toward integration. Seven of the eight regression coefficients are negative, ranging from -.07 to -.20, and in only one case (black rural grouping of classrooms) is there any suggestion that inadequate controls cause the effect to be overstated.

The Measures of Achievement Grouping

Table 2.13 presents the mean scores on various measures of the degree of grouping in our sample of schools. The data indicate that most elementary schools divide students within each class (for example, into graded reading groups);[17] but do not put students of different ability levels in different classrooms.

Ability grouping becomes more common for older students as they attend larger schools. The high school principal was asked to estimate how many of his present tenth graders were in ability-grouped schools in seventh and eighth grades, and the third row of the table indicates that the mean response was close to "over half." The high school principal was also asked whether his own school was ability grouped, and only 10 per cent said no. If the response to this question was yes, three additional questions were asked; these three questions were combined to make the tracking scale by adding the values indicated beside each response in Table 2.13. If the principal said his school was not ability grouped, the school was assigned the minimum value of the scale.

The responses indicate that tracking is used very selectively. The last three rows of the table indicate that only "about half" of the schools' academic classes are ability grouped; that very few schools separate students during nonacademic portions of the day; and that the average school has approximately three levels of tenth grade English.

Table 2.14 presents the intercorrelations between these three items. The table shows a modest correlation between the breadth of grouping (the number of academic subjects tracked) and the degree of English class grouping.

TABLE 2.13

ACHIEVEMENT GROUPING SCALES

Grade and Item (Scoring Weight in Parentheses)	Elementary School Principals	High School Principals
Fifth Grade:		
Achievement grouping within classes School has large enough program (2) School has program but it is too small (1) School does not have (0) Blank: item is scored as missing	1.36	not used in tenth grade
Fifth and Tenth Grade:		
Achievement grouping of classrooms School has large enough program (2) School has program but it is too small (1) School does not have (0) Blank: item is scored as missing	.60	1.11
Tenth Grade:		
When your present tenth graders were in seventh and eighth grades, approximately how many of them went to schools which had ability-grouping? Would you say almost all, over half, less than half, or very few? Almost all (4) Over half (3) Less than half (2) Very few (1) Blank	not used in fifth grade	2.81
*Approximately what proportion of the tenth grade academic classes--English, Math, Social Studies, etc. --are separated by program, so that students are in class only with students in their ability-group level or program? All (4) More than half (3) About half (2) Less than half (1) Blank (2)	not used in fifth grade	2.00
*Are the non-academic classes, such as home room, gym, health, music, art--separated by ability-group levels or tracks? Yes, all are separated (3) Some are separated (2) None are separated (1) Blank (2)	not used in fifth grade	1.13

when it is present, since both variables are correlated with the amount of junior high school tracking. However, none of these measures are associated with grouping of nonacademic classes, suggesting that it is possible to institute widespread ability grouping without grouping home rooms, gym classes, and the like.

TABLE 2.14

INTERCORRELATIONS BETWEEN ITEMS OF HIGH SCHOOL TRACKING SCALE AND JUNIOR HIGH SCHOOL GROUPING

(Urban above diagonal, rural below)

	Seventh-Eighth	Academic	Levels of English	Non-Academic
Grouping in seventh and eighth grade		.12	.26	-.02
Grouping of academic classes	.42		.28	.08
Number of levels of tenth grade English	.26	.32		-.08
Grouping of nonacademic classes	.14	.17	-.04	

Note: Correlations shown are averages of those obtained when black and white weights are used.

Two Intervening Variables: Classroom Segregation and Racial Contact

Our data have shown that ability grouping at the elementary school level has the anticipated negative effect on students' attitudes toward integration, and that at the high school level, it has no negative effect, and perhaps some positive effects. In order to understand what is occurring here, let us introduce two intervening variables: the actual level of segregation in classes in the school, and the amount of social contact between black and white students.

best-known use is in Karl and Alma Taeuber, Negroes in Cities.[18] The index varies from 0 to 1.00, and can be thought of as the proportion of students of one race who would have to be reassigned from one classroom to another so that each room would have the same black-white ratio.[19] The index is appropriate for comparing schools of very different racial compositions (only 3 to 4 per cent of the variance in the dissimilarity index can be explained by a quadratic equation for per cent of white students in school). These classroom desegregation indices are rather low for elementary schools in our sample, and slightly higher for high schools. The mean values are .19 for elementary schools and .29 for high schools.[20]

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[18] Karl E. Taeuber and Alma F. Taeuber, Negroes in Cities: Residential Segregation and Neighborhood Change (Chicago: Aldine, 1965).

[19] For example, if two classrooms had the racial compositions (25 white, 9 black) and (10 white, 12 black), the dissimilarity index would be .29. One could achieve equal 5: 3 white-to-black ratios by reassigning 6 black students from the second classroom to the first, so that the two rooms would become (25 white, 9 + 6 = 15 black) and (10 white, 12 - 6 = 6 black). Six, or 29 per cent of the 21 black students would have to be relocated. Alternatively, 10 whites might be moved from the first room to the second, so that the two rooms would be (15 white, 9 black) and (20 white, 12 black); but 10 students is, again, 29 per cent of the 35 white students in the school.

[20] To give the reader some sense of what these values mean, presented below are the levels of segregation in the typical elementary school and the typical high school in our study.

Elementary School class no.	1	2	3
Number of whites	24	21	18
Number of blacks	6	9	12

High School class no.	1	2*	3	4*	5	6*	7
Number of whites	28	29	22	21	18	15	12
Number of blacks	2	3	8	9	12	15	18

(* in [illegible] rooms sampled following sampling instructions after all [illegible]

Racial contact is measured by one question for fifth graders ("Are any of your three best friends of the opposite race?") and for high school students, by a scale of that question plus three others, as shown in Table 2.15. The table indicates that blacks have more contact with whites than whites with blacks, a natural consequence of the fact that there are more whites than blacks in most schools. The table also indicates very high levels of contact among fifth graders, and much lower levels in high school.

TABLE 2.15

VOLUNTARY INTERRACIAL CONTACT SCALES

Grade and Item (Scoring Weight in Parentheses)	(Mean per cent responding favorably) White	Black
Fifth Grade:		
Think of your three best friends in the fifth grade in this school. Are they all the same race as you or is one or more of a different race? Yes, all same race as me (0) No, one or more is of a different race (1) Blank (0)	42.6	51.7
Tenth Grade:		
Think for a moment about the three students you talk with most often at this school. Are they the same race as you? Yes, all same race as me (1) No, one or more is from another race (4) Blank (1)	18.2	34.8
Have you ever called a student of a different race on the phone? Yes (2) No (1) Blank (1)	24.1	39.5
This school year, have you helped a student from another race with school work? Yes (2) No (1) Blank (1)	61.2	63.8

Testing a Theory of Tracking

The conventional wisdom about tracking is derived from the "contact" hypothesis, which states that increased face-to-face contact on an equal-status basis between two hostile groups will reduce hostility. It is sometimes additionally argued that tracking "labels" students, reinforcing the whites' stereotypes of blacks as inferior. Applied to achievement grouping of blacks and whites, the thesis is that grouping increases racial segregation, preventing contact, and hence prevents any reduction in intergroup hostility. This hypothesis argues that tracking's main effect is through segregation, as diagrammed in Figure 2.2.

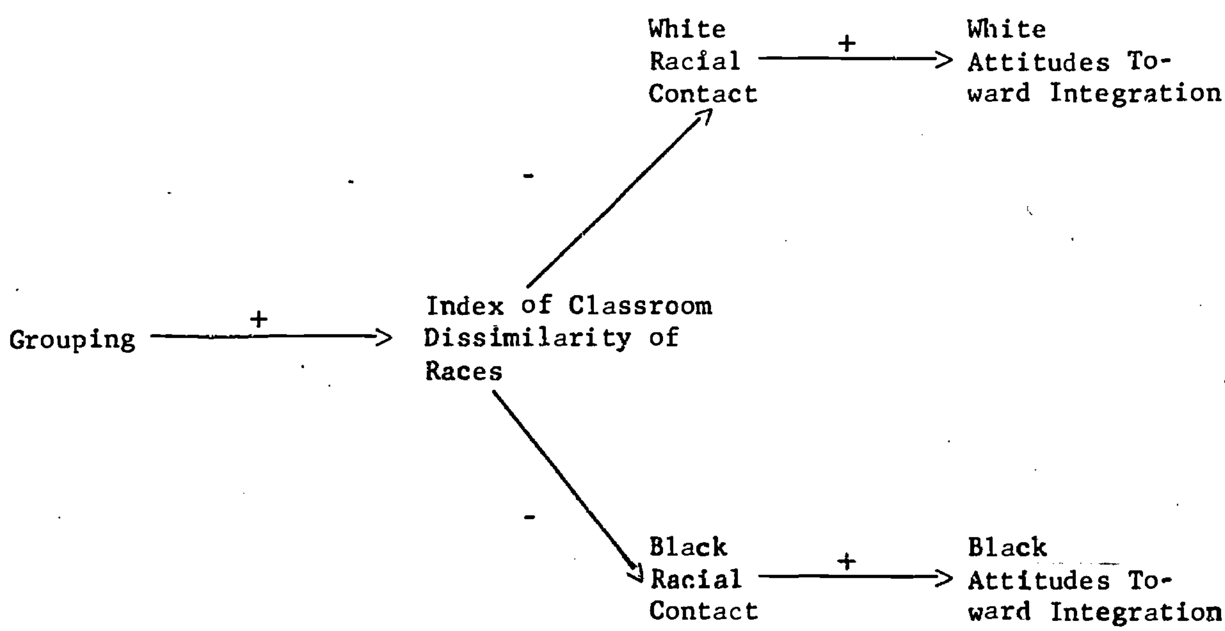


Fig. 2.2--A Theoretical Model of the Effects of Grouping

The diagram specifies that grouping leads to higher scores of the dissimilarity index, which in turn reduces white and black contact, which is positively related to white and black favorability toward integration. Thus, the overall sign of the grouping-attitude relationship is (+)(-)(+) = (-).

Elementary Schools

In Figure 2.3 we test this model for elementary school students. For each line in the path predicted by the model, the figure gives the partial correlation coefficient, controlling on the standard set of controls used for the other analyses of attitudes toward integration. The additional lines in the figure, those not predicted by the theory, have partial correlation coefficients that are controlled on both the standard variables and the intervening variables in the model. For example, the -.13 at the top of Figure 2.3 indicates that there is a negative partial correlation between grouping and attitudes toward integration, after controlling for standard variables such as racial composition and white and black SES, and for both the dissimilarity index and white racial contact. These partial correlations are not shown if they are below $\pm$ .08 in absolute value.

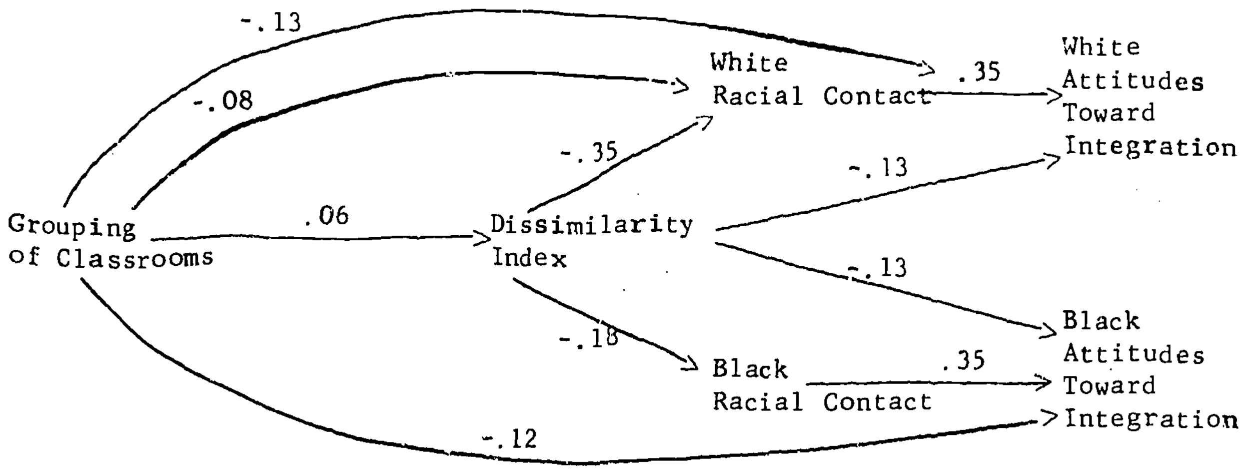
We can draw several conclusions from the figure.

1. Achievement grouping of classrooms harms attitudes toward integration, but not because it produces segregated classes. Rather, its effect is independent of both classroom segregation and racial contact in three of the four cases. Apparently, achievement grouping makes attitudes less favorable whether it produces segregation or not.

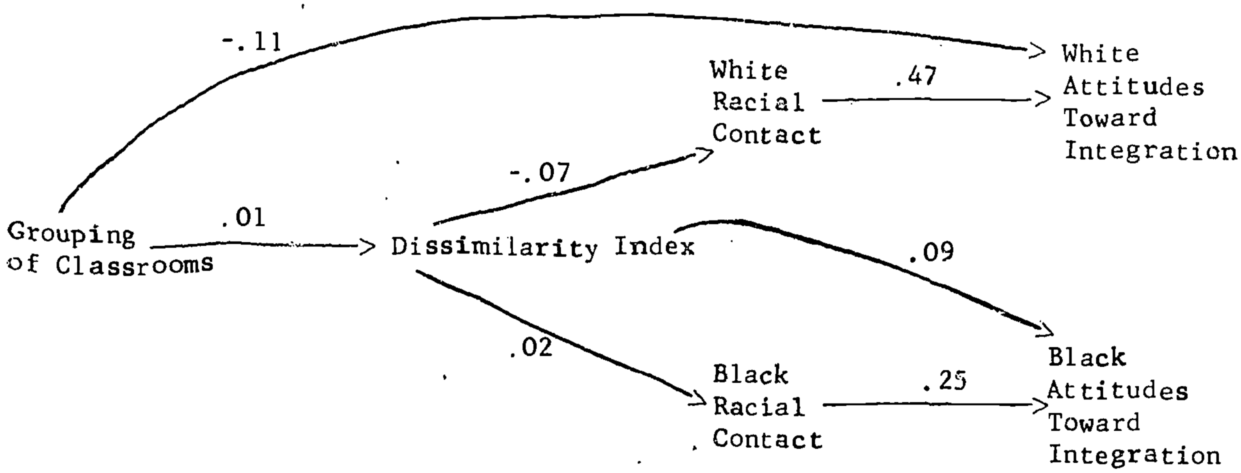
2. The general argument, that segregation within the school reduces racial contact and inhibits the growth of favorable attitudes toward integration, seems clearly supported by the data for rural schools. There is a strong relationship between racial contact in the school and pro-integration attitudes. Furthermore, for both black and white rural students, there is a direct link between classroom segregation and unfavorable attitudes toward integration. The urban data are less clear; they show no correlations of the dissimilarity index with any of the other variables.

3. The data show, however, that the principal's report of the presence of ability grouping of classrooms is uncorrelated with the degree of classroom segregation. It seems unreasonable that ability grouping does not increase classroom segregation, and we have no explanation for this finding.[21] Whatever the explanation, it seems obvious that we cannot assume that "achievement grouping" is synonymous

Rural Schools



Urban Schools



NOTES: Correlations between grouping and the dissimilarity index are averages of runs made with white and black weights and control variables. Correlations with absolute values below .08 are not shown unless specifically predicted by the model. Associations which are not predicted by the model are partial correlations controlling on intervening variables in model.

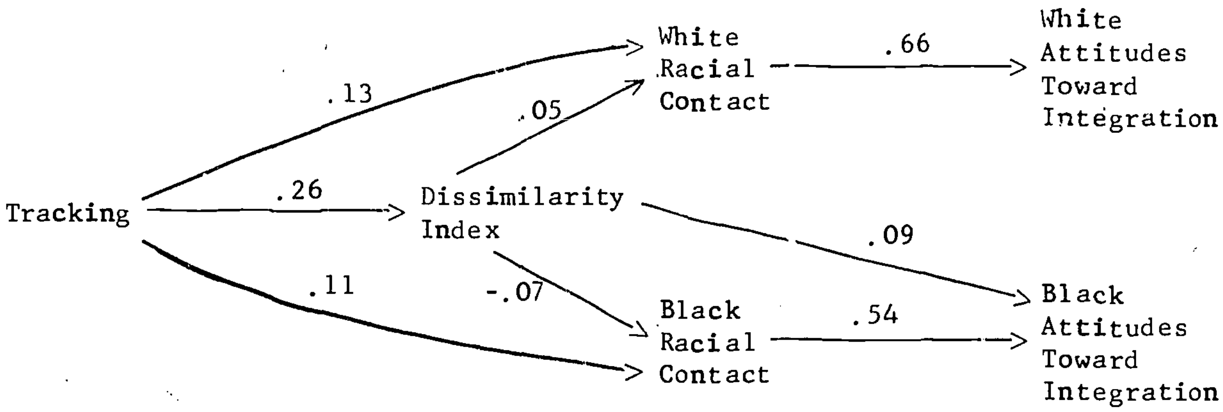
How shall we interpret these findings? First, it is obvious segregation of classrooms within the desegregated school has definite negative effects. In rural schools, where it is difficult to make friendships with classmates outside of school because of distances between homes, the racially balanced classroom leads to more interracial friendships. Friendships in turn lead to pro-integration feelings, as the contact hypothesis predicts. Second, there may be a stigma effect; white student in a mostly-white class may see the blacks in the other, mostly-black classroom as inferior while being seen by them as prejudiced, or at least snobbish. But even if the principal does institute ability grouping without segregating classrooms, or limits his ability grouping to subgroups within each classroom, the effects are still negative. Here we argue that the stigma attached to being in, say, a slow reading class has a negative effect on racial attitudes.

High Schools

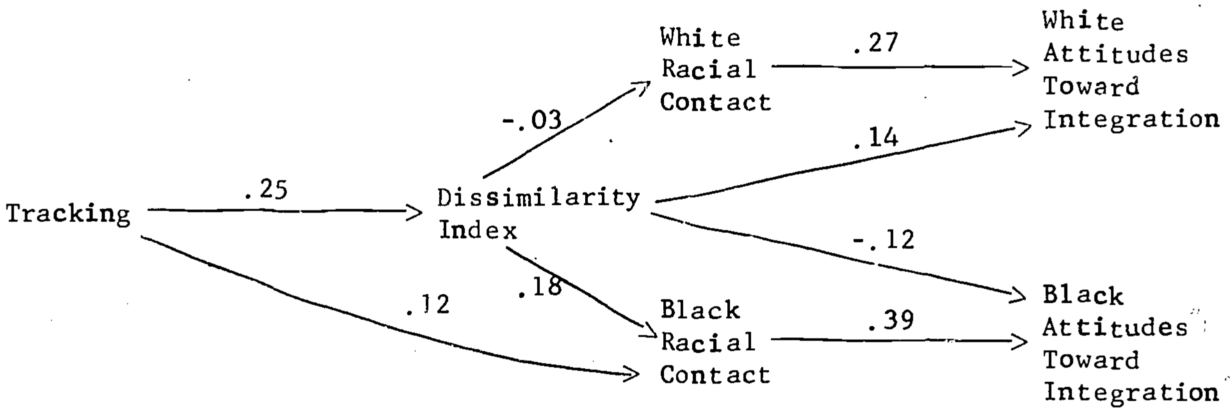
The data for high schools are presented in Figure 2.4. This time, tracking leads to segregation, but segregation does not appear harmful. The English classes in tracked schools are more segregated than those in untracked schools, but there is no evidence that classroom segregation inhibits racial contact. The partial correlations of tracking with racial contact are positive in three of the four cases; in addition, there are two positive correlations of classroom segregation with attitudes toward integration. The overall pattern indicates that tracking has a positive effect on racial contact, and that partially segregated classrooms may be beneficial. The effects of tracking on racial attitudes are entirely the result of tracking's impact on the level of racial contact. Once racial contact is controlled, tracking has no direct effect on white or black atttitudes.

These data do not provide clues as to why tracking does not show the expected effect, but we may speculate as follows. The contact hypothesis generally assumes that the subject holds unfavorable and uninformed attitudes toward the other group; under such conditions, any extensive contact that is not structured to reinforce intergroup hostility should reduce prejudice. These assumptions, however, may not apply to high school students in 1972. Most of the students in our sample (83 per cent of the whites and 68 per cent of the blacks) have attended integrated elementary or junior high

Rural Schools



Urban Schools



NOTES: Correlations between grouping and the dissimilarity index are averages of runs made with white and black weights and control variables. Correlations with absolute values below .08 are not shown unless specifically predicted by the model. Associations which are not predicted by the model are partial correlations controlling on intervening variables in model.

Fig. 2.4--Testing the Grouping Model, Tenth Grade Partial Correlations, Using Control Variables for White or Black Attitudes Toward Integration.

schools. Whatever negative feelings they have about students of the other race have already withstood actual contact with such students. Furthermore, the contact between the races in many schools is not always reassuring; it may be hostile or even violent. In addition, the practice of publicly grading students (the use of "honor rolls," the returning of graded exam papers in class, and so on) and the fact that academic work represents one of the major shared experiences of high school students put strains on interpersonal relationships between students of different achievement levels. Viewed in this way, it seems plausible that ability grouping may ease some interrracial tension.

The failure of the dissimilarity index to correlate with racial contact may also indicate that friendships develop among students during the nonacademic portion of the day; activities such as homeroom, extracurricular activities, athletics, and shop classes are rarely ability grouped. At the same time, the limited interracial contact in academic classes may be more conducive to friendships because students are of similar ability levels.

Why are these effects so different from those in elementary schools? In elementary school, grouping inhibits racial contact and, we argue, stigmatizes students. But in high school, the mere fact that two students sit side-by-side is little guarantee of friendship; students are too mobile, in and out of school. In addition, academic performance is so public--a failing student has little privacy--that heterogeneous grouping probably has effects as bad, or worse, than homogeneous grouping. At the same time, black and white students in the tracked school who are of different ability levels have chances to meet in non-threatening nonacademic classes, while students of the same ability level have more chances to see each other. The result, we argue, is to make the tracked school no worse in its race relations than the heterogeneously grouped school.

The Effects of Grouping on Other Racial Attitudes of High School Students

Thus far, we have seen that high school tracking is not associated with unfavorable student attitudes toward integration. What is its relationship to other measures of racial attitudes? The questionnaire contains several other items measuring attitudes toward members of the opposite race. In general, all the white responses show a moderate amount of negative feeling about blacks, ranging from the 19 per cent of urban whites who think color does make a difference in how smart people are, to the 58 per cent of rural whites who say that blacks "keep to themselves" in their school. Almost no blacks believe that one race is smarter than the other, and they generally give more favorable responses to the other questions. However, most blacks see their school as discriminatory. Only 35 per cent (rural) or 37 per cent (urban) of black students say that whites don't have special advantages in their school. In two other questions, 72 per cent of blacks say some teachers are unfair to blacks, while only 18 per cent say some are unfair to whites. (The whites disagree strongly: only 18 per cent of whites say that some teachers are unfair to blacks, and 40 per cent say some teachers are unfair to whites.) Thus, there is a noticeable amount of white prejudice, and a great deal of prejudice perceived by blacks.

In Table 2.16, degree of tracking is correlated with several racial attitude measures, first as a zero-order relationship and then as a partial correlation controlling on the same variables that were used as controls in analyzing attitudes toward integration. We find the strongest and most consistently positive effects for urban whites and for rural blacks.

On the whole, there is no general effect on prejudice for rural whites. Earlier, we saw that rural whites were more favorable toward integration in tracked schools. Table 2.16 suggests that white rural students in these schools do not like their black classmates more, but are more satisfied with their school; the partial correlation of tracking with the "I like school" scale is +.17.

For urban whites, perceptions of friendliness and attitudes toward the race/intelligence issue show equally strong positive associations with the tracking scale. The five racial attitudes variables (excluding the "I like school" scale) have partial correlations with tracking ranging from .16 to .20. For rural whites, while they see blacks as friendlier and more ambitious, they also see them as intellectually inferior.

TABLE 2.16

THE EFFECT OF TRACKING ON RACIAL ATTITUDES OF HIGH SCHOOL STUDENTS

Racial Attitudes Variable	Association with Tracking			
	Urban		Rural	
	Uncontrolled r	Partial r*	Uncontrolled r	Partial r*
White responses:				
Blacks are friendly	.14	.22	.03	.10
Blacks don't keep to themselves .	.04	.16	.04	-.06
Blacks are not dumb	.15	.20	.05	-.08
Blacks are ambitious	.16	.22	.17	.10
Color has nothing to do with ability	.05	.20	.03	-.09
I like school	.31	.32	.12	.17
Black responses:				
Whites are friendly	.06	.14	.17	.18
Whites don't keep to themselves .	.02	.10	.22	.23
Whites are not dumb	-.09	-.02	.11	.07
Whites are ambitious	.10	.12	.05	.04
Whites get no special advantages in this school	-.15	-.07	.02	.07
I like school	.09	.16	-.07	.01

*Using same controls as in attitude toward integration analysis.

Black rural students are favorably affected by tracking mainly because they see the white students as more friendly and less self-segregated. Given the white reports we have examined, this may be an accurate perception. Black urban students like school more if their school is tracked and, like rural students, they see the white students as more friendly and less inclined to keep to themselves. Black urban students in tracked schools, however, are more likely to see the school as discriminatory.

In summary, Table 2.16 agrees with Table 2.12 (which related tracking to attitudes toward integration) in showing effects of tracking that are more positive than negative. In rural schools, tracking apparently makes white students more favorable toward integration, although it does not reduce their prejudice. In urban schools, tracking may seem discriminatory to blacks, but both black and white students like school more, and white students appear considerably more liberal in their attitude. Black and white urban students are neither more nor less favorable to integration in tracked schools.

When High School Ability Grouping Is Not Beneficial

The preceding discussion leads us to speculate that tracking has no harmful effects on student attitudes toward integration only when certain other conditions hold; when, for example, the school staff is sufficiently pro-integration so that they will minimize the "labeling" effects of grouping on lower-ability students.

We searched for the conditions which must hold before tracking does not have a harmful effect on white attitudes with several regression equations, using the standard control variables and each time adding one additional variable and that variable's interaction term with tracking. For example, we entered in our first equation the mean of the teacher's racial liberalism scores (scored 0 or 1), and a second term that combines this score and tracking (scored 1 if both the school is tracked and the teacher liberalism score is high and 0 if both conditions do not hold). When these two variables, plus tracking itself (also scored 0 or 1) are entered in the equation, we can estimate two separate effects: the effect of tracking when teachers are conservative, and the effect of tracking when teachers are liberal. In this computation, the effect of tracking in schools with conservative teachers is negative; attitudes toward integration are .28 standard deviations lower in tracked schools. The effect of tracking in schools with liberal teachers, however, is strongly positive; attitudes toward integration are .61 standard deviations higher when schools are tracked.

This analysis was done with several variables for both urban and rural schools. No interesting results appear for urban schools, but a highly consistent pattern emerges for rural schools, summarized in Table 2.17. The entries in this table show the differences between white attitudes toward integration in tracked and untracked rural schools (expressed in standardized scores when various other conditions are specified). The first

TABLE 2.17

THE CONDITIONS UNDER WHICH TRACKING IS ASSOCIATED WITH FAVORABLE WHITE RURAL ATTITUDES TOWARD INTEGRATION

Characteristics of Rural Schools	Gain in attitudes toward integration, in units of school standard deviations
Teacher attitudes:	
Conservative	$-.28\sigma$
Liberal	$+.61\sigma$
School size:	
Small	$-.11\sigma$
Big	$+.72\sigma$
Racial tension:	
Low	$-.04\sigma$
High	$+.44\sigma$
White student previous education:	
Segregated	$-.08\sigma$
Integrated	$+.37\sigma$

two lines report the results for the interaction of tracking with the teacher attitudes described above. The remainder of the table shows that tracking has a positive effect when the school is large, or has a high level of racial tension, or when the white students attended integrated primary schools. In short, tracking has no positive effect in small rural schools, in schools where teachers are prejudiced, in schools where whites are from segregated backgrounds, or in schools where blacks are quiet. (This is consistent with the fact that tracking's effects on other student racial attitudes is more unfavorable in rural schools.)

Our analysis shows that tracking should not be done in an authoritarian manner. White high school students were asked whether they were assigned to a particular curriculum (college preparatory, vocational, business, or general) or voluntarily chose it. It is interesting that an average of only 6 per cent of the students say they were assigned. The typical high school is apparently quite successful in counseling students without appearing rigid or repressive. Table 2.18 shows that when this percentage of students who say they were assigned exceeds 6 per cent, attitudes toward integration become more unfavorable. In rural schools, tracking has positive effects on attitudes toward integration only in non-authoritarian schools; the positive effects disappear in schools where more students say they are assigned.

TABLE 2.18

RELATIONSHIP OF TRACKING AND PERCEIVED FREEDOM OF CHOICE IN CURRICULUM WITH WHITE ATTITUDES TOWARD INTEGRATION

Degree of Tracking	Percentage of whites who say they were assigned to their curriculum	Mean Attitude toward Integration Score	
		Urban	Rural
High	High (over 6 per cent)	16.1	13.2
	Low (under 6 per cent)	17.3	14.1
Low	High (over 6 per cent)	16.2	13.9
	Low (under 6 per cent)	17.1	12.8
School σ:		2.65	2.57

Summary of Table

	Urban	Rural
Effects of tracking:		
In schools		
with less choice	-.04σ	-.27σ
with more choice	+.08σ	+.51σ

Conclusions

In conclusion, we can present a specific set of statements about the effect of ability grouping. In elementary schools, ability grouping and classroom segregation are both deterrents to favorable attitudes toward integration. But in high schools, where tracking is carried out in a non-authoritarian way, and where the students and staff are relatively liberal, ability grouping, even if it leads to increased segregation of classes, may have slight positive effects on attitudes toward integration and other racial attitudes.

The Effects of ESAP on Elementary School Student Attitudes toward Integration

When we combine our experimental design and regression analyses, we see a simple, consistent picture: ESAP had no effect on elementary school student attitudes toward integration, and there is no reason to expect it to have had. We found that ESAP did fund a diverse group of activities, but when we analyzed those activities in the regression analysis, we found that they did not affect attitudes toward integration. Conversely, the activities and personnel additions that are associated with improved racial attitudes--additional non-classroom staff in rural schools, curriculum reorganization and human relations programs in urban schools--were rarely funded by ESAP. It is interesting that ESAP funds were not used for human relations activities in elementary schools. Apparently, race relations in elementary schools are low on the priority list of Southern educators.

It seems likely that school administrators tend to ignore racial issues unless student unrest forces them to act, and elementary school students are relatively passive. But before we accuse school leaders of insensitivity, we should consider whether a great deal of race relations work is needed in elementary schools. On the basis of attitude scores, one would argue that the target population should be white high school students, whose attitudes are the most unfavorable to integration. At the elementary school level, the data indicate that "leave them alone and they will work things out" is a viable strategy. For example, the number of years of desegration is a strong positive predictor of pro-integrationist attitudes for all four of the elementary school groups. But even though few of the students in our sample of schools had attended integrated schools since kindergarten, their attitudes toward integration are already rather favorable and they have many interracial friendships. Presumably, the fifth graders of the 1972-73 school year, who had more experience with integration than the students we studied, had even more favorable attitudes.

The Effects of ESAP on High School Student Attitudes toward Integration

ESAP did not make either white or black high school students more favorable to integration. But in contrast to the straightforward null finding of the fifth grade analysis, the tenth grade story is extremely complex.

ESAP did have a noticeable effect on the quality of race relations in high schools. The data demonstrating this are presented in Chapter 3. The most interesting finding is that black students in the experimental high schools are considerably more likely to say that their teachers and principals are favorable to integration, despite the fact that the experimental school teachers are not, in terms of personal feelings about the race issue, more liberal. This indicates that there is no selection bias in the experimental design.

In Chapter 3, and in an analysis of teacher attitudes and behavior presented in Volume II, we argue that student perceptions of teacher attitudes are not based on an accurate perception of the staff's true feelings but on teacher and principal behavior. Thus, the fact that students perceive the staff as being more favorable to integration in the experimental schools, while teacher self-reported racial attitudes are not necessarily pro-integrationist, suggests that something, presumably related to ESAP, has changed teacher behavior.

In Chapter 3, we attempt to weave this finding together with others to produce a convincing explanation of how ESAP raised the achievement test scores of black male high school students. The explanation is only partly successful, primarily because it is impossible to fit the attitudes toward integration of either white or black students into the story.

The first problem is with black attitudes toward integration. ESAP apparently caused black students to believe their school was fairer to them. We argue that this should, in turn, make them like school more, and it does (see Chapter 3). If the blacks in the experimental schools like their own integrated school more than those in the control schools, we argue that they should like integration in general more, but they don't.

We have a similar problem with white attitudes toward integration. We know (from Chapter 1) that ESAP funds were used in high schools to develop teacher and student human relations activities. We also know (from the regression analysis of activities earlier in this chapter) that these human relations activities are associated with more favorable attitudes toward integration on the part of white urban students. But again, the white student integration attitudes in experimental schools are not different from those in the control schools.

The most likely explanation for both problems is simply that ESAP had as much negative as positive effect on attitudes toward integration. It has sometimes been pointed out that compensatory education, while perhaps beneficial to blacks, may serve to reinforce the stigma that blacks are inferior. The consistent negative effects of the basic instructional services and guidance factors on attitudes toward integration, for both black and white elementary and high school students, suggest this is true.

It may also be the case that schools that strongly emphasize remedial programs do so because the staff see black academic problems as the overriding issue. This may reflect a fundamental anti-black sentiment on the part of the principals and the teachers, which is communicated to the students through the way in which the remedial program is executed. Thus, ESAP may have provided funds that conservative schools could use for remedial programs that decreased rather than enhanced the status of black students.

While this seems to be a reasonable explanation for white attitudes, it will not explain the black data. Here we seem to have a measurement problem: racial attitudes, as measured by perceptions of the school, or feelings of liking schools, indicate that ESAP had positive effects, but the attitudes toward integration scale shows no effect.

It seems to us that the black analysis has been complicated by the fact that, under certain conditions, reducing discrimination against black students may lead to expression of more anti-white sentiment. To give three examples of this: (1) in urban schools, as black status goes up, black attitudes toward integration become more unfavorable (but it is important to remember that the average black student is strongly favorable to integration, so that when we say that high status blacks are less favorable to integration, one should think of them not as opposed to it but simply less than unanimous in their support); (2) tenth grade blacks in Upper South urban schools have attitudes less favorable than those in Deep South urban schools; (3) tenth grade urban schools where the teachers are less prejudiced have black students who are more anti-integration.[22]

These statements fit with what we know about social movements of opporessed groups; that revolutionary ardor grows when conditions improve. The race riots of the 1960's began in Los Angeles, not Birmingham. Rioters were generally better educated than non-rioters;[23] and on at least some questions, young, well-educated blacks--the economically most successful group--were more "separatist" in their views than those with less education.[24]

Thus, the most successful blacks, the ones with relatively more freedom, are the ones who can make the most provocative demands. They are less afraid and feel less need to support traditional black positions. We believe that this has created some of the problems in our analysis, for this means that the more liberal a school becomes, the more its black students will feel free to break away from traditional assimilationist values. Thus, liberalizing a school may lead to more anti-integrationist sentiments for some blacks.

In our data, the factor analysis-regression procedures would seem to indicate that any general strategy of improvement in the schools, whether it be increased guidance counseling or greater human relations

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[22] Data presented in Appendix C.

[23] Nathan S. Caplan and Jeffrey M. Paige, "A Study of Ghetto Rioters" Scientific American 219 (August, 1968), 15-21.

[24] Angus Campbell and Howard Schuman. "Racial Attitudes in 15 American Cities" in Supplemental Studies for the National Commission on Civil Disorders (Washington, D.C.: U.S. Government Printing Office, 1968), p. 19.

efforts, leads to blacks becoming less sympathetic to integration. This is consistent with the idea that "modernizing" Southern schools are experiencing a growth of anti-integration sentiment similar to that appearing in Northern high schools. (In this regard, it is reassuring that ESAP did not lead to a decrease in pro-integration sentiment).

Thus we have two plausible (but unproven) explanations for the contradictions in our evaluation of ESAP: that the expenditure of ESAP funds for remedial work reinforced white sterotypes of blacks in some schools, offsetting any gains resulting from human relations efforts in other schools; while at the same time, ESAP sometimes provided a more liberal environment in which blacks could express their anti-integration feelings more easily.

There are other possible explanations for the failure of ESAP to make white high school student attitudes more favorable toward integration. One is that the program was too small. Black students, who are generally more sensitive to racial issues, may have been influenced by subtle changes in the school that were too small to affect white students. ESAP was a small program; its effect on black male achievement, which we examine in the next chapter, suggests that black students are extraordinarily sensitive to the nuances of the school's racial climate. This interpretation is consistent with some of the findings presented in Volume II, especially in Working Papers 1 and 2. It is also possible that ESAP did not affect white students for the simple reason that it was targeted rather sharply at blacks. If teachers became more sensitive to racial issues, and changed their behavior toward their black students, blacks may have perceived this change while whites were completely unaffected.

It may be that ESAP programs, especially in rural schools, encountered a white backlash. There is some evidence in this chapter, and more in Volume II, Working Papers 1 and 2, to suggest that some of the pro-integration sentiment expressed by white high school students, especially in rural areas, is superficial, and will not withstand the pressure of a sudden equal-status relationship between races. By this argument, a program whose main effect was to make black students feel more at home may have alienated whites in some schools.

There is also a methodological issue. Can we assume that a successful program should result in more whites favoring integration? Perhaps, but we must keep in mind that white pro-integration sentiment is now strong in schools where blacks are a small minority, and there is some evidence to suggest that whites are most pro-integration in schools where blacks are not given an equal position in the school. This implies that establishing racial equality in newly desegregated Southern schools will make white students less pro-integration.

Finally, it may be true that a certain amount of racial tension is inevitable. It is important to remember that high school is a time of conflict between groups. Social class, neighborhood, and common interests become criteria for membership in exclusive groups. In a desegregated high school, race provides an additional criterion to use in distinguishing "us" from "them." In this situation, conflicts may center on issues of status and power, and games played with these stakes are invariably zero-sum games; "we" win only if "they" lose. One possible result of this situation is that the principal will eventually find himself in a position where the only way he can appease one group is to offend the other.

Thus, we have reason to argue that a school with a "good" racial climate may sometimes have students of one or both races who are opposed to integration. Consequently, not only are we unable to predict the direction in which white and black attitudes will be affected by an ESAP activity, we are not even sure if the fact that students hold attitudes more favorable to integration represents a positive, rather than a negative, effect in the long run.

The effects of ESAP on achievement and attitudes toward school, plus the positive effects of human relations activity on the integration attitudes of some subgroups of students, make us reluctant to conclude that ESAP had no effect on student attitudes toward integration. We think it more likely that ESAP had offsetting positive or negative effects, in any (or all) of three different ways:

1. ESAP may have had no net positive effect on white attitudes toward integration because whatever gains may have occurred from ESAP-sponsored human relations activity may have been offset by the negative effects of ESAP-funded remedial programs on white attitudes.

2. We hypothesize that the first contradiction--that black students saw their ESAP-assisted schools as more favorable to integration but did not become more favorable to integration themselves--is a result of the fact that the more liberal school environment enabled blacks to develop a stronger racial esteem and express separatist feelings more willingly.

3. We think the second contradiction--that ESAP funded human relations activities that made white students more favorable to integration without showing a net difference in favor of ESAP experimental schools--may also be partly explained either by a backlash on the part of white students to the increased attention paid to blacks, or by the fact that the ESAP program was too small, and too short in duration, to affect white students, who are less sensitive than blacks to changes in racial climate.

In summary, it looks as if there are ways to influence white students to accept integration. The most effective way is simply to make sure that the school is firmly committed to improved race relations. Perhaps ESAP can do this; perhaps in some sense it did (at least in terms of black perceptions of the school). But changing attitudes of high school students in this area is a complex problem; apparently we should not expect easy solutions.

CHAPTER 3

ACHIEVEMENT TEST PERFORMANCE

Introduction

In this chapter, we will measure the effectiveness of ESAP by looking at its impact on tested school achievement in much the same way that we looked at changes in racial attitudes. The structure of the chapter is exactly parallel to Chapter 2. We begin by introducing the measurement of the school output variable (achievement), and locating the necessary control variables for the analysis. In this chapter we will also examine an analysis of covariance applied to the experimental design, and will perform a multiple regression analysis of the impact of school programs.

The measure of school achievement used in this chapter is the Survey Test of Educational Achievement (STEA). This shortened version of the ETS STEP test was especially developed for this evaluation. In the analysis of the test results, the social class characteristics of the students were controlled. This was necessary in part because middle-class students score higher than working-class students on the test. Similar to the Coleman report (Equality of Educational Opportunity),[1] we also found that students in middle-class schools have markedly higher achievement scores than do students of similar background in working-class schools. This indicates a "multiplier" or "contextual" effect. Middle-class schools not only have superior students, but also are able to provide a superior quality of education.

The results of the experiment indicate that ESAP raised the test scores of black high school males significantly. Test scores for this group are approximately one-half of a grade higher in the experimental

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[1] James S. Coleman et al., Equality of Educational Opportunity (Washington: U.S. Government Printing Office, 1966).

schools than they are in the control schools, once social class differences between the two groups of schools have been controlled.

The main goals of ESAP were to improve race relations in newly desegregated schools and to raise black achievement. The data suggest that improving race relations will raise black test scores. This would explain why ESAP effects appear only in high schools, because ESAP did not result in major expenditures in this area of elementary schools.

In addition to presenting the analysis of ESAP program effects in this chapter, we will examine the whole range of activities currently employed in the schools studied, in order to locate those that seem to raise achievement. It appears that the most important of such activities are the extensive use of audio-visual specialists and the equipment for student use.

The Achievement Test

The Survey Test of Educational Achievement could be used because we are interested only in mean school scores, and therefore do not need a test accurate enough to evaluate individual students. A discussion of the test reliability (the extent to which a retesting of the same students would give the same results) and other methodological issues appear in Appendix D. That analysis indicates that the test is sufficiently reliable, so that the main source of error is the result of sampling only 15 to 35 students of each race per school.

STEA measures the achievement of students in five areas: reading, mechanics of writing, mathematical computation and concepts, and science. In this report, only the overall score is analyzed; scores on the separate subtests are not used.

How Large Is the Effect of School on Achievement?

At present, there is a raging debate over the importance of the quality of education in determining school achievement. A number of social scientists have argued that improving the school will have only a negligible effect upon the achievement scores of the students in it. We find in our analysis that school quality does make a difference in achievement, although whether such a difference should be interpreted as enormous or negligible is a matter of interpretation and of values.

As Table 3.1 indicates, the amount of variance between schools on the achievement test for Southern blacks is slightly less than one-fifth of the total variance. This is similar to the results obtained in the Coleman report. These values are approximately the same as those we obtained

TABLE 3.1

RATIO OF BETWEEN-SCHOOL VARIANCE IN ACHIEVEMENT TEST SCORES TO TOTAL VARIANCE

Grade and Race	Variance Ratios
	Per Cent
Fifth grade, black	18.0
Fifth grade, white	16.2
Tenth grade, black	19.5
Tenth grade, white	20.5

for the between-schools variance in racial attitudes in Chapter 2. The differences between schools, however, are in fact much larger for integration attitudes than for achievement. Thus the effect of school on those attitudes is even more important than the effect of school on achievement. There are two reasons for this. First, the integration attitude scale is very short and contains a great deal of measurement error. The effect of this is to drastically understate the amount of variance between schools.[2]

[2]The introduction of a large amount of measurement error at the individual level tends to inflate the individual-level variance. At the same time, the between-school variance is not increased as much, since a school mean based on a number of students is more accurate than data at the individual level. Thus, the effect of error is to inflate the individual variance more than the between-school variance and hence reduce the between-to-within variance ratio.

Secondly, we will see that many of the between-school differences in achievement can be attributed to the characteristics of the student body. This was not true in the case of attitudes toward integration. A detailed discussion of the interpretation of the between-school variance appears in Volume 2; there we suggest that differences in school quality can alter test performance by two to four grade levels.

Control Variables for the Analysis

As in Chapter 2, the first step in the analysis was to use multiple regression to locate the set of control variables needed to analyze the effect of school factors on achievement.[3] The major controls needed were those measuring student social background. The student social background variables used in this study are somewhat unusual. Many elementary school students would be unable to answer the usual questions about social status, parents' occupation, income, or educational attainment. Hence, we chose simpler items that the student would have opportunity to observe.

Using achievement as the dependent variable, all items measuring social background were entered into a stepwise multiple regression equation. These included both social status and the amount of educational support the student received at home. For each grade and race, we picked the best equation in which the variables had the expected effect and in which we were able to maximize the percentage of variance explained. The items that comprised the final equations were different for each group.

There are several reasons for these differences.

1. The fifth and tenth grade questionnaires differ because less sophisticated items must be used with elementary school students.

2. There are racial differences in the importance of the variables (e.g., fewer white families receive food stamps).

3. The correlations between variables are so high that they readily serve as proxies for each other.

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[3] More detailed discussions of this topic appear in Appendices A and B.

For fifth grade blacks, the strongest background variable is the percentage of students not using food stamps. For whites, the best SES variable is the percentage receiving a daily newspaper. Mother's education is the strongest SES variable in the tenth grade for both whites and blacks.

Another important control variable is the social background of the students of the other race in the school. Student social background affects student achievement both directly and indirectly. Its direct impact is obvious: high status students perform better on tests. But the indirect effect documented by the Coleman report is equally important: students learn more when their classmates are of higher status. Our data indicate that the correlation of the school mean social status for one racial group with school mean achievement for that group is considerably higher than is the individual-level correlation between social background and achievement. It can be shown that school mean social background is a significant predictor of individual achievement. But if black achievement is affected by the social background of the students' black peers, it should also be affected by the average background of the students' white classmates as well, and this is the case. Therefore, the SES of the opposite race was added as a control.

Additional school and community characteristics were also used as control variables. These were all factors over which the school had little control, so that the addition of some new school activity, such as remedial reading, could not have altered the factor. After we had formulated equations controlling SES, we tried to control those school and community variables that had an effect on achievement but that occurred prior to any projects. Again, the full set of variables was used, but the optimal equations included only a subset of these variables. A summary of the control equations used in the multiple regression is shown in Table 3.2. The community and school variables that are associated with high achievement in at least one equation included:

1) high per pupil expenditures for education

2) whether the superintendent was elected or appointed (elected superintendents are in low achievement districts)

3) high level of civil rights activity

4) favorable teacher attitudes toward testing

5) the principal's favorable evaluation of the teachers

6) high percentage of Jewish students

7) high percentage of white students selecting the school

8) high number of non-classroom specialists per student employed in the school

9) high degree of tracking

10) high percentage of the district population in rural areas

TABLE 3.2

THE CONTROL EQUATIONS FOR THE ACHIEVEMENT TEST SCORES

Grade and Race	Variables	Per Cent of Variance Explained
Fifth grade, black	White and black social status; Per cent of Jewish students; Per pupil expenditures; Superintendent elected or appointed; Amount of civil rights activity	17
Fifth grade, white	White SES; Ruralism; Per cent attended kindergarten; Principal's rating of white teacher quality; Per cent of teachers who value testing	53
Tenth grade, black	Black and white SES; Ruralism; Superintendent elected or appointed	41
Tenth grade, white	White and black SES; Per pupil expenditures; School size; Number of non-classroom professionals in school; Tracking; Number of white in-transfers; Per cent of white students selecting this school	43

These control variables are without exception much less important than student social status. A full discussion of the control variables appears in Appendix B. Briefly, the first nine variables can be summarized as indicators of (a) general school quality, (b) integration effects, and (c) contextual effects of school social status. Schools of generally high quality will usually have high expenditures per student (1, above), more non-classroom specialists (8), more tracking (9), teachers who are "believers" in achievement testing (4), and principals who evaluate their teachers favorably (5). In addition, high-quality schools will have appointed school superintendents; the elected school superintendent is a political anachronism, which has survived only in a small number of rural Southern school districts.

The importance of race relations is reflected in the higher black achievement in districts with more civil rights activity. We suspect that civil rights activity in the community has a direct impact on black student motivation. White achievement is higher when white students say they selected their schools; we hypothesize (but cannot prove) that this item reflects both voluntary transfers to schools with reputations for quality and school systems protecting their high-status white "neighborhood" schools.

Schools with Jewish students, even in very small numbers, tend to have high black school achievement, just as schools with high-status non-Jewish white students do.

Only the last control variable--high percentage of the district population in rural areas--requires more detailed discussion. When social class measures are used, they tend to penalize students in rural areas, where it is more difficult to obtain a daily newspaper, easier to get food stamps, and less likely for one's mother to be a high school graduate. Students in rural areas appear to have extremely low social status while their achievement is only moderately low compared to students in urban districts, creating a serious multicollinearity problem. For this reason, urbanism is entered as a negative predictor of achievement in every equation.

Table 3.2 shows that the control variables explain at least 40 per cent of the variance in every category except that of fifth grade black students. The low per cent of variance explained in that category was a matter of great concern for the evaluation staff. After much analysis, it was decided that the achievement test used for the fifth grade students was satisfactory (see Appendix D). It seems most likely that there was an unusually large amount of response error in the questions about social class, and additionally, that student social class is not as important a predictor of achievement for black students as it is for white students. Student social class is also less important at the elementary school level than it is at the high school level.[4]

Since the control equation for fifth grade black students is less satisfactory than the equations for the other three groups, our results generally will not be as clear for this group as for the others. Special attention will be given to interpretation of the results for this group.

In the analysis of covariance of the experiment, a shorter list of control variables was used, partly to conserve degrees of freedom, and partly so that we could combine the white and black control variables into a single group, since the covariance analysis analyzes white and black test scores simultaneously. The controls used in the experimental analysis are discussed in the next section, and also in Appendix A. The controls for the regression analysis are presented in detail in Appendix B.

The Effects of ESAP: The Results of the Experiment

Our first task in determining the effect of ESAP on achievement is to examine the test scores of the schools in the ESAP experiment. Our

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[4]The argument is as follows: for Southern blacks, inequality of economic opportunity has meant that there has been less opportunity for families of superior genetic ability to gravitate to high status positions. Thus, status is a poor indicator of innate academic ability. The other major reason why we expect middle-class students to perform better in schools is that high-income students have fewer problems than do lower-income students with delinquency and aggressive behavior; but these behavior problems do not become important until high school. Thus, the advantage of high social background is not as important in elementary school for blacks as it is for whites.

analysis is limited to the experimental and control schools and, more specifically, to those matched pairs of schools where both the experimental and control schools have students of both races.

The analysis of covariance does not permit weighting. Therefore, in order to minimize the impact of small numbers of respondents of one race, we removed all pairs of schools where one in the pair had less than three students of one race. This left 39 pairs of high schools and 68 pairs of elementary schools available for analysis.

The analysis, identical to that described in Chapter 2, was a multivariate analysis of covariance. It is a multivariate analysis because it uses four dependent variables simultaneously (the achievement of white and black males and females) and it is a covariance analysis because it removes the effects of the control variables (or covariates) before comparing the achievement scores of the experimental and control schools. In this analysis, the covariates are 12 student characteristics.

For each race, in both the fifth and tenth grade analysis, we used the percentage of students living with both parents, the percentage receiving a daily newspaper at home, as well as the mean number of siblings, giving a total of six covariates. In addition, for the fifth grade analysis, we added the percentage using food stamps, the percentage owning a bicycle, the percentage of female students in the class, as well as the principal's report of the percentage of students qualifying for federally subsidized lunches. For the tenth grade, we added the percentage of students (of each race) whose mothers were high school graduates, whose homes had air conditioning, and whose families owned their own home. Thus, each grade had a total of 12 covariates.

Table 3.3 gives the mean test score and standard deviations for the experimental and control schools separately by both race and sex. To make the achievement scores comparable with other standardized tests, we multiplied all scores by 10. If there were no bias in the design--if the experimental schools were indeed randomly selected from the same universe as the control schools--we would not expect differences in the social

TABLE 3.3

ESAP'S EFFECT ON ACHIEVEMENT: THE RESULTS OF THE EXPERIMENTAL DESIGN

Grade, Race, and Sex	Unadjusted Scores			Difference: Experimental-Control	Difference Adjusted for Social Background	Significance Level[a]
	Standard Deviation	Mean Experimental	Mean Control			
Fifth grade white male . . .	46.8	322	318	4.2	15.3	n. s.
Fifth grade white female . .	42.1	358	362	- 4.4	- 5.9	n. s.
Fifth grade black male . . .	63.3	160	146	14.2	- 3.8	n. s.
Fifth grade black female . .	55.4	193	192	1.0	- 1.6	n. s.
Tenth grade white male . . .	63.5	252	241	10.4	5.7	n. s.
Tenth grade white female . .	52.6	276	273	3.2	-15.5	n. s
Tenth grade black male . . .	38.4	117	102	14.9	24.0	$p < .02$
Tenth grade black female . .	43.5	123	120	2.9	- 4.7	n. s.

[a]All significance tests in this table are two-tailed, making no prior assumptions about the way in which the experimental and control schools differ from one another. A one-tailed test is appropriate for this problem; using it, the experimental-control differences would be significant ($p < .05$) before adjustment for the social background covariates.

NOTE: Multivariate significance test using all four dependent variables combined in a linear model:
Fifth grade: n. s.
Tenth grade: $p < .04$.

status of the schools to be important. Since we are not sure that there is no bias in the design, we remove the effects of the social class covariates and examine the adjusted means. Such a control will reduce the amount of variance in achievement remaining to be explained, making the expected differences between schools smaller. Thus a difference of a particular size becomes more significant as we remove some of the factors that might randomly explain that difference. Before removing the social status covariates, the tenth grade black male results show the only experimental-control difference that approaches significance (the significance test for the unadjusted means is not shown in the table; for tenth grade black males, $p < .10$, two-tailed). There is also a positive experimental-control difference for fifth grade black males, but here the standard deviation of school means is considerably larger and thus this result does not approach significance.

When the covariates are removed from the school means, the differences for tenth grade black males become larger and go well beyond significance at the .05 level. Our best estimate of the effect of ESAP on tenth grade black males is a gain of 24 points, or 4.2 months[5] in grade equivalent units.[6] Furthermore, when a multivariate analysis of covariance is performed by finding the best fitting linear sum for all tenth grade groups, the difference is significant when used as the dependent variable in the analysis. In other words, pooling all of the tenth grade achievement scores produces a statistically significant result ($p < .04$), which

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[5]Approximate grade equivalence was derived from Equality of Educational Opportunity, which showed that one standard deviation (at the individual level) was equivalent to three grade levels. We assumed the same relation for our test, so that 5.7 test points = 1 month.

[6]One remaining issue was the unequal cell sizes. The analysis reported here does not weight the pairs according to the number of students tested in each school. However, the analysis was repeated, using an analysis of variance with unequal cell sizes, with identical results; the differences between the experimental and control schools are 16 points before adjustment for covariates, 25 points after adjustment.

gives us reason to conclude that the experiment has had some effect on achievement. When we separate these scores into four groups, we find that the achievement gains are concentrated in high school black male students ($p < .02$). This is a very satisfying result. If ESAP is indeed concerned with raising minority group achievement, its impact should be concentrated on blacks.

We have answered the first question of the evaluation of achievement: ESAP does have an effect. Our next question is why ESAP had the effect it did. The remainder of this chapter is devoted to an analysis of the ways our data indicate that one can intervene in the school to raise achievement and, more particularly, the ways in which ESAP did intervene to raise achievement.

The Regression Analysis of Program Impact on Achievement

Why did ESAP raise the achievement of black high school males? For that matter, why did ESAP not raise the achievement of other groups? The remainder of this chapter is devoted to investigating this question. The most likely explanation for the success of ESAP is that certain school projects affect the achievement of certain groups. ESAP presumably raised the achievement of black high school males because it provided an activity which raised their achievement, and failed to raise the achievement of other groups because it was unable to provide the kinds of activities that would have raised the achievement of those groups.

Our first step is to ignore the experimental design within the data, group all of the schools together, and carry out a multiple regression analysis of program impact upon achievement. We will carry out this analysis in three stages. First, we will verify that the regression analysis agrees with the analysis of covariance by showing that the mix of projects that ESAP purchased does in fact raise the achievement of high school black males only. Second, we will carry out an overview analysis by examining only the four factors developed in the factor analysis of each grade level (see Chapter 1) in order to determine if any of these factors have a significant impact upon achievement for any group. Third, we will examine the individual impacts of approximately 60 measures of the existence of projects. We hope to explain why ESAP, by purchasing certain activities that have an effect upon achievement, increased tenth grade black male achievement. Similarly, we hope to show that ESAP, by not purchasing other activities that have an effect upon achievement, failed to raise the achievement of other groups.

After this three-step analysis is completed, we will reconsider the experimental design results, to see if our analysis of the effects of various school activities has shed any light on why ESAP should affect achievement.

The Impact of the ESAP Strategy in the Regression Equations

In the full sample, used for the regression analysis, the experimental and control schools are supplemented by additional ESAP schools so as to effectively double the sample size. If the regression analysis is consistent with the experimental design results, we should find that a dummy variable representing whether the school was an ESAP school or a control school shows a positive regression coefficient when entered in the regression analysis for tenth grade black students. This is in fact the case. When this regression analysis is done, insignificant regression coefficients are obtained for the fifth grade black and white students, a noticeably negative coefficient (beta = -.09) is obtained for tenth grade white students, and a positive coefficient (beta = +.07) is obtained for tenth grade black students. Since we ran this analysis for a combined group of males and females, the effect is small (a beta of .07 implies a gain for ESAP schools of only 5 points). Presumably, this effect would be larger if the regression were run for tenth grade black males. Even under the most generous assumptions, however, the regression coefficient for tenth grade black males would still be relatively low, compared to the ESAP effect found in the experiment.

Thus far we have examined the effects of giving ESAP grants to a particular set of schools. The evaluation of ESAP can be viewed in a different way. ESAP is no more than a collection of programs. Many of these programs have existed for years, funded by Title I or local tax money. There is no reason to believe that a human relations program funded by ESAP is significantly different from a similar project supported by local funds. If ESAP has a particular effect, it should be because of the activities that it supports. These activities should produce the same results whether or not they are directly related to ESAP.

We can ask two questions. First, what was the ESAP strategy, that is, what activities were bought with ESAP grants? Second, what are the effects of these activities, regardless of the source of funding?

To define the ESAP strategy, we must determine which projects were most often bought with ESAP grants. To do this, we put the set of program variables into a regression equation with the dependent variable being whether the school received ESAP funds. Thus, we are seeking to determine the extent to which the presence of each particular program predicts that the school received an ESAP grant. The details of the results are given in Appendix B.

The description of ESAP generated in this way is similar to that given in Chapter 1; ESAP purchased a diverse collection of activities ranging from the hiring of school psychologists to the purchasing of human relations literature. Each activity is weighted according to how likely ESAP was to fund it, and the activities are put in a scale. The scale measures the extent to which a school has activities that ESAP would be likely to fund. A school might have a high score on the scale without having received an ESAP grant if it were supporting these activities with other funds.

We use this scale in a regression with achievement as the dependent variable. We are testing whether these programs have any effect, regardless of whether or not they are the direct result of ESAP.

The results of the regression are given in Table 3.4. The regression coefficients for white and black fifth and tenth graders are not large enough to be called significant effects. However, the scale does have a positive effect on tenth grade black male achievement--the group which ESAP benefits. As evidenced in Table 3.3, ESAP had a negative, although insignificant, effect on tenth grade white achievement. Table 3.4, using the entire sample, shows that the ESAP strategy had a positive effect on achievement for this group, although this effect is still not significant. There are several possible explanations for this shift. Since the results from both samples are statistically insignificant, we will not attempt to interpret them at this time.

TABLE 3.4

THE IMPACT OF THE ESAP STRATEGY ON ACHIEVEMENT

Grade and Race	Beta (After Controls Introduced)
Fifth grade, white . . .	.00
Fifth grade, black . . .	.03
Tenth grade, white . . .	.05
Tenth grade, black . . .	.05
Tenth grade, black males	.08

We can conclude that the activities in which ESAP invested serve to improve the achievement of black high school males. We find also that the activities have this effect regardless of their source. The effect is not linked to the timing or other characteristics of ESAP.

The Impact of Program Strategies on Achievement Using Factor Analysis

In Chapter 1, we observed that approximately 40 activities and supplemental staff we identified in the schools can be clustered into general groups. We argued at that time that this clustering represented a grouping of activities according to their ideological orientation. For example, human relations programs tended to occur in elementary schools that were also reforming their curriculum and introducing such new ideas as team teaching; remedial reading often went hand in hand with the use of teacher's aides and counselors; other schools seemed to "specialize" in hiring staff oriented toward social work. Similar overall ideological strategies can be discerned in the tenth grade.

We can ask whether any one of these ideological orientations is more effective in raising achievement than any other. We construct the factors from the factor analysis and enter them into regression equations with the usual control variables. The results, shown in Table 3.5, are unrewarding. On the whole, none of the alternative ideological strategies seem to work. The fifth grade factor 2 and tenth grade factor 1 describe a cluster of activities primarily dealing with intergroup relations (at the elementary school level, this factor also includes classroom reorganization). This factor produces negligible gains in achievement. Fifth grade factor 1, the purchase of auxiliary non-instructional staff, gives no results.

TABLE 3.5

THE IMPACT OF PROGRAM STRATEGIES ON ACHIEVEMENT
USING FACTOR ANALYSIS

Grade and Factor	Standardized Regression Coefficients	
	Black	White
Fifth Grade:		
Factor 1: Auxiliary personnel, non-instructional	.02	.02
Factor 2: Intergroup relations, curriculum reorganization	.02	-.05
Factor 3: Basic instructional services	.04	.03
Factor 4: Social work, guidance	.02	-.03
Tenth Grade:		
Factor 1: Intergroup relations	.02	.05
Factor 2: Basic instructional services, social work	.04	.02
Factor 3: Intergroup relations, facilities . . .	.04	.04
Factor 4: Guidance and counseling	-.04	.03

Fifth grade factor 3 and tenth grade factor 2 describe activities directly aimed at cognitive development. These include a collection of remedial programs and staff, achievement grouping, and teacher's aides. The factor shows only small achievement gains. A final tenth grade factor is a collection of social work and couseling programs, including the use of school psychologists and home visitors.

Later we will see that some individual projects affect the achievement of tenth grade students, but this analysis indicates that no one overall approach to school reform is particularly successful.

Examining Individual Activity Effects with Regression

There is no single strategy that is more effective than any other in raising achievement. When we examine the effects of individual activities, however, we find that some activities show small effects for some subgroups of students. Each of the 61 activities (63 for high schools) is entered in a regression equation to predict fifth and tenth grade black and white achievement. Each activity variable is entered in a multiple regression equation with the set of community and student background control variables. Thus, 248 separate regression equations are computed, and the 248 standardized regression coefficients are examined. This computation yields 248 standardized regression coefficients. They range from +.13 to -.13 with a modal value of 0. The typical program has no measurable effect. However, in the elementary school, 10 of the 122 regression coefficients are +.06 or greater, and in the high school, 14 out of 126 are .07 or better. Table 3.6 displays the regression results for every activity with one or more regression coefficients above this criterion.

As noted in Chapter 2 and Appendix B, reports of programs are coded in three slightly different ways. Special codings are marked in parentheses next to the variables with a key to the codes given below. In the table itself, there are four different notations:

1) The 24 coefficients over .06 (fifth grade) or .07 (tenth grade) are simply listed.

2) The 11 coefficients below this criterion but greater than .03 are indicated as "+" (plus sign).

3) The 29 coefficients between +.03 and -.03 are listed as "0" (zero).

4) The 8 coefficients more negative than -.03 are shown as "-" (minus sign).

TABLE 3.6

IMPACT OF SCHOOL ACTIVITIES AND PERSONNEL ON ACHIEVEMENT: A SUMMARY OF POSITIVE FINDINGS

Activity	Fifth Grade		Tenth Grade	
	Black	White	Black	White
Teacher-relations programs (p)[a]	0	-	.07	.08
Remedial reading teachers/student . . .	0	0	.11[d]	0
Remedial math teachers/student	+	.06	.10[d]	+
Teacher's aide programs (d)[b]	+	0	0	.07
Teacher's aides/student	0	.06	0	+
Textbooks	.08	0	-	0
Testing materials	.08	.07	0	0
Audio-visual specialists/student . . .	0	0	.08	.12[d]
Instructional equipment(s)[c]	.08	0	0	0
Guidance counseling program (d)	0	+	-	.08
Counselors/student	+	.06	-	0
Counselor's aides/student	0	+	-	.07
Vocational education teachers/student .	.08	+	0	+
Social work program(s)	0	0	.11[d]	0
Nurses/student	.13[d]	0	0	0
Gym teachers/student	.06	0	.10[d]	+
New construction	0	-	.09	.07
Renovations	0	-	+	.07

[a](p) = principal's report of existence of program (yes, no).

[b](d) = principal's report of duration of program (0, 1, 2 years).

[c](s) = principal's report of size of program (none, too small, adequate).

[d]Significant, $p < .05$ (one-tailed test).

Setting up the table in this way allows us to check effects that are significant and to check the consistency of effects across groups. Thus, a program would be questionable if it has a significant effect on one group but a minus for other racial and age groups. We would be more impressed with a program with one or two significant results and at least a plus in the other categories.

The largest single regression coefficient for high schools in Table 3.6 is the beta = .12 for the impact of audio-visual specialists on tenth grade white achievement. There are very few fifth grade audio-visual specialists and they show negative results in a regression analysis for both black and white achievement. However, a related variable, the purchase of instructional equipment, does show a positive regression coefficient for fifth grade black students. Taken together, these findings suggest that these two activities are worth further study.

We will not make a detailed study of the activities in the remainder of Table 3.6. Apparently remedial reading and remedial mathematics teachers have small positive effects on the achievement of black students in high school. (We are not convinced that there are not similar effects for black fifth graders, where the inadequacy of the control variables creates the danger that we may understate the impact of activities concentrated in low-SES schools.) These effects are not very large, and in any case are not very relevant to an analysis of ESAP. We saw in Chapter 1 that ESAP funds were rarely used to hire remedial specialists. ESAP schools were more likely to have "remedial programs" (presumably without specialists heading them), which are not associated with black achievement improvement.

The consistency of one other result is suggestive. The employment of gym teachers is the only activity that has consistent effects at both the fifth and tenth grade levels. Otherwise, the data suggest that white students are beneficiaries in schools that emphasize counseling, and that black students are beneficiaries in high schools with social work programs. The presence of nurses is strongly related to fifth grade black achievement, and vocational education teachers have small positive effects in three cases out of four. Achievement is apparently higher in schools that have undergone additional construction or renovation. Since these results are not very consistent, we will not analyze them further. In the next section, we will examine the results for audio-visual specialists and equipment in more detail.

Audio-Visual Specialists and Equipment for Student Use

The activity that seems to accomplish the most in raising test scores on the high school level is the employment of an audio-visual specialist. Only 10 per cent of the high schools studied had audio-visual specialists. Since ESAP did not invest in much audio-visual equipment, these aids cannot explain the effectiveness of its program. It is important, however, to examine the positive results. As indicated in Table 3.7, high schools that employ audio-visual specialists show achievement gains for black and white students, once social class is controlled, of two and four months, respectively. These are the two largest unstandardized regression coefficients for any program at the tenth grade level. No other program has as large an effect on either black or white students.

The elementary school results indicate that the impact of audio-visual specialists is negligible, taking into account the fact that there are so few of these specialists in elementary schools that these numbers are unreliable. However, a related variable, instructional equipment, does show an achievement impact. The presence of equipment for individualized instruction and audio-visual aids has a significant effect for blacks.

Nearly all schools report that they have such equipment, but if we divide the schools into those in which the principal rated the equipment as adequate and those in which he rated it inadequate, we find that adequacy of equipment correlates with black elementary school achievement; the beta = .08 is one of only three betas of this size for this group.

While the use of instructional equipment and audio-visual materials is very fashionable now, there is no widely accepted theory to explain why these activities should raise achievement test scores. Most of

TABLE 3.7

IMPACT OF AUDIO-VISUAL SPECIALISTS AND INSTRUCTIONAL EQUIPMENT

Variable	Size of Activity[a]	Simple Correlation Coefficient (r)	Standardized Regression Coefficient (Beta)	(Beta-r)	Total Variance (Simple R^2)	Unique Variance (Unique R^2 after Controls)	Unstandardized Regression Coefficient (b)	Number of Achievement Months Gained (b/5.8)
Fifth, Black:								
Audio-visual specialist .	4 %	.00	-.02	.02	.00	.00	- 4.06	- .7
Instructional equipment .	1.27	.07	.07	.00	.01	.01	7.06	1.2
Fifth, White:								
Audio-visual specialist .	4 %	-.03	-.02	.01	.00	.00	- 3.18	- .5
Instructional equipment .	1.27	.03	-.03	-.06	.00	.00	- 3.44	- .6
Tenth, Black:								
Audio-visual specialist .	11 %	.03	.08	.05	.00	.01	13.04	2.2
Instructional equipment .	1.22	.07	.03	-.04	.00	.00	2.37	.4
Tenth, White:								
Audio-visual specialist	11 %	.17	.12	-.05	.03	.02	25.19	4.3
Instructional equipment .	1.22	.04	.00	-.04	.00	.00	0.00	.0

[a]For audio-visual specialists, this column gives the percentage of schools with specialists; for instructional equipment, it gives the mean size of program (2 = adequate, 1 = small, 0 = none).

the discussion of new equipment for schools centers around its impact on the motivation of students. The finding, if it can be considered accurate, is obviously of considerable policy relevance. In order to convince ourselves of its validity, we carried out further analyses.

An additional statistical analysis was done to determine the various correlates of audio-visual specialists and to determine if any of these correlates, entered into the regression equation with achievement, would explain away the audio-visual effect. The result confirms the first analysis: there are no school characteristics which, when entered in the regression equation, would remove the effect of audio-visual specialists.

Another check was provided by administering telephone interviews to the high schools that claimed to have audio-visual specialists. Those results are reported in the next section.

Telephone Interview Follow-Up of Audio-Visual Specialists

Our regression analysis indicates that having an audio-visual specialist improves achievement for tenth graders, and that the use of equipment for individual instruction improves achievement for fifth graders. To test these findings further, and to obtain a better idea of what equipment schools have and how they use it, we called high schools in the sample who reported having an audio-visual specialist. Of the 22 schools in the high school sample who reported having a specialist, we talked to the principals of 17. The other five principals could not be contacted or asked not to be included. Since this follow-up was of an informal nature, principals who preferred not to participate were not pressed.

Interviewers asked principals how long they had been at the school and which of their specialists they felt were most effective. In general, the responses to this question were vague and not particularly informative. Principals were also asked to describe the activities of the audio-visual specialist, the kinds and amount of equipment in the school, and the ways in which the equipment was used, and to give their own opinion about whether or not equipment is effective in raising achievement or improving attitudes.

The purpose of these interviews was to test both the effectiveness of the audio-visual specialist and the value of equipment in general. The best measure of how instructional aids are utilized by a school is the presence of an audio-visual specialist (rather than the presence of equipment) because, while virtually every high school has some audio-visual equipment, few have a specialist. We asked very generally whether the school had any audio-visual equipment; since every school said that they did, this is a very insensitive measure. Schools with an audio-visual specialist seem to have more than the average amount of equipment, or at least put a special emphasis on its use.

In order to understand the role of the specialist, we must understand the kind of equipment in schools and the way in which it is used. There is considerable variation among schools in this area. One group of equipment includes conventional classroom items, such as film and slide projectors, record players, and tape recorders. All the schools we contacted had at least some of these, and used them most often in science, social studies, and music and art courses. One school had increased the use of films as part of a massive curriculum revision, which included the establishment of "mini-courses" in Asian and African studies.

There are other pieces of equipment that are used in classrooms but are less common. These include cameras and visual makers, which take photos of three dimensional objects (for example, fossils). Most of the schools have television, but as a rule principals are not enthusiastic about it. The majority indicated that they had a couple of sets that floated around the school and could be used to watch the local educational channel. Two principals said that they could film their own shows and they were considerably more enthusiastic about television.

Some equipment is designed for individual use. These include language labs, headsets, teaching machines, and individual carrels with microfilm viewers, tapes, or records. Teaching machines are most often used for remedial work, particularly in reading, although one principal was having his staff develop a programmed instruction course in remedial math.

We talked to one principal whose school had a media center in which students could choose from a wide range of equipment to use individually and in small groups. Schedules in this school were flexible; students were free to pursue individual interests. Under such a program, teachers spend more time working on a one-to-one basis with students.

Once the interviews were completed, and the schools were rated according to the amount and type of equipment used and the activity of the audio-visual specialists, we correlated this information with the residual scores for the school on white and black achievement, racial attitudes, and racial tension.

Residuals were calculated by finding a predicted score for each school from the best regression equation controlling on SES, region, and other background variables. This score was then subtracted from the actual score of the school. The residual tells us how different the actual score is from what we would predict from SES and background factors. The racial tension score was based on principal, teacher, and black and white student reports of racial conflict. Racial attitude scores, on the scale used in Chapter 2, were combined for black and white students, weighting each race equally. Using these equal weights, all four scores were summed to yield a single total. The tension, racial attitudes, and total scores were normalized for the entire population of high schools to yield means of 0 and standard deviations of 1.

Table 3.8 gives the means of the residuals by the ratings of the amount of equipment in the school and the activity of the audio-visual specialist. Columns A and B show that high equipment schools have gains in black and white achievement. Columns C and D show larger gains for racial attitudes and racial tension (the higher the score the lower the tension). Column E shows a gain in the total residual. The difference in the mean total score is significant at the .05 level.[7] The difference

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[7] We use a one-tailed test because we have no reason for predicting a negative effect. The hypothesis we are testing is whether or not there is a positive effect.

for racial tension scores is significant at alpha = .10, despite the small number of cases.

TABLE 3.8

MEAN RESIDUAL SCORES BY AMOUNT OF EQUIPMENT AND ACTIVITY OF THE AUDIO-VISUAL SPECIALIST--FOR TENTH GRADE

Amount of Equipment and Activity of Specialist	A Black Achievement	B White Achievement	C Racial Tension	D Combined Racial Attitudes	E Combined Sum of All Residuals (Cols. A+B+C+D)
Equipment:					
High	16.0 (N=12)	7.0 (N=12)	.33 (N=12)	.35 (N=12)	.55 (N=12)
Low	-5.6 (N= 5)	1.9 (N= 5)	-.49 (N= 5)	-.06 (N= 5)	-.24 (N= 5)
Difference . .	21.6	5.1	.82[a]	.41	.79[b]
σ	37.2	46.8	1.00	1.00	1.00
Audio-Visual Specialist:					
Very active .	7.1 (N= 9)	5.1 (N= 9)	.47 (N= 9)	.40 (N= 9)	.48 (N= 8)
Not very active . . .	13.0 (N= 8)	2.8 (N= 8)	-.34 (N= 8)	.14 (N= 8)	.12 (N= 8)
Difference . .	-5.9	2.3	.81[a]	.26	.36
σ	37.2	46.8	1.00	1.00	1.00

[a]Significant, $p < .10$ (one-tail).

[b]Significant, $p < .05$ (one-tail).

The activity level of the audio-visual specialist does not have the predicted effect on achievement. Audio-visual specialists tend to have similar functions in most schools; generally they are responsible for ordering and maintaining equipment, and teaching others how to use it. Because of this similarity of function, it is difficult to rate specialists as being either more or less active. Consequently, there is a good deal of measurement error in these ratings. Schools with an active specialist, however, do have less racial tension, more liberal racial attidues, and a higher total residual. The difference in the mean racial tension is significant at the .10 level.

This miniature follow-up survey supports the findings of the regression analysis, which showed achievement gains in high schools with audio-visual specialists. Furthermore, the fact that it is the usage of equipment and not merely the presence of the specialist that is associated with achievement gains supports our hunch that the tenth grade audio-visual specialist variable (1) is acting as a proxy for high utilization of equipment, and (2) is related to the fifth grade "equipment for students' use" variable, which also has a positive effect on achievement in the regression analysis. (There are very few fifth grade specialists; while they show no positive effect on achievement, this result is unreliable because of the small number of cases.)

Note that the results of this analysis are statistically independent of the regression results. The regression results from the analysis of all schools show a positive relationship between the presence of a specialist and higher achievement. This finding necessitates that the achievement residuals for the 17 schools in Table 3.8 be above average, and this is the case (the achievement residuals were constructed to yield a mean of zero across the sample of 200 high schools, so that positive residuals would indicate above average performance). But the regression analysis on the total sample implies nothing about any relationship between the level of audio-visual activity and achievement among the 17 schools in Table 3.8. If the regression results were the result of sampling error, coding mistakes, or response bias (thus indicating no intrinsic relationship between equipment and school performance), then we would not expect differences in the predicted direction within this group of 17 schools. Therefore, the regression results and the results of Table 3.8 are statistically independent of each other, and Table 3.8 independently confirms Table 3.7.

Table 3.8 suggests that equipment has its biggest effect in reducing tension and hostility. In fact, this variable does more to reduce tension than it does to improve attitudes. Equipment, such as tapes, films, and records, provides an interesting and neutral stimulus. Machines can present interesting material in a way that eliminates competition and neutralizes interpersonal conflict.

We suspect that schools that focus primarily on individualized instruction significantly reduce racial tension by most fully removing students from competitive classroom interactions. Only two schools were rated by our interviewers as relying principally on individualized instruction. Both of these schools have extremely positive racial tension scores, 1.65 and 1.55 (over 1 1/2 σ's below the mean in tension). These are on the far end of the distribution of scores. Since this finding is based on two schools, it is hardly conslusive, but it is provocative.

Most of the principals in the 17 schools liked the equipment that they had, and wanted more. A good audio-visual program allows for the presentation of material that goes beyond the teacher's knowledge. It allows a school to expand curriculum offerings and to bring courses up to date. Audio-visual equipment also frees teachers, giving them time to work on a one-to-one basis with students. Finally, it provides students with a way of pursuing fields of individual interest.

We hypothesize that there are several reasons why teaching equipment boosts achievement and reduces tension. Teaching machines and other individualized forms of instruction allow students to move at their own pace without tracking. There is a definite stigma attached to being in a class for slow readers. Working with an individualized programmed teaching machine lets every student move at his or her own pace with no stigma attached to it.

Further Speculations on Why ESAP Affected Achievement

In speculating about why ESAP affected achievement of black male high school students, it seems likely that the answer is not that ESAP funds provided physical or personnel resources, but that ESAP resulted in a change in the "climate" of the school, a staff attitude more sympathetic toward desegregation, which in turn affected the motivation of black students. Before presenting the evidence we have for this point of view, let us review what we have learned thus far.

We have seen that the experimental schools show a gain of almost half a grade level in tenth grade black male achievement. We tried several different tactics to explain this increase. We factor analyzed school activities, but did not locate any one factor that was more effective than others. We then looked to see if the collection of activities in which ESAP invested cause black achievement to rise. Although there is a definite rise in achievement, the process by which this occurred is unclear. It was then necessary to look at all possible projects for an explanation. Here, the evidence is somewhat confusing. The best project in terms of raising achievement appears to be the use of audio-visual aids as well as individualized equipment. Although the results are interesting, they do not explain the particular effects of ESAP.

All of the above analyses are based upon the assumption that if ESAP had any effect, it was the result of the types of projects that it bought. There is a possibility that ESAP money, because of its emphasis on improving race relations, changes a school in a manner beneficial to the black males. There is evidence to suggest that this change may have something to do with the racial tone of the school.

What follows is not a conclusive proof of some theory, but rather a collection of facts that support one explanation for ESAP's effectiveness. Hopefully, it can suggest directions for future methods of effecting change in education.

We have seen that ESAP's program in high schools was often quite different from that in elementary schools. In the high school program, ESAP funds were used for teacher's aides, but fewer schools spent funds on remedial work, and major emphasis was placed on human relations programs and curriculum revision.

This, however, does not help us a great deal. We know that there is a small achievement difference favoring schools with teacher human relations programs. The regression results, however, suggest that we would not get large differences between the experimental and control schools if a teacher human relations project were the sole contribution of ESAP. When we turn to curriculum revision, our model--that ESAP is merely a collection of projects, and these projects are not distinguishable from others funded from other sources--begins to break down. Such a model seems completely reasonable for ESAP-purchased teacher's aides or counselors. It is not perfectly applicable to remedial programs, since ESAP remedial programs tended not to involve the employment of specialists. (This problem was solved by distinguishing remedial personnel from remedial programs in the regression analysis.) Even though two remedial programs may differ, it is reasonable to assume that they have enough in common to permit categorizing them together. The model breaks down completely on an item as ambiguous as "curriculum revision" or "teacher in-service education." There is no reason to assume that curriculum revision or teacher education in one school is at all similar to an activity with the same name in another. There is also no reason to assume that ESAP-funded curriculum revision or in-service education are similar to the activities undertaken in one of the control schools. We have two reasons for suspecting that, in fact, they are not similar. The first is the sheer magnitude of ESAP-funded curriculum revision. If 70 per cent of the experimental schools revised the curriculum, compared to only 47 per cent of the controls, it follows that ESAP-funded decisions are more than a simple extension of existing programs. Second, we know that ESAP is unique among federal programs in its focus on race relations.

All of our previous approaches to ESAP attempted to find a direct connection between the projects that ESAP funded and the gain in achievement. Let us suppose that ESAP acted in a much more diffuse manner by helping to create a friendlier racial climate. If this is so, then we need to look at other changes in the ESAP experimental schools that in some manner affect tenth grade blacks.

We look at the difference between the experimental and control schools for every item in the questionnaire. Only ten items show a difference of more than two-tenths of a standard deviation. Of those ten, five suggest that experimental schools have a better racial atmosphere. These are listed in Table 3.9. In ESAP schools, teachers are more likely to discuss racial issues and less likely to see the schools as racially tense. The results indicate the following three things: (1) A greater percentage of black students perceive the school staff as supporting integration,[8] (2) more are likely to say that they like school, and (3) fewer state that they feel they "do not belong in this school."

TABLE 3.9

TENTH GRADE EXPERIMENTAL AND CONTROL SCHOOLS:
DIFFERENCES IN RACIAL ITEMS

Item	Difference, Experimental School Minus Control in Standard Deviations
Teachers: discussion of racial issues more than once per month	.30 σ
Teachers: school not racially tense	.35 σ
Black students report staff is pro-integration.	.40 σ
Black students: "I feel like I don't belong" (per cent yes)	-.24 σ
Black students: "I like school" (per cent yes)	.26 σ

[8] In fact, the experimental school staff does not appear more liberal in reporting their private attitudes toward race. Thus, ESAP seems to have changed either the way these teachers act (not the way they feel) or the way their actions are perceived.

It appears that ESAP schools have a more relaxed racial atmosphere than their matched controls, and are more likely to be places where black students like school and feel a sense of belonging. All of this is important in itself. Very few would question the value of making black students feel more comfortable. But since this is an analysis of achievement, we need to explore the relationship between black students feeling more welcome and their academic performance in school. The evidence here is not conclusive, but it does suggest an important area for future study.

Of all the items in Table 3.9, the item showing the strongest relationship with achievement is the percentage of students who say that they like school. Taking the tenth grade sample of matched pairs, we compute the correlation between the difference between the experimental and control schools in the percent of black students who say they like school and the difference between the experimental and control schools in black male achievement. The correlation between the two differences is .50. In those pairs where the ESAP school has a higher percentage of black students who like school, black achievement is also higher.

We can argue that students who do well academically like school. It is certainly plausible. There is some evidence, however, that for blacks, liking school has a definite racial meaning, and one that is quite different from its meaning for whites.

Liking school and feeling as though you belong are highly correlated for both races (.37 for whites and .30 for blacks). When we look at perceptions of staff attitudes, however, we see a sharp white-black difference (Table 3.10). The table shows that perceptions of the racial attitudes of the staff are extremely important for blacks to have a sense of belonging and to like school, and are not at all important for whites.

TABLE 3.10

ZERO-ORDER CORRELATIONS BETWEEN LIKING SCHOOL, BELONGING, AND PERCEIVING THE STAFF AS PRO-INTEGRATION, FOR TENTH GRADE BLACKS AND WHITES

Item	Per Cent Who Say They Like School	Per Cent Who Say "Yes" to "I don't belong"	Per Cent Who Feel Staff Is Pro-Integration
A. Blacks			
Per cent who say they like school	-	-.30	.44
Per cent who say "yes" to "I don't belong"		-	-.44
Per cent who feel staff is pro-integration			-
B. Whites			
Per cent who say they like school	-	-.37	.09
Per cent who say "yes" to "I don't belong"		-	.07
Per cent who feel staff is pro-integration			-

As black students perceive that staff attitudes are more pro-integration, they feel more comfortable in their schools and find it easier to learn. We still have to prove the causal direction of the relationship. But the argument is plausible enough, and the evidence sufficiently provocative to warrant further work.[9]

The theory suggests that a program similar to ESAP could change the tone of the school sufficiently to cause an increase in achievement. It could be argued that staff attitudes about integration are the result of ingrained feelings of prejudice, which are not likely to be changed by a program like ESAP. However, in an analysis of staff attitudes appearing in Volume II of this report, we find that the percentage of black students who feel that the staff is pro-integration is not highly correlated with actual teacher prejudice. Instead, student perceptions are the result of other factors, such as the attitudes and activity of the principal, the presence of civil rights activities in the community, and bi-racial activities in the school. It is possible, therefore, for ESAP to help create an environment of staff support for black students.

Conclusion

We find that ESAP raises the achievement of black high school males. An analysis of projects that ESAP funds yields no clear explanation for this result. When we compare ESAP schools with their matched

[9] A critical problem to be solved either in future research or in further reanalysis of these data is the sex-race interaction. Black males apparently respond differently from black females to the racial climate of the school. Little previous research on school desegregation has been concerned with sex differences, although one earlier study found similar results. (Robert L. Crain and Carol Sachs Weisman, Discrimination, Personality, and Achievement [New York: Seminar Press, 1972]). We know too little about race relations and sex differences in human development. The two most promising concepts are the handling of aggression (that black males express more aggression, which limits their performance in difficult situations) and staff differences in handling male and female students (that prejudiced white teachers may reward well-behaved black females while punishing black males).

controls, we find that the black students in ESAP schools feel more staff support for integration and express more comfort and satisfaction with their school. In the fifth grade, where we get no achievement gains, no such pattern of differences appears. Using the degree of comfort in school as the intervening variable, our results suggest that there may be a relationship between staff racial attitudes and black student achievement. This may be the explanation for the effect of ESAP upon achievement.

CHAPTER 4

RECOMMENDATIONS

We subscribe to the general view that evaluations should be done by evaluators and policy making should be done by policy makers, each in their own area of expertise. It seems clear, however, that the perspectives of each should inform the activities of the other. We have therefore decided to state some of the conclusions of this evaluation in the form of policy recommendations. We do this for two reasons: first, it may be easier for policy makers to understand our conclusions if they are required to compare their policy recommendations to those made by the authors of the evaluation. If the evaluation itself is unclear, the policy recommendations we draw may clarify what we tried to say. Second, we have several specific recommendations regarding the way in which future evaluations should be done, and here, as professional evaluation researchers, we are within our own area of expertise and can appropriately make such recommendations. The first part of this chapter lists specific recommendations for action in the area of education; the reader interested only in educational policy may wish to stop reading at the end of Part I. Part II offers recommendations concerning the evaluation of ESAP and future evaluation research, and will be of interest primarily to professionals in charge of evaluation research, both inside and outside the government.

PART I. Recommendations for Educational Policy

A. Programs similar to ESAP should be maintained.

The overall conclusion of our evaluation is that ESAP was a successful program. It changed the character of high schools and, in doing so, boosted the achievement of black male high school students. It would seem, therefore, that we could be unequivocal in recommending that programs similar to ESAP should be funded in the high schools. Unfortunately, we are not sure what would constitute a "similar" program. It is true that, after extensive analysis, we are fairly sure that ESAP was successful because it changed the way in which the school as an institution dealt with racial issues. Yet we are not absolutely certain about why ESAP was successful, nor do we know which component parts of ESAP were critical to its success.

Neither do we know why ESAP had different effects at the high school level and at the elementary school level. We suspect (but cannot prove) that ESAP was used in high schools to respond to black high school students and community civil rights leaders who were protesting inadequacies in the schools' handling of race relations. We also suspect that this protest did not occur at the elementary school level, and that the elementary school ESAP program was, therefore, directed away from changing the schools' handling of race relations into a more traditional remedial program.

B. It seems quite likely that widespread use of media and tools for individualized instruction will be quite effective; additional evaluative research should be done in anticipation of increased funding in this area.

The second strongly supported conclusion of our study is that the small group of high schools that made intensive use of the media experienced improvement in achievement and an apparent reduction in racial tension. This finding does not, however, lead directly to a recommendation for increased funding for media. We have not demonstrated that intensive use of media is a replicable innovation. There are too many anecdotal accounts of instructional equipment collecting dust in school closets, and certainly there is the possibility that intensive media usage is only successful where the school staff is committed to that approach. For these reasons we would recommend additional funding within an experimental design evaluation scheme. Funds (sufficient to achieve above-threshold effects) should be awarded to schools (with randomized controls) that have demonstrated through proposals their commitment to utilization of the funds. A second allocation (also to randomized experimental and control schools) should be made to schools that have demonstrated only a moderate level of commitment. If only the first group should prove successful, the study would have demonstrated that intensive media usage must be diffused slowly with normative support from change agents such as the graduate schools of education. If both samples show gains, this would argue for widespread immediate diffusion of the media. (Other combinations of results would lead to equally clear, though possibly disheartening, policy recommendations.)

C. <u>Elementary schools that choose to do achievement grouping should modify their methods of doing so; federal pressure placing restrictions on classroom segregation should be maintained.</u>

For this, the third of our strongly supported conclusions, our data indicate that achievement grouping and classroom segregation both have unfortunate consequences in elementary school. If elementary school administrators feel it necessary to group students for academic purposes, we would recommend that this grouping be limited to academic subjects where it is deemed necessary, and be done by "departmentalization"--with students changing rooms and teachers for reading and math. Those portions of the day that provide opportunities for social interaction among students should be conducted in settings that are racially balanced. In this way, elementary school ability grouping would more closely resemble that of the high schools in this study. By grouping only for a couple of hours a day one could expect to avoid the negative effect on attitudes toward integration that more traditional elementary school ability grouping methods are seen to have. Grouping within classrooms makes the level of every child public and may lead to feelings of shame or pride that make contact with children at other levels difficult; slower children may be stigmatized.

Our data also indicate that classroom segregation, even in the absence of achievement grouping, is itself harmful to good race relations. Hence we recommend that present federal policy (reflected in the regulations governing both ESAP and ESAA) prohibiting such classroom segregation be continued.

D. Federal policy regarding achievement grouping in high schools should be more flexible.

With this, we begin a series of recommendations that are less strongly supported, and must be offered more tentatively than the first three.

Achievement grouping in high schools does not have the unfortunate effects on race relations that we anticipated. This does not lead to an immediate policy recommendation to abolish from federal guidelines any restrictions on ability grouping or internal segregation in schools. There are a host of sound political, moral, and legal reasons for strong regulations preventing internal segregation within schools, regardless of the consequences of such policy. However, it makes sense to raise the question of how federal policy might be modified in the light of the facts. Our data only suggest that ability grouping benefits race relations; we can more comfortably make the statement that it does not harm race relations. We must also accept the fact that achievement grouping is very widely used in schools. Finally, we should note that achievement grouping is by no means synonymous with classroom segregation; in a large number of schools, the use of achievement grouping does not lead to increased classroom segregation. But none of this tells us clearly how the federal government should write and implement regulations stating what will be considered "bona fide" ability grouping. Clearly, we cannot recommend that all restrictions on ability grouping and classroom segregation be dropped, since in elementary schools, ability grouping had precisely the negative consequences that the authors of the ESAP regulations had anticipated.

Perhaps the clearest recommendation that can be made on the basis of the study is that federal policy should be reviewed in the light of the results of this study, and the regulations changed as necessary. For example, bona fide ability grouping might be defined so as to admit the possibility that there may be circumstances in high schools where ability grouping in excess of present guidelines should be permitted--e.g., in schools where racial tension is already unusually low, thus arguing that tracking has not been harmful; or in cases where the school administration has demonstrated its commitment to desegregation by administering ability grouping in such a fashion as to minimize segregation. Conversely, regulations prohibiting classroom segregation should be enforced where the school appears to lack commitment to racial equality.

We regret that this policy recommendation must be so ambiguous; but timid and ambiguous policy recommendations from social science research are not new. They often occur when the data are not as strong as we might wish in supporting one hypothesis over another, where we lack good social science theory to explain the findings and thereby make them more convincing, or where the conclusions of social science data conflict with the society's moral judgments and it is not clear whether a scientific or a moral standard is the most appropriate one to apply.

E. There is a definite possibility that adoption of new innovations in the area of ungraded classrooms, team teaching, individualized instruction, open classrooms, and the like, and increased use of human relations activities, will have positive effects on the motivation and racial attitudes of urban elementary school students. Such programs should be evaluated with a new experiment, and if the evaluation is positive, such programs should be incorporated in future federal legislation.

We noted that ESAP funds were invested in programs to influence school race relations only in high schools; in elementary schools no such effort was made. There are two reasons to expect that elementary school race relations programs would be effective if they were instituted. First, we hypothesized in Chapter 3 that ESAP had its positive effect on black male achievement in high schools because of ESAP's effect on high school race relations. Second, we saw in the analysis of the impact of elementary school activities on attitudes toward integration (and particularly in the factor analysis results) that urban schools that restructured their elementary classrooms and emphasized human relations activities tended to have students who were more favorable to integration. Since this result comes from the regression analysis rather than the experimental design, we cannot be as confident of it. However, the evidence seems strong enough to warrant a special study to test the possibility that the guidelines for the allocation of ESAA and other grants should give priority to elementary school human relations programs and curriculum reorganization. Since Southern elementary schools did not use ESAP funds for intergroup relations activities, we can assume that, without the use of guidelines to encourage it, other elementary schools would be equally reluctant to invest money in this area.

F. <u>There is a definite possibility that federal pressures on local school districts for reform in the area of race relations are effective in improving the quality of education. These efforts should be evaluated, and if the evaluation is positive, they should be intensified.</u>

ESAP represents the "carrot" approach to changing the race relations policies of schools. Its success suggests, as a corollary, that the "stick" approach might also be successful. Certainly, the question is worthy of specific research. It is widely assumed that federal guidelines--that requiring the establishment of biracial committees at both the district and school level, for example--are effective ways to press for social change. It would be good to replace this assumption with more specific data. If federal pressure is not successful, maintaining it represents an undesirable intrusion on local autonomy. The data from the ESAP evaluation suggest that federal enforcement of guidelines requiring institutional change in racial matters may be the most effective way in which the government can influence the quality of education. (This seems particularly true with regard to the establishment of student and adult biracial committees and other devices that encourage the school staff to commit itself to the principle of racial equality.) If our hypothesis could be established as true, it would have important implications for federal policy. Whether an effective evaluation of these federal policies can be carried out is a debatable question. On the one hand, an experimental design might require that federal officials strengthen their enforcement of guidelines in certain districts but not in others, and this might prove to be illegal. On the other hand, it is likely that normal variation, over time and between regions, would provide the basis for a natural experiment.

PART II. Recommendations for Further Work on This Evaluation of the Emergency School Assistance Program, and for Future Evaluation Research

A. The Office of Education should collect, in some systematic manner, an administrative reaction to this evaluation.

We recommend a Bayesian approach in this evaluation--which means simply to gather and use all the information that is available about ESAP. We have reported here on a systematic survey research evaluation. This provides unique data that we believe is valid. This method does, however, leave a number of questions unanswered--the most important being why ESAP works. We would recommend that additional data, which exist now in the notes and memories of a large number of federal officials and local school administrators, be sought. We would recommend that as many officials as possible be asked to react to the conclusions and, more importantly, to the gaps in the conclusions of this study. If, for example, a large number of local and federal officials were to argue that their observation of the ESAP program suggested that ESAP achieved its success by operating in a particular way, and if their interpretation was not inconsistent with the data presented in this report, we would have considerably increased the amount of information available to us, and the chances of making intelligent policy recommendations regarding further funding of ESAP-type programs would be considerably improved.

One way to accomplish this would be to hold a conference to bring a large number of these people together. A working paper, perhaps prepared by the Emergency School Aid Act staff, with appended commentary from the Office of Planning, Budgeting, and Evaluation, might be an appropriate way to summarize the conclusions of the conference.

B. Future evaluations must be based on experimental designs whenever possible.

We are aware of the force of the word "must," but we are convinced that any trained reader of social research will agree with our conclusion that the impact of ESAP would not have been determined without an experimental design. Indeed, it is extremely likely that we would have concluded that ESAP had no effect if we had not had an experimental design to work with. This is not to say that cross-sectional nonexperimental research is useless; it is very valuable for certain purposes. The evaluation of programs, however, may well be impossible without experimental treatments.

There will be many objections raised to any experimental design. While these objections may at first sound persuasive, often they do not stand up under close scrutiny. For example, some administrators expressed concern over the misfortune of the schools that were designated as controls and thereby arbitrarily deprived of ESAP funds. Persons raising this objection, however, fail to recognize that since ESAP funds were finite, there would, in any event, be a number of schools that could not receive them. Presumably, an effort was made to insure that ESAP funds were awarded to the most needy schools--say, 800, to pick an arbitrary number. The experimental design necessitated that 150 of those 800 schools would be deprived of funds despite the judgment of ESAP program administrators that those schools were needy. However, the exclusion of those 150 schools meant that ESAP funds would be available to an additional 150 schools. Anyone familiar with proposal award procedures would agree that proposal awards are based on such inadequate information that there is absolutely no sound basis for arguing that those additional 150 schools were less needy, less deserving, or less competent than those that were originally selected to receive the funds.

A second rebuttal to the critic who is concerned about the deprived control school is that in many cases there is little evidence that the federal program in question is beneficial to the school. So, while it is true that the control school is deprived of funds, if we are to believe the evaluation research that has been done, their students are often not being deprived of an improved education. The criticism that the control schools are being arbitrarily deprived of benefits applies only to the case where it can be argued that all children have a moral right to a program that reasonable men would agree is strongly beneficial to them. Thus, for example, one could not randomly abolish the entire public school system in certain counties in order to assess the impact of having schools as opposed to having no schools. But randomization is appropriate in any case where federal funding is being used to create a program that is limited, experimental, or expected to be marginal in its impact.[1]

C. <u>In future evaluations, federal policies regarding non-compliance must be very strict.</u>

In this evaluation, federal officials worked very hard to obtain compliance of local administrators with the experimental design. However, in many cases they did allow school systems to withdraw from the experiment. In the future, every effort should be made, and every sanction available brought to bear, to insure that once a randomized treatment-control sample has been selected, no further withdrawals occur.[2] The large number of losses that occurred early in the study, before the random selection of the control schools, was not so critical; the small number of losses that occurred afterward are a serious problem.

D. <u>A rule of thumb: imperfect treatment is tolerable, imperfect randomization is not.</u>

In an experimental design, schools are randomly allocated into treatment and control groups, and the treatment groups receive the "injection" that is being evaluated. Let us make a distinction between two time periods in the sampling process. Most studies have a first stage, in which districts are contacted and a sample drawn, followed by a second stage of randomization of experimental and control schools. We recommend that any school districts that refuse to cooperate after the second stage be kept in the study, even if they have refused to withhold the treatment from the control schools in their district. In this study, schools in

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[1] For an expanded discussion of this point, see Donald T. Campbell, "Methods for the Experimenting Society," a paper read at the Eastern Psychological Association meeting, April 17, 1971, and at the American Psychological Association meeting, September 5, 1971. To be published in the <u>American Psychologist</u>.

[2] OPBE agrees strongly with this point, and the regulations governing ESAA are stronger than those for ESAP. It is our understanding that the current evaluation of ESAA has had very good success in obtaining compliance.

over 100 districts were randomly assigned to treatment and control groups. At this point, some school districts protested the treatment and asked to withdraw; actually, they were asking permission to apply the treatment to their control schools. When these school districts did withdraw, they were excluded from the study sample in an effort to insure that no control schools would receive treatments. However, once the schools had withdrawn, we no longer had a perfectly randomized sample, and pursuing the question of the extent of response bias and its impact became difficult. If we had instead permitted the withdrawing school districts to assign treatment funds to their control schools, but at the same time retained those schools in the sample, we would have had a perfectly randomized sample, but an imperfect allocation of treatments, with approximately one-sixth of the control schools receiving treatment. However, this type of error would generate only very elementary problems for the analyst. It would mean that the effect of the treatment would be understated in the experimental design by a factor of one-sixth. Indeed, this situation would be little different from the present evaluation since we suspect that some of the treatment schools received a very small amount of funds or spent them in very peculiar ways so that the general ESAP treatment simply did not occur there. At the same time, there are control schools that spent funds from other sources that accomplished precisely what ESAP attempted to accomplish. Thus, our treatments are imperfect. Hence, we arrive at the following rule: given a choice between imperfect randomization of the schools in two treatment-control groups and the imperfect allocation of treatments within the two groups, imperfect treatment is much to be preferred over imperfect randomization.[3]

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[3]Of course, perfect randomization <u>and</u> perfect treatment is better; but this compromise may be necessary in the very rare case that a school has a strong moral claim against becoming a control.

E. Treatments to be evaluated in experiments should be unambiguous.

The critical problem with the ESAP evaluation is that it is extremely difficult to decide what the ESAP program was. In future evaluations, we would recommend that, instead of evaluating a federal program in all its full-blown ambiguity, a small fraction of the funds (anywhere from 1 per cent to 5 per cent) should be set aside for carefully controlled treatments that can be evaluated. If, for example, we wish to evaluate ESAP because we believe that programs designed to modify race relations in the school are effective, evaluation funds should be used to evaluate not ESAP itself, but a subset of ESAP programs that are explicitly designed to change race relations in the school. For example, one proposal from a school district that seemed to represent an unambiguous ESAP strategy might be picked up and assigned randomly to a number of other districts. (The author of the original proposal might be employed to supervise its treatment in the other districts in order to avoid the charge that Washington had designed the program.) If an evaluation were carried out under these conditions and the strategy found to be successful, we would know much more precisely what types of programs should be funded in the future. If several alternative strategies were randomly allocated to the school districts, the evaluation design would be able to detect the most desirable of the alternatives. Finally, the results achieved by these various strategies could be compared to the results obtained in a subsample of locally designed ESAP programs, to determine whether nationally standardized treatments are preferable to locally initiated programs. The use of multiple treatment would permit a Greek-Latin square type design that would allow the control schools for one treatment analysis to receive treatments of another kind, thus reducing the number of schools that receive no funds at all and minimizing objections to the program.

Simultaneous evaluation of several alternative treatments is also preferable from a cost viewpoint. Since the setting up of an evaluation study accounts for much of the cost of an evaluation, increasing the sample size does not double the survey cost. Furthermore, if three or four related treatments are studied simultaneously, the effect of each treatment can be compared to the others, and additional insight can be gained in that fashion.

F. Reliance on achievement test scores alone should be discontinued.

We are persuaded, on the basis of this report and the working papers in Volume II of this study, that non-cognitive measures of the effects of the school are of critical importance. For example, the assumption that school integration is a valuable social policy only if it raises achievement test scores is obviously not an accurate description of the national sentiment. We do not think that segregationists would--or should--immediately embrace integration if it is shown to raise test scores; conversely, we would not urge that integrationists abandon their position if research finds no gain. There is more to school than this. Many of the criticisms of American schools presently being made are not based simply on the notion that students do not perform well on standardized tests; rather, they are based on the charge that students are unhappy, bored, or subjected to racism. Whether professional educators wish to admit it or not, the school has become the second major socializing force (after the family) in all industrialized societies. A school system that produced adults who, as a result of their school experience, were unhappy, inarticulate, undemocratic, unable to work, or to maintain family relationships would be considered an incredible failure.

It is sometimes argued that a school that teaches students to read and do mathematics will accomplish these other goals--that the main reason for social alienation or personal inadequacy is cognitive. On the face of it, the argument is not very plausible, and it seems more likely that it is the school's inability to deal with student alienation and unhappiness that prevents students from learning to their capacity. At this point, one must choose between these two opposing points of view without benefit of supportive data. But to limit ourselves to measuring the performance of schools with cognitive testing is to assume the answer to the question, that is, to assume that motivation is not a factor in causing achievement, and that all that is necessary to produce healthy adults is to teach them cognitive skills.

There are also practical reasons why one must use non-cognitive variables. In this study, measurement of whether a student likes school turned out to provide us with a critical intervening variable used in the last section of Chapter 3 to develop a theory of the impact of ESAP. In Volume II of this report we will learn a great deal about schools, and particularly about school desegregation, through the use of these kinds of variables.

APPENDIX A

THE EXPERIMENTAL DESIGN

Large scale educational evaluations typically are observational studies. In such investigations, the information or data to be studied arises from an ongoing process over which the investigator has no direct control. Observational studies can be contrasted with experimental studies, in which the investigator manipulates various factors in order to produce data.

The analysis of observational data generally proceeds as correlation analysis. Variables, or sets of variables, are defined as "dependent," and are correlated with or regressed on other variables defined as "causal" or "explanatory." As a rule, the dependent variables are those consequences of the process under study which interest us, and the "explanatory" variables are the logically antecedent or potentially manipulable variables whose effects we would like to understand.

The analysis of experimental data is usually directed toward the resolution of specific questions. Statistical tests are employed when the data do not "speak for themselves." The analysis reflects efforts in the experimental design to isolate known sources of error and bias. Properly designed and executed, experimental studies have the inestimable value that they can be generalized and, with some usually reasonable assumptions, the results can be tested for significance. From experimental data, then, we can both resolve the relationships between variables and obtain some idea of how confident we can be that the relationships will hold up in subsequent experiments.

These distinctions between observational and experimental studies, so clear in textbooks, are often blurred in practice. In fact, there is a new type of study, appearing in the literature with growing frequency, which combines some elements of the experimental design (randomized treatments, measurements of effect) with some elements of the observational approach (broad measurement of many causal variables which are not randomized); this evaluation of the Emergency School Assistance Program is such a study. Within the framework of this study, experimental findings are presented with statistical estimates of the confidence limits made possible by randomizing treatment assignments, as well as correlation studies that attempt to discover relationships between variables after attempting to compensate for bias and known sources of error.

This appendix will focus on the experimental aspects of the data. Specifically, the following analysis will describe the results of a random allocation of funds to schools. It has been suggested by previous observational studies (notably the Coleman report) that the effect of federally funded additions to educational programs is not a good predictor of student achievement, and this assertion has produced enough concern to warrant a direct experimental test.

Briefly, the experimental design involved the pairing of schools within school districts (called LEAs or local educational administrations). This was accomplished by instructing district school superintendents to choose pairs of schools within their districts that were "alike" and to submit the names of these pairs to the Office of Education. The paired schools, hopefully matched on characteristics that would affect student achievement, were allocated ESAP funds by the Office of Education; one school from each pair was randomly designated as the school to receive support. Thus, ESAP funds were sent to only one school from each pair. A few months later, tests were made to assess the effects of these funds.

The random assignment of funds involved some courage on the part of all concerned. It was felt that a clear answer to the question of the effectiveness of financial support could be obtained only through random assignment, because only this approach could lead to unambiguous conclusions. The analysis assumes that such randomization took place; unfortunately, we now know that some bias was introduced by LEAs selectively dropping out of the experiment (see Appendix F).

When one school from each matched pair had been selected for funding, the selection was announced to the school district; 18 school districts refused at this point to participate in the experiment. In one case, the reason for refusal was given explicitly as an unwillingness to see the "better" school supported and the other school neglected. Of course, this case of the "better" school receiving funds would be expected to arise about half of the time, and would allow the experiment to produce a balanced picture of the effect of the ESAP funds.

Because of the possible systematic dropout of school districts from the experiment when the "better" matched school received funding, we can expect the achievement means of the schools receiving ESAP funds to be lower than the means of schools not receiving funds. All else (i.e., all other sources of error) being equal, then, we would expect the ESAP funds to reduce school achievement, but this would be an artificial finding resulting solely from this allocation bias. We do not know the extent to which this bias affects the results, but because it is clear that our findings will be conservative in this area, we have not attempted to deal with this problem in our analysis. For the moment, we will assume randomization of fund allocation.

One can understand why superintendents might choose to drop out of the experiment. It is worth repeating, however, that the consequence of this systematic dropout is to make school funds appear to be ineffective in raising student attitudes and achievement, given our model and our assumptions about other random sources of error.

Randomization is crucially important to the process of statistical inference. Randomization insures that each school in a matched pair has an equally probable chance to receive ESAP funds. There is no guarantee that prior differences between sets of schools will be balanced out, but randomization does allow us to calculate the probability that apparent differences are caused by chance and not by ESAP funds. For example, the probability that ESAP funds go to the "better" school in each pair for n pairs is (1/2)n--a very small probability, given our sample size. If a difference is found between funded and unfunded schools, the reader has the choice of concluding that the difference is real (significant) or, alternatively, of concluding that a very rare event has occurred. This is the meaning of the probability statements which are presented with the findings.

We can do better than randomization when the sources of error are known. For example, because we know that schools with predominantly high social status students do better than schools with low status students, we can measure school status and take it into account in our analysis. This leaves only unsuspected sources of bias for randomization to cope with.

The preferred method for controlling for known sources of error involves experimental design--not an option left entirely open to the ESAP evaluation. In lieu of this method, we have used analysis of covariance to correct for initial unbalance of known error sources in our sets of schools. As will be clear later, this method can be seen to remove substantial amounts of variance in test scores, leaving us with much greater precision for our comparison between funded and unfunded schools.

The Analysis of Covariance

The analysis of covariance (ANCOVA) can be thought of as a combination of analysis of variance (ANOVA) and regression. In the present context of the ESAP evaluation, ANOVA techniques enable us to investigate the effect of ESAP funds on school criteria, such as student achievement; ANCOVA improves our estimates of the effect by reducing bias and increasing the precision of our comparisons between ESAP-funded and control schools. Lastly, multivariate ANCOVA permits the simultaneous consideration of more than one school performance criterion in an analysis (we have used both STEA[1] test scores and a scale of racial attitudes).

The Model

It may be easier to interpret the findings with reference to a specific model. We present first a simple model:

$$Y_{ij} = M + T_i + B(X_{ij} - \bar{X}) + e_{ij}$$

Y_{ij} = school achievement mean, where i is our index of type of treatment (we have only two, presence or absence of ESAP funds) and j is the index of the pairs of schools

M = grand mean

T_i = effect of i^{th} treatment (e.g., ESAP funds)

[1]See Appendix D.

X_{ij} = initial value of school characteristic (e.g., average school SES)

e_{ij} = random, unexplainable variable

With this model, we can see that the net effect of including the regression-like term $B(X_{ij} - \bar{X})$ is to alter our estimation of T_i, to the extent that the covariate X_{ij} is correlated with Y_{ij}. That is, given a completely uncorrelated set of X and Y, our estimate of T_i would be unchanged.

For example, suppose that the covariate, SES, was not included in the model. An ANOVA for ESAP effect would then assess the fraction of variance in test score that could be "explained" by T_i, the ESAP funds variable (Figure A.1).

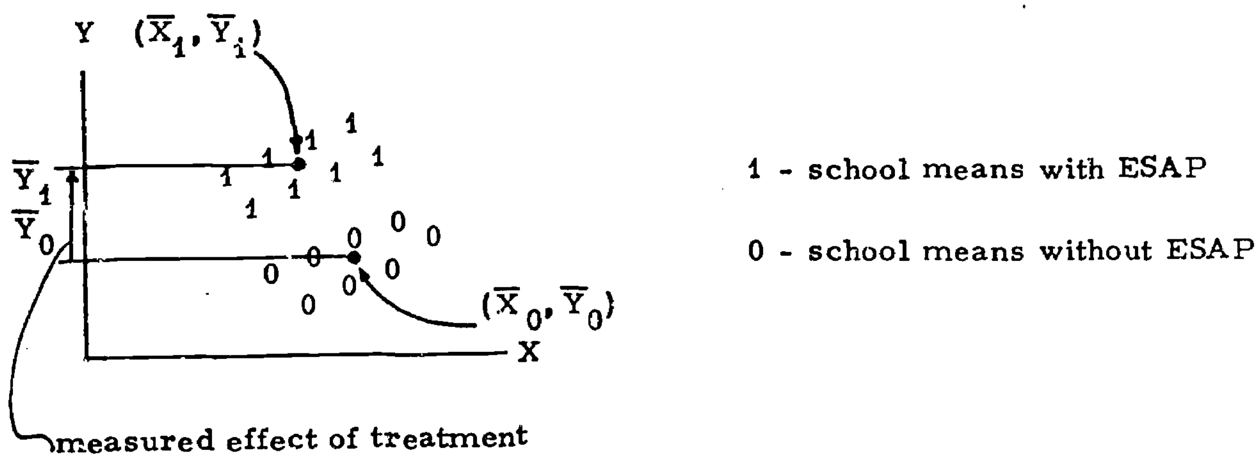

Figure A.1

The intercepts on the Y axis in Figure A.1 indicate that not much difference is attributable to ESAP funds, but this figure also shows that the distribution of SES is unbalanced for the schools. In fact, there appears to be a pattern of low-SES schools receiving ESAP and high-SES schools going without it. Given some school allocation guidelines, this pattern does not seem unreasonable. We can see that this unequal allocation of ESAP to schools suppresses the ESAP effect.

Figure A.2 illustrates the effect of the analysis of covariance in adjusting $\bar{Y}$ values for initial inequalities in $\bar{X}$. The "adjusted" values $\bar{Y}'_0$, $\bar{Y}'_1$ now show a likely ESAP effect, having removed the allocation bias. Additionally, the within-class error has been substantially reduced, since it is now only the variation about the regression lines.

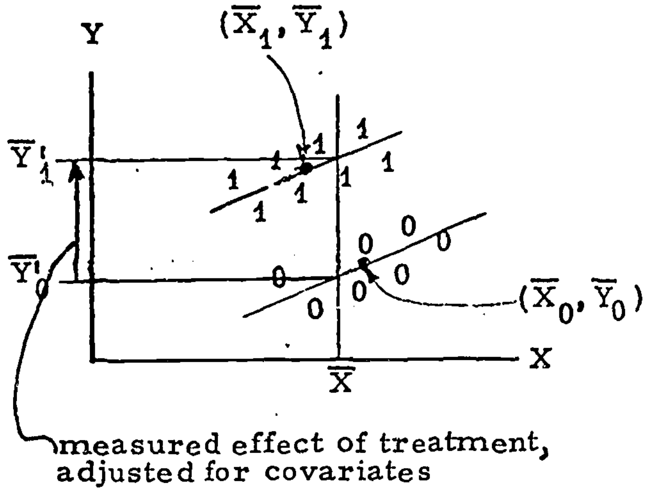

Figure A.2

Although it is not possible to represent pictorially, the more elaborate model used in the analysis does not introduce any new concepts in ANCOVA. The univariate model is:

$$Y_{ijk} = M + L_j + E_i + \sum B_1(X_{ijkl} - \bar{X}_1) + e_{ijk}$$

Y	=	school achievement mean
M	=	grand mean
L_j	=	blocks (pairs of schools)
E_i	=	ESAP funding effect (allocation of ESAP)
B_1	=	regression coefficients for 1 covariates
e_{ijk}	=	random variable, error

With this model, we can hopefully reduce bias with respect to several background SES measures (described in the next section), always assuming that our model is correct. We are left with a test for the ESAP effect (E), which has bias removed and which is tested against a reduced error term.

This model can be extended to include more than one dependent variable. In some analyses we have used both achievement test scores and attitude measures simultaneously to detect the effect of ESAP funds. More importantly, however, we have broken the dependent variable down into the test scores of four subpopulations: black boys, black girls, white boys, and white girls.

We chose the test scores of these four subpopulations as dependent variables because we do not see the utility of once again reporting that sex and race of student are important predictor variables for achievement. We now know and expect the scores for these subpopulations to be different. The interesting question is this: Does additional funding of the amount and kind provided by ESAP differentially affect these subpopulations?

We suspect that there are two reasons why these subpopulations should be differentially affected: (1) funds that are channeled into remedial programs will be aimed at low-achievement students, (2) funds which are used for advanced courses will exclude these students and will be aimed at the high-achievement students. We have focused our evaluation on the first category of programs and, therefore, would expect the effect of ESAP funds to be concentrated on males and blacks, since these are the typical low-achievement students.

We will perform separate analyses of covariance for each of the four student subpopulations. We will treat the four sets of test scores both independently and jointly (multivariate ANCOVA). The multivariate case, where all four sets of scores are taken jointly, means that the "best" linear combination of the four scores is computed, one which combines these criteria in such a way as to present the most favorable case for finding an effect attributable to ESAP funding. It follows, then, that if no effects are found for this combination of criteria, no other linear combination could have done better.

Experimental Findings for Achievement Scores

The objective of this analysis is to detect the effect of ESAP funds on student performance as measured by a test of verbal, arithmetic, and scientific achievement. As mentioned earlier, the experiment involved randomly allocating ESAP funds to one school in each matched pair of schools within school districts. The outcome of the experiment is perhaps most clearly shown in the tables of school averages for the fifth grade (Table A.1) and for the tenth grade (Table A.2).

TABLE A.1

FIFTH GRADE OBSERVED COMBINED MEAN SCORES
(Combined over LEAs)

Race and Sex	No ESAP	ESAP	Overall	Standard Deviation
White male	31.80	32.22	32.01	4.68
White female . . .	36.25	35.81	36.03	4.21
Black male	14.56	15.98	15.27	6.33
Black female . . .	19.22	19.32	19.27	5.54

Perfect score: 57 N = 116
Scores corrected for guessing

TABLE A.2

TENTH GRADE OBSERVED COMBINED MEAN SCORES
(Combined over LEAs)

Race and Sex	No ESAP	ESAP	Overall	Standard Deviation
White male	24.08	25.12	24.60	6.45
White female . . .	27.28	27.60	27.44	5.26
Black male	10.25	11.74	10.99	3.34
Black female . . .	11.99	12.28	12.14	4.35

Perfect score: 57 N = 62
Scores corrected for guessing

Table A.3 summarizes the findings with respect to the differences between funded and unfunded schools. It should be clear from the size of these differences and their standard errors that we cannot assert ESAP funds to have an overall effect, although the pattern of increased achievement in ESAP schools holds out some hope. A statistical test (ANOVA, equivalent to a t-test) confirms that no one of these differences is significant; in addition, no significance is indicated by a multivariate ANOVA on all subgroups taken jointly.

TABLE A.3

SCORE DIFFERENCES BETWEEN FUNDED AND UNFUNDED SCHOOLS

Race and Sex	Fifth Grade ESAP Minus Control	Standard Error of Difference	Tenth Grade ESAP Minus Control	Standard Error of Difference
White male .	0.42	0.87	1.04	1.64
White female	-0.44[a]	0.78	0.32	1.33
Black male .	1.42	1.17	1.49	0.98
Black female	0.10	1.03	0.29	1.10

[a]Minus indicates lower score in ESAP school.

In addition to the differences among school districts, we know there are other sources of error in this experiment that could influence the pattern of achievement scores between the funded and unfunded schools. For example, had funds typically been assigned to the lower SES schools within each matched pair, the consequent scores would not be unique measures of the ESAP effect but would include a simultaneous comparison of school SES effect on achievement scores. The analysis of covariance allows us to equalize some of these known potential sources of error and to thereby increase the precision of our comparison. Some of the background variables that, from previous analyses, we know are correlated with achievement scores and cannot be logically affected by the allocation of funds are presented below.

Background Variables

Fifth Grade:

Number of siblings	(black and white)
Own bicycles	(black and white)
Live with parents	(black and white)
Newspaper delivered	(black and white)
Receive food stamps	(black and white)
Per cent female	
Per cent on lunch program	
	Total = 12

Tenth Grade:

Mother's education	(black and white)
Live with parents	(black and white)
Number of siblings	(black and white)
Read daily newspaper	(black and white)
Own air conditioner	(black and white)
Own home	(black and white)
	Total = 12

In the next part of this analysis, we shall adjust the means and differences shown in Tables A.1 through A.3 to compensate for these background variables to the extent that they are distributed unevenly between the treated and untreated schools. Such adjustments make the comparison between funded and unfunded schools more appropriate because the effect of irrelevant variables is thereby eliminated from the comparison. Not only will the means be adjusted to make the comparison fairer, but the achievement score variance attributable to the extraneous variables (covariates) will be removed from the error variance to increase the precision of the statistical tests. Tables A.4 and A.5 reflect these adjustments.

TABLE A.4

FIFTH GRADE ESTIMATED COMBINED MEAN SCORES FROM MODEL, ADJUSTED FOR TWELVE COVARIATES

Race and Sex	No ESAP	ESAP	Overall	Standard Deviation
White male	31.25	32.78	32.01	4.31
White female . . .	36.32	35.73	36.03	3.95
Black male	15.46	15.08	15.27	5.49
Black female . . .	19.35	19.19	19.27	5.88

N = 116

TABLE A.5

TENTH GRADE ESTIMATED COMBINED MEAN SCORES FROM MODEL, ADJUSTED FOR TWELVE COVARIATES

Race and Sex	No ESAP	ESAP	Overall	Standard Deviation
White male . . .	24.31	24.88	24.60	4.82
White female . .	28.21	26.66	27.44	4.89
Black male . . .	9.79	12.20	11.10	3.01
Black female . .	12.37	11.90	12.14	4.29

N = 62

It is worth noting that the covariates are quite effective in reducing the variance in the four test scores. The per cent of the score variance accounted for by all 12 covariates can be seen in Table A.6; Table A.7 presents the differences between funded and unfunded schools.

TABLE A.6

PER CENT OF VARIANCE ATTRIBUTABLE TO FULL SET OF COVARIATES

Race and Sex	Fifth Grade	Tenth Grade
White male	33	67
White female	30	48
Black male	41	63
Black female	11	42
Joint multivariate .	31	52

TABLE A.7

SCORE DIFFERENCES BETWEEN FUNDED AND UNFUNDED SCHOOLS, ADJUSTED FOR COVARIATES

Race and Sex	Fifth Grade ESAP Minus Control	Standard Error of Difference	Tenth Grade ESAP Minus Control	Standard Error of Difference
White male . . .	1.53	0.91	0.57	1.56
White female . .	-0.59	0.83	-1.55	1.58
Black male . . .	-0.38	1.15	2.40	0.97
Black female . .	-0.16	1.24	-0.47	1.39

Note: See technical note at end of section.

The results of statistical tests show the fifth grade differences to be insignificant. A multivariate analysis of covariance, however, shows the tenth grade differences to be significant. Subsequent univariate ANCOVA's show the increase in scores of black males to be the one univariate significant effect. The results are summarized in Table A.8.

TABLE A.8

TENTH GRADE: THE STATISTICAL TESTS OF THE HYPOTHESIS THAT THE EXPERIMENTAL AND CONTROL SCHOOL ACHIEVEMENT SCORES DIFFER

Multivariate:		4, 15 d.f.	$p = .04$[a]
Univariate:	White males	$F_{1,18} = .13$	$p = .7$
	White females	$F_{1,18} = .96$	$p = .3$
	Black males	$F_{1,18} = 6.1$	$p = .02$[a]
	Black females	$F_{1,18} = .11$	$p = .7$

[a]Two-tailed test.

Notice, however, the extremely small F values for white males and black females, which indicate that the error mean square for these groups is overestimated and that the covariates and blocking have not unbiased this estimate. Such a situation can arise when a term is missing from the ANCOVA model that is needed to decompose the error term further, or when the residual is not a good estimate of error because of interaction between blocks and treatments; that is, the error variance differs from LEA to LEA and the low F tests indicate that the ESAP fund/LEA interaction variance may not be homogeneous (which we cannot test given the lack of replication in the design).

Experimental Findings for Attitude Scores

The analyses discussed above were also carried out on another set of criteria referred to as "attitudes toward integration scores." This dependent set of variables was constructed by averaging the responses to three questions directed to the students:

Tenth Grade:

Question 43: If you could choose the kind of school you would go to, would you pick one with:

1) All white students (0)
2) All black students (0)
3) A mixture of different kinds of students (2)
4) Other (0)
5) Blank (0)

Question 45: Would you like to have more friends who are of a different race?

1) Yes (2)
2) No (0)
3) Blank (0)

Question 53: How uncomfortable do you feel around students of a different race?

1) Generally very uncomfortable (1)
2) Generally somewhat uncomfortable (2)
3) Occasionally somewhat uncomfortable (3)
4) Not at all uncomfortable (4)
5) Blank (3)

Fifth Grade:

Question 18: If you could choose the kind of school you would go to, would you pick one with:

1) All white students (0)
2) All black students (0)
3) A mixture of different kinds of students (2)
4) Blank (0)

Question 28: Would you like to have more friends who are of a different race?

1) Yes (2)
2) No (0)
3) Blank (0)

Question 33: In general, do you think that white people are smarter than black people, that black people are smarter than white people, or do you think that a person's color doesn't have anything to do with how smart he is?

1) White people are smarter (0)
2) Black people are smarter (0)
3) Color doesn't have anything to do with smartness (2)
4) Blank (0)

These questions were scaled as described in Chapter 2, and the scores for each of the four student subpopulations were used as dependent variables.

Another set of concomitant variables was used as the covariate set that related to integrative characteristics of the schools. Neither the analysis of variance nor the analysis of covariance showed any significant results for the ESAP funding effect. Table A.9 presents the mean attitude scale scores, and Table A.10, the differences between the experimental and control schools. None of these differences are significant. Table A.11 shows the means after they have been adjusted to eliminate the effects of the covariates, and Table A.12 shows the differences between the experimental and controls schools. Again, none are statistically significant.

The covariates for the social attitude analysis were as follows:

Fifth grade: Average response to earliest year attended integrated school (black and white)
Principal's race
School racial distribution prior to integration
Principal report of racial composition change
Per cent taking bus to school (black and white)

Total = 7

Tenth grade: Average response to earliest year attended integrated school (black and white)
Principal's age
School racial distribution prior to integration
Per cent of teachers under age 35
Principal report of integration of student government and cheerleaders
Principal years in office

Total = 7

TABLE A.9

OBSERVED COMBINED MEAN SCORES ON ATTITUDE SCALE
(COMBINED OVER LEAs)

Grade, Race, and Sex	Mean Attitude Scores			Standard Deviation
	No ESAP	ESAP	Overall	
Fifth Grade:				
Black male . . .	13.95	14.36	14.16	2.8
Black female . .	14.22	13.43	13.83	3.8
White male . . .	12.59	12.83	12.71	2.5
White female . .	13.78	13.55	13.67	2.3
Tenth Grade:				
Black male . . .	18.84	18.65	18.75	2.48
Black female . .	18.97	19.35	19.16	3.33
White male . . .	12.94	13.26	13.10	2.36
White female . .	15.13	14.81	14.97	3.04

Note: There is one bad data entry in the fifth grade scores, discovered after this report was written. It does not materially alter the conclusions nor even the reported figures.

TABLE A.10

SCORE DIFFERENCES BETWEEN FUNDED AND UNFUNDED SCHOOLS

Race and Sex	Fifth Grade ESAP Minus Control	Standard Error of Difference	Tenth Grade ESAP Minus Control	Standard Error of Difference
Black male . . .	.41	.52	.19	.63
Black female . .	-.79	.70	.39	.85
White male . . .	.24	.46	.32	.60
White female . .	-.22	.43	-.32	.77

TABLE A.11

ESTIMATED COMBINED MEAN SCORES FROM MODEL,
ADJUSTED FOR SEVEN COVARIATES

Grade, Race, and Sex	Mean Adjusted Score			Standard Deviation
	No ESAP	ESAP	Overall	
Fifth Grade:				
Black male . . .	13.88	14.43	14.16	2.83
Black female . .	14.19	13.47	13.83	3.77
White male . . .	12.57	12.84	12.71	2.55
White female . .	13.76	13.57	13.67	2.30
Tenth Grade:				
Black male . . .	18.88	18.60	18.74	2.29
Black female . .	18.95	19.37	19.16	3.57
White male . . .	13.02	13.17	13.10	2.55
White female . .	15.20	14.73	14.97	3.39

TABLE A.12

SCORE DIFFERENCES BETWEEN FUNDED AND UNFUNDED SCHOOLS,
ADJUSTED FOR COVARIATES

Race and Sex	Fifth Grade ESAP Minus Control	Standard Error of Difference	Tenth Grade ESAP Minus Control	Standard Error of Difference
Black male . . .	.56	.54	-.28	.61
Black female . .	-.72	.72	.41	.95
White male . . .	.27	.49	.14	.68
White female . .	-.19	.44	-.46	.90

School Programs

School programs are the "treatments" of educational experiments. In an educational survey, however, these treatments are not deliberately and randomly assigned to schools. Because the assignment of treatments is not under experimental control, the analysis of their effects incurs some peculiar problems. First is the treatment measurement or indexing problem. When an experimenter assigns treatments, it is rarely a question whether the experimental material received the treatment--one would expect complete correspondence between the experimenter's records and an inspection of the experimental material. The analysis of survey data presupposes no experimenter's records; the assignment of treatments represents a natural process. The assignment of treatments must therefore be detected by an inspection of the experimental material itself.

Such an inspection is not trivial, given the nature of school programs. These programs are only occasionally physically apparent. It is easy to detect an overhead projector, for example, and to assume therefore that the audio-visual treatment exists; but what if the projector is rarely or badly used? It is increasingly clear that the complete and accurate detection of school treatments must rely on observer data, which is not conventionally gathered in educational surveys. Because the detection of treatments is not a typical problem in experimental analysis, there is no established procedure that can be applied to survey data. There appear to be several reasonable approaches:

1) Correlate all program indicators with each other for all respondents (superintendent, principal, teacher, student). Cluster or factor out groups of indicators that appear to measure the same things. Define programs from these empirical findings.

2) Accept a particular response from a specific respondent as a program indicator (this is the conventional approach).

3) Accept a combination of mutually-supportive indicators from various respondents together with other evidence that confirms the operation of the school program (such as report of funds collected for audio-visual equipment and teachers' reports of frequent use).

Obviously one can expect somewhat different results from each method. This indeterminacy is peculiar to experimental analysis of educational survey data; it must be taken very seriously since the unambiguous assignment of schools to treatments lies at the basis of all further analysis. Each of the solutions listed above encounters criticisms. The first can produce program indicators that are uninterpretable, do not refer to any real school program, and are not generalizable as indicators to a set of schools other than the sample schools. The second solution can result in badly biased indicators. The third approach also suffers from bias, although its construction is intended to minimize this problem. On the whole, the third solution appears to be the most reasonable in the context of questions about the effect of school programs on students, and it is the solution we chose. The logical steps we used to create program indicators in accordance with the third alternative are listed below.

Program Variable Construction

Fifth Grade

Reading:	Principal reports size of program is large enough and available to fifth grade.
	Above average per cent of teachers reporting learning about teaching reading.
	Above average per cent of teachers reporting one, two, or three hours extra time for poor readers.
Tutorial:	Principal reports size of program is large enough and available to fifth grade.
	Above average per cent of counselors reporting academic counseling.
Guidance:	Principal reports size of program is large enough and available to fifth grade.
	Above average portion of students receiving counseling to total enrollment.
Teacher's Aides:	Principal reports size of program is large enough and available to fifth grade.
	Above average per cent of teachers reporting full-time aide.

Above average per cent of teachers reporting that aides do student- or parents-relations work.

Above average per cent of teachers reporting more than 15 minutes alone.

Curriculum: Principal reports size of program is large enough and available to fifth grade.

Above average per cent of teachers reporting some or more multi-ethnic texts.

Above average per cent of teachers reporting learning about new materials.

Above average per cent of teachers reporting learning about minority groups.

Extracurricular: Above average per cent of teachers reporting intergroup problem projects.

Classroom Organization: Principal reports one or more of the following programs are large enough and available to fifth graders: Ungraded, demonstration, underachiever, maladjusted, grouped classrooms, grouping within classrooms.

Above average per cent of teachers reporting ungraded classrooms.

Above average per cent of teachers reporting learning about new discipline.

Above average per cent of teachers reporting can handle heterogeneous classes.

Team Teaching: Principal reports size of program is large enough and available to fifth grade.

Above average per cent of teachers reporting team teaching.

Teacher Training: Principal reports size of program is large enough and available to fifth grade.

Above average per cent of teachers reporting taking training.

Above average per cent of teachers reporting no lack of training.

Above average per cent of teachers reporting time on training, positive rating, and resulting changes.

Equipment: Principal reports size of program is large enough and available to fifth grade.

Tenth Grade

Tutorial: Principal reports size of tutorial and reading programs is large enough and available to tenth grade.

Above average per cent of counselors reporting academic counseling above mean. Per-student specialists (remedial reading and math and speech).

Guidance: Principal reports size of program is large enough and available to tenth grade.

Above average fraction of students receiving counseling to total enrollment.

Above average per-student specialists (guidance counselors and aides and psychologists).

Teacher's Aides: Principal reports size of program is large enough and available to tenth grade.

Above average per cent of teachers reporting more than 15 minutes alone.

Above average per-student specialists (teacher's aides).

Student Relations: Principal reports size of one or more of the following programs is large enough and available to the tenth grade: Student relations, teacher relations, social work, parent relations and community relations.

Above average specialists (social worker, truant officer, psychologist).

Curriculum: Principal reports size of curriculum and minority history are large enough and available to tenth grade.

Above average per cent of teachers reporting some or more multi-ethnic texts.

Above average per cent of teachers reporting one or more minority culture classes.

Above average per cent of teachers reporting learning about minority groups.

Extracurricular: Principal reports size of program is large enough and available to tenth grade.

Above average per cent of black students reporting membership in sport or club.

Tenth Grade--Continued

	Above average per cent of white students reporting membership in sport or club.
	Above average per cent of teachers reporting increased participation.
	Above average per-student specialists (music, drama, gym).
Vocational:	Principal reports size of program is large enough and available to tenth grade.
	Above average per-student specialists (vocational).
Classroom Organization:	Principal reports following programs are large enough and available to tenth grade: Underachiever, maladjusted, grouped classes.
	Above average per cent of principals reporting student tracking.
	Above average per cent of teachers reporting learning about new discipline.
	Above average per cent of teachers reporting can handle heterogeneous classes.
Teacher Training:	Principal reports size of program is large enough and available to tenth grade.
	Above average per cent of teachers reporting taking training.
	Above average per cent of teachers reporting no lack of training.
	Above average per cent of teachers reporting time on training, positive rating, and resulting changes.
Equipment:	Principal reports size of program is large enough and available to tenth grade.

This list gives the various indicators that were treated as evidence of satisfactorily operating programs. A score for each program (e.g., teacher training) was constructed by counting the number of indicators for that program which were coded as "satisfactory." The number of possible satisfactory

These counts of satisfactory program indicators could have been used as continuous variables over their various ranges, but this would have involved weighting and scaling problems. To avoid these problems, the program variables were dichotomized at the median values, so that each school received a score of either 0 or 1 on each of the 10 programs.

Interpretation of Findings

Having established some definitions of programs, we can now return to the problem of establishing how ESAP funds achieved their effect in the tenth grade experimental sample. We have included the analysis of the fifth grade as well, to see if some reasons can be found for the lack of effect there.

Our first comparison involves simply examining the program content of the funded schools and of the control schools (Tables A.13 and A.14).

TABLE A.13

PER CENT OF SCHOOLS HAVING PROGRAMS FOR FIFTH GRADE

Program	ESAP Schools	Control Schools	Per Cent Difference
Guidance	19.0	8.6	10.3
Team teaching	53.4	60.3	-6.9
Teacher's aides	22.4	12.1	10.3
Teacher training	5.2	12.1	-6.9
Reading	37.9	34.5	3.4
Classroom organization . . .	15.5	34.5	-19.0
Curriculum revision	27.6	24.1	3.4
Extracurricular	36.2	39.7	-3.4
Tutorial	22.4	13.8	8.6
Equipment	25.9	51.7	-25.9

TABLE A.14

PER CENT OF SCHOOLS HAVING PROGRAMS FOR TENTH GRADE

Program	ESAP Schools	Control Schools	Per Cent Difference
Guidance	38.7	12.9	25.8
Human relations	61.3	32.3	29.0
Teacher's aides	29.0	25.8	3.2
Teacher training	54.8	32.3	22.6
Vocational program	22.6	35.5	-12.9
Classroom organization . . .	38.7	45.2	-6.5
Curriculum revision	54.8	45.2	9.7
Extracurricular	54.8	54.8	0.0
Tutorial	12.9	22.6	-9.7
Equipment	38.7	25.8	12.9

The pattern of differences for the fifth grade is mixed, with ESAP schools having programs and not having them equally often when compared to the control schools. Further, programs that we believe to be associated with achievement (e.g., remedial reading) are distributed fairly equally between the two sets of schools, with no set of schools having the advantage.

The pattern of program differences for the tenth grade, on the other hand, shows a definite advantage falling to the ESAP schools. More ESAP-funded schools have programs of all sorts than do their matched controls. This difference is highly significant--it would not be expected to arise by chance.

In summary, we find no statistically significant effect on student achievement from ESAP funds and no clearly interpretable pattern of program differences between ESAP and control schools for the fifth grade. In the tenth grade, however, we find a significant effect from ESAP funds and a clear preponderance of ESAP schools having school programs. It appears that the ESAP funds have achieved their effect here by being translated into school programs.

suspect that our results disagree because we have partially eliminated allocation bias--ESAP funds were assigned experimentally to schools rather than being awarded only to schools with low achievement. Our results clearly show that the need for further experimental work; specifically, the need for random assignment of programs to experimentally determine the effectiveness of programs in real school settings.

One further comment is in order about the magnitude of support. The ESAP funds, on the average, added $17 per pupil to each fifth grade student and $12 per pupil to each tenth grade student. This support represents about 3 per cent and 2 per cent, respectively, of the total per pupil expenditure as reported by the district. In other words, our experimental treatment must be defined as a 2 to 3 per cent increase in funds, given an average per pupil expenditure of about $600. We can only speculate what our findings would be if the baseline expenditure or percentage increase were different. The relative percentage increase in funds necessary to produce an effect in achievement at different grade levels appears to be an important policy variable and should be incorporated in subsequent experiments.

<u>The Contribution From ESAP</u>

ESAP funds bought only a fraction of the programs in the school budget; nevertheless, we would like to know what programs appear to be connected with the significant ESAP effect. In this section, we will consider the data from school superintendents describing which programs ESAP funds supported.

Two problems arise immediately. The first is the now familiar program coding problem: the accumulation of evidence that ESAP funds were used for a particular school program. The second problem has to do with the directness of the support: did ESAP support the program as indicated by the superintendent, or did the support free money to support another school program?

ESAP Contribution Coding

Once more, we resort to the process of gathering indicators and totalling them to produce a score for a particular school program. We must do so because there are several different ways for ESAP funds to support programs (for example, reading): materials can be purchased, reading specialist time bought, or special classes formed. We have coded the program variable to indicate ESAP support if any one of the indicators is positive.

Fifth Grade

Reading:	Availability of ESAP reading program
	ESAP-supported reading specialists
Tutorial:	Availability of ESAP-supported tutoring program
	ESAP-supported remedial education personnel
	ESAP-supported remedial program or materials
Guidance:	Availability of ESAP-supported guidance specialists
	Availability of ESAP-supported counselor's aides
	Availability of ESAP-supported psychologists
	ESAP-supported counseling assistance
	ESAP-supported counselors
	ESAP-supported teacher training in psychology
Teacher's Aides:	Availability of ESAP-supported aides
	ESAP-supported aides and support personnel
Curriculum:	Availability of ESAP-supported texts
	Availability of ESAP-supported curriculum revision
	ESAP-supported ethnic classes and materials
	ESAP-supported nonethnic classes and materials
	ESAP-supported teacher training in curriculum
Extracurricular:	Availability of ESAP-supported extracurricular program
	Availability of ESAP-supported extracurricular materials
	[illegible]

Fifth Grade --Continued

Classroom Organization:	Availability of ESAP-supported ungraded program
	Availability of ESAP-supported demonstration program
	Availability of ESAP-supported underachiever program
	Availability of ESAP-supported maladjusted program
	Availability of ESAP-supported classroom grouping program
	Availability of ESAP-supported within-classroom grouping program
Team Teaching:	Availability of ESAP-supported team teaching program
Teacher Training:	Availability of ESAP-supported teacher training program
	Availability of ESAP-supported teacher training in desegregation
	Availability of ESAP-supported teacher training in methods
	Availability of ESAP-supported teacher training in skills
	Availability of ESAP-supported teacher training in remedial methods
	ESAP-supported teacher training (overlap question)
	ESAP-supported teacher training (another overlap)
Equipment:	Availability of ESAP-supported teaching materials
	Availability of ESAP-supported reading machine
	Availability of ESAP-supported audio-visual equipment
	Availability of ESAP-supported testing materials
	Availability of ESAP-supported supplies
	Availability of ESAP-supported furnishings
	Availability of ESAP-supported renovation
	Availability of ESAP-supported space
	Availability of ESAP-supported audio-visual specialists
	ESAP-supported material purchases
	ESAP-supported facility improvements

Tenth Grade--Continued

	Availability of ESAP-supported remedial math specialists
	ESAP-supported remedial education personnel
	ESAP-supported remedial education program/materials
Guidance:	Availability of ESAP-supported guidance specialists
	Availability of ESAP-supported counselors
	Availability of ESAP-supported psychologists
	ESAP-supported counseling assistance
	ESAP-supported counselors
	ESAP-supported teacher training in psychology
Teacher's Aides:	Availability of ESAP-supported teacher's aides
	ESAP-supported aides and support personnel
Student Relations:	Availability of ESAP-supported community relations specialists
	Availability of ESAP-supported truant officer/ home visitor
	Availability of ESAP-supported student relations program
	Availability of ESAP-supported community relations program
	Availability of ESAP-supported parent-teacher program
Curriculum:	Availability of ESAP-supported texts
	ESAP-supported ethnic classes and materials
	ESAP-supported nonethnic classes and materials
	ESAP-supported teacher training in curriculum
Extracurricular:	Availability of ESAP-supported recreational materials
	Availability of ESAP-supported drama teacher
	ESAP-supported student-to-student activities
Vocational:	Availability of ESAP-supported vocational program

Tenth Grade--Continued

Teacher Training:	Availability of ESAP-supported teacher training program
	Availability of ESAP-supported teacher training in desegregation
	Availability of ESAP-supported teacher training in methods
	Availability of ESAP-supported teacher training in skills
	Availability of ESAP-supported teacher training in remedial methods
	Availability of ESAP-supported teacher training (overlap question)
	ESAP-supported teacher training (another overlap)
Equipment:	Availability of ESAP-supported teaching materials
	Availability of ESAP-supported reading machine
	Availability of ESAP-supported audio-visual equipment
	Availability of ESAP-supported supplies
	Availability of ESAP-supported furnishings
	Availability of ESAP-supported renovation
	Availability of ESAP-supported space
	Availability of ESAP-supported audio-visual specialists
	ESAP-supported material purchases
	ESAP-supported locality improvements

Having coded the ESAP contributions to the experimental schools, we can begin to answer the question of what ESAP funds bought in the experimental schools, in an attempt to account for the significant effect of ESAP funds in tenth grade student achievement. We will consider the fifth grade for possible indications as to why ESAP funds did not appear to have an effect here.

The ESAP funded programs coded in the list above have different ranges, depending upon how many items could be bought as components for a given school program. We dichotomize these program indicators as:

TABLE A.15

PER CENT OF ESAP-FUNDED SCHOOLS RECEIVING PROGRAM SUPPORT LISTED FOR EACH PROGRAM

Program	Per Cent
Fifth Grade:	
Guidance	60.3
Team teaching	0.0
Teacher's aides	65.5
Teacher training	84.5
Reading	17.2
Classroom organization	3.4
Curriculum revision	77.6
Extracurricular	44.8
Tutorial	51.7
Equipment	65.5
Tenth Grade:	
Guidance	58.1
Human relations	35.5
Teacher's aides	71.0
Teacher training	64.5
Vocational program	9.7
Classroom organization	6.5
Curriculum revision	83.9
Extracurricular	25.8
Tutorial	58.1
Equipment	80.6

We can now compare the tenth grade program support shown in Table A.15 with the program comparison shown in Table A.14. Notice that the five programs which show near or above 10 per cent superiority in the ESAP schools (Table A.14)--guidance, human relations, teacher training, curriculum revision, and equipment--are also all programs which have received direct ESAP support in over 35 per cent of the experimental schools (Table A.15). Furthermore, three programs that show superior strength or no difference in strength in the control schools--vocational, classroom organization, and extracurricular--are the programs that received ESAP support in less than 30 per cent of the experimental schools. There are two anomalous cases--teacher's aides and tutorial--that received ESAP support but do not exist in greater number in the experimental schools.

It would appear that the tenth grade ESAP effect might be attributable to the five programs: guidance, human relations, teacher training, curriculum revision, and equipment. This finding should be tempered, however, by the fact that we do not know what fraction of the ESAP funds went to program support. Since we know only the number of times such support was applied to various schools, we cannot say whether these programs represent efficient instruments for achievement increases.

Technical Note

A comparison of Tables A.7 and A.3 raises questions that must be answered. The problem appears to arise because Table A.3, which presents score differences unadjusted, is interpreted as showing a consistenly positive ESAP effect, whereas Table A.7, which presents score differences adjusted for covariates, is interpreted as showing an inconsistent covariate correction that differentially (and negatively) affects some of the student groups.

We note first that the signs of the score differences cannot be taken too seriously; the magnitude of the differences in every case for both tables is swamped by the standard error of the difference, with one

The following analysis may serve to alleviate concern about the apparent decrease in score attributable to experimental funds. When the covariates were matched by race to the score groups, another ANCOVA led to the following results for the tenth grade sample:

TABLE A.16

TENTH GRADE SCORES FOR BLACK POPULATION CORRECTED FOR BLACK COVARIATES ONLY

Race and Sex	No ESAP	ESAP	Difference	Standard Error of Difference
Black male . .	10.2	11.8	1.6	.84
Black female .	12.0	12.3	.3	1.1

Covariates (see list of background variables): mother's education, live with parents, number of siblings, and own home for black population

TABLE A.17

TENTH GRADE SCORES FOR WHITE POPULATION CORRECTED FOR WHITE COVARIATES ONLY

Race and Sex	No ESAP	ESAP	Difference	Standard Error of Difference
White male . .	24.6	24.6	.00	1.5
White female .	28.1	26.8	-1.3	1.4

Covariates (see list of background variables): mother's education, live with parents, number of siblings, and read daily newspaper for white population

In Table A.16 we see that the apparent decrease in score for the black female subgroup disappears when white covariates are excluded. This would indicate that the distribution of white covariates was responsible for the negative effect reported in Table A.7. For example, had ESAP funds gone to schools characterized by high white covariates and low black covariates, we would expect to see this result when the white covariates were eliminated. (Overall correlations between the scores of the four student populations are high; what reduces one will tend to reduce the others.)

In Table A.17, we see that the decrease in white female scores reported in Table A.7 is still apprent (but still not significant). Eliminating the black covariates has evidently not affected the decrease. We would expect to see this result when ESAP funds went to schools characterized by high white covariates and low black covariates.

Decomposing the covariates by race reveals the following: The experimental schools tend to have slightly lower black SES and slightly higher white SES than do the control schools. Males of both races perform poorly when black SES is low, so that introducing these covariates increases the effect of ESAP on males. White students and black females perform well in schools with high white SES, but black males score low in these schools.

The result of using both sets of covariates, then, is to lower the achievement of females (whose experimental school scores are biased upward by the white SES bias, and unaffected by black SES), to leave unaffected white male performance (whose achievement is raised by the higher white SES, lowered by the lower black SES, with the two effects cancelling each other), but to raise black male achievement (since black males do poorly in low black SES/high white SES schools). None of the covariate effects can be taken seriously, however, since they are not statistically significant. If they were, they would not seem unreasonable; we have good reason to expect that males and females would be affected by school social status in different ways, and the idea that black males would have difficulty coping in high white SES schools seems plausible.

The evidence presented in these analyses does not warrant the assertion that ESAP funds were preferentially allocated to those schools attended by high SES whites and low SES blacks (if SES is what the covariates define). Had our results been significant, however, this might be a more reasonable interpretation than the conclusion that ESAP funds damaged achievement ratings of certain student groups.

APPENDIX B

THE EFFECTS OF SCHOOL PROGRAMS ON ACHIEVEMENT

This appendix presents an analysis of the degree to which the Emergency School Assistance Program and related educational activities affect achievement. Multiple regression is the basic method employed in the analysis. The format of the analysis, and of this appendix, is as follows:

1. Since we do not expect the ESAP program, or any related compensatory programs, to have an effect totally independent of other factors (i.e., characteristics of the students and of the schools), an effort is made to construct the best set of control variables for predicting achievement. The assumptions made in constructing this set of controls and the criteria used in evaluating them are described below.

2. An overall assessment of the effects of having the ESAP program is presented. First, we use multiple regression to see if the ESAP schools have higher achievement than schools that did not receive ESAP funds. Second, we decompose ESAP into the list of specific activities that ESAP schools tend to have, and look at the achievement of schools that have the "ESAP package" of activities.

3. We then offer an assessment of the effects on achievement of each of 61 different variables characterizing activities occurring in the schools. This assessment is also a two-stage process. First, each activity variable is tested individually. Second, a factor analysis is used to group the 61 activity variables into four overall "strategies," and the effects of these are measured.

4. The extensive set of regression equations described in (3) above is distilled and summarized. In this way, the best predictors of achievement among these 61 programs are selected.

5. Additional analysis is done to gain an understanding of the way in which particular activities affected achievement.

A Note on the Use of Weighting in the Analysis

In some of the schools that we studied, one source of sampling error was imbalance in racial composition. For example, a school 90 per cent white would normally have 52 white students, but only five black students, in the sample. The small number of black students means that the mean for that school has a relatively high sampling error. Fortunately, this source of sampling error is easily minimized.

When two means are to be compared, or when a regression analysis is carried out to predict the mean of some school test or attitude scale, cases with small n's must be discounted. The standard formula for doing so is given by Frederick Mosteller and Daniel P. Moynihan:[1]

$$w_i = \frac{1}{V_B + \frac{V_w}{n_i}}$$

where:

n_i = number of students in school i

w_i = weight for school i

V_w = variance within schools

V_B = variance between schools

An examination of the formula reveals that small numbers of students provide reliable estimates only if the variation between schools is large relative to the variation within schools. That is to say, if every student in a particular school had exactly the same test score, there would be no point in collecting these test scores for more than one student. Conversely, at the opposite extreme, if there were no true

[1] On Equality of Educational Opportunity (New York: Random House, 1972), p. 228.

differences between the means of schools on a particular test, then all schools would be assigned a weight of 0 and there would be no point in analyzing school differences.

David J. Armor observes, in the reference cited above, that on many variables measured in the Coleman report, the variance between schools was approximately 25 per cent of the total variance. In our study, we used the actual ratio of between-school to within-school variance on the achievement test as our weighting factor throughout; these weights were all approximately 3, which is identical to a ratio of 25 per cent.

Control Variables: The Predictors of Achievement

The first step of our analysis was to determine the best set of control variables to use in evaluating program impact. Since we want to assess the relative effects of a variety of programs in terms of whether or not they help to increase achievement, rather than create a comprehensive model that assesses the relative effects of all predictors of achievement, we have followed the procedure used in the Coleman report for the tables below by first controlling for a set of variables that we assume are prior to the programs being evaluated. We deviate from Coleman's analysis considerably though, because we are attempting to assess the effects of compensatory programs in practice during the 1971-72 school year. Thus, we control not only for characteristics of the students' family background, but also for some characteristics of the school. Only those characteristics of the school that can be assumed to be prior to the compensatory education programs are controlled.

The set of variables used in the control equations were obtained through the following procedure. First, the achievement test means for black students and white students were correlated against school characteristics and family background characteristics. This was in excess of 400 items for high schools, with slightly fewer items for grammar schools. All items that were significantly correlated with achievement were examined.

We did not include any of the attitudinal scales in this correlational analysis, as we did not feel safe in assuming that attitudes preceded or caused achievement. We did assume, however, that characteristics and attitudes of teachers and principals are logically prior to, rather than an effect of, achievement.

All significant correlates of achievement were then entered into a step-wise regression program that searched for the minimal number of significant predictors of achievement in a regression equation. These equations were then altered and rerun by deleting and adding variables until an equation was obtained in which (1) all the items that predicted achievement seemed reasonable (or at least not ridiculously unreasonable), and all were associated with achievement in the expected direction; (2) all could be assumed to be logically prior to achievement and to compensatory programs; and (3) when taken together, the variables all increased the per cent of variance explained without increasing the error of estimate.

The regression equations used as controls are presented in Tables B.1 through B.4. Table B.1 shows the equation for black students in the fifth grade; Table B.2, white students in the fifth grade; Table B.3, black students in the tenth grade; and Table B.4, white students in the tenth grade. In each table, the variables are listed in the order in which they entered the equation. Columns 1 and 2 give the multiple r and the r^2, or variance explained, at each step. Column 3 notes the increment in r^2 contributed by the variable. Column 4 gives the zero-order correlation coefficient, and columns 5 and 6, the unstandardized regression coefficient (here called B) and the standardized regression coefficient (beta). The variables in Table B.1 explain only 17 per cent of variance for black students in the fifth grade, while those in Tables B.2 through B.4 explain 53 per cent of the variance for white students in the fifth grade, 41 per cent of the variance for blacks in the tenth grade, and 45 per cent of the variance for whites in the tenth grade. In all four cases, the majority of the explained variance is attributed to the social background of the student.[2]

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[2]We considered several different explanations for the fact that the amount of variance explained was so much lower for blacks in the fifth

The particular variables that survived to be included in this equation, as well as the ordering of these variables, are interesting. The regression equation that we used enters variables in the order of the amount of variance explained by each; therefore, the ordering of the variables is a ranking of their impact on achievement. Thus, we can see that, for black students in the fifth grade, characteristics of their socioeconomic background are important predictors of achievement, but nowhere near as important as such characteristics are for black tenth graders or whites at the fifth grade and tenth grade levels. Four components of socioeconomic background status enter into the equation for black fifth grade students. Ranking first is the percentage of families that do not use food stamps; fourth is the percentage of students who own bicycles; sixth is the mean number of siblings that black students have; seventh is the percentage of students who live with both of their parents. If we enter only these four variables into a regression equation, we explain 13 per cent of the variance.

The variables that describe the characteristics of the schools or community of the students are also quite different for blacks in the fifth grade than they are for the other three groups. The superintendent selection process is a dummy variable--one if the superintendent is appointed, zero value if elected. In 83 per cent of the school districts the superintendent is appointed. The 17 per cent in which the superintendent is elected tend to be rural and in the Deep South. Thus, the superintendent selection process is partially a surrogate variable for the last two variables, and it is not surprising that achievement is 15 points lower in schools with elected school superintendents.

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grade than for any other group. Other than the straightforward proposition that background characteristics simply do not determine achievement at this level to the extent that they do for others, we have no explanation. The achievement scores for fifth grade blacks show as much variance as the other groups, and the distribution is as close to normal as it is for them. See Appendix D for a detailed discussion of the problem.

TABLE B.1

SUMMARY OF REGRESSION OF ACHIEVEMENT TEST SCORES
OF FIFTH GRADE BLACK STUDENTS ON THE
BEST SET OF CONTROL VARIABLES

(Variables Assumed to Precede ESAP and
Other Compensatory Programs)

Variable	Multiple r	r^2	Unique r^2	Simple r	Unstandardized Regression Coefficient B	Standardized Regression Coefficient beta
Does family receive food stamps . .	0.31	0.09	0.09	0.31	0.47	0.19
Superintendent selection process .	0.35	0.12	0.03	0.20	16.38	0.11
Level of civil rights activity in LEA	0.37	0.14	0.01	0.17	1.55	0.12
Does student own a bicycle	0.38	0.15	0.01	0.20	0.24	0.07
Earliest grade student attended integrated school	0.39	0.15	0.01	-0.08	-0.53	-0.09
Number of siblings	0.40	0.16	0.01	-0.23	-3.16	-0.08
Does student live with both parents	0.40	0.16	0.01	0.14	0.28	0.08
Per cent of students who are Jewish	0.41	0.17	0.00	0.15	0.86	0.05
Per cent of students who are white	0.41	0.17	0.00	0.12	0.08	0.04
Per pupil dollars spent	0.41	0.17	0.00	0.11	0.01	0.02

TABLE B.2

SUMMARY OF REGRESSION OF ACHIEVEMENT TEST SCORES
OF FIFTH GRADE WHITE STUDENTS ON THE
BEST SET OF CONTROL VARIABLES

(Variables Assumed to Precede ESAP and
Other Compensatory Programs)

Variable	Multiple r	r^2	Unique r^2	Simple r	Unstandardized Regression Coefficient B	Standardized Regression Coefficient beta
Does family read newspaper	0.50	0.25	0.25	0.50	0.91	0.24
Number of siblings	0.60	0.35	0.10	-0.48	-21.35	-0.21
Does student live with both parents	0.64	0.41	0.05	0.35	1.30	0.22
Did student attend kindergarten . .	0.66	0.44	0.03	0.38	0.53	0.19
Does student own bicycle	0.68	0.46	0.02	0.48	0.71	0.13
Per cent of students who are Jewish	0.69	0.48	0.02	0.33	2.93	0.16
Per cent of teachers who think tests = achievement	0.71	0.50	0.02	0.22	0.41	0.13
Principal's rating of white teacher quality	0.72	0.51	0.01	0.10	0.21	0.11
Per cent urban in LEA	0.72	0.52	0.01	0.13	-0.23	-0.12
Does family receive food stamps . . .	0.73	0.53	0.00	0.33	0.32	0.06

TABLE B.3

SUMMARY OF REGRESSION OF ACHIEVEMENT TEST SCORES
OF TENTH GRADE BLACK STUDENTS ON THE
BEST SET OF CONTROL VARIABLES

(Variables Assumed to Precede ESAP and
Other Compensatory Programs)

Variable	Multiple r	r^2	Unique r^2	Simple r	Unstandardized Regression Coefficient B	Standardized Regression Coefficient beta
Per cent of students whose mothers are high school graduates	0.50	0.25	0.25	0.50	0.77	0.33
Mean score on SES index (whites). .	0.57	0.32	0.08	0.41	3.38	0.30
Per cent of students who live with parents	0.60	0.35	0.03	0.25	0.33	0.12
Superintendent selection process .	0.61	0.37	0.02	0.25	16.48	0.15
Per cent urban in LEA	0.62	0.38	0.01	0.23	-0.36	-0.27
Percent of families who receive newspaper	0.64	0.40	0.02	0.39	0.41	0.19
Per cent of families who own air conditioner	0.64	0.41	0.01	0.37	0.23	0.12

TABLE B.4

SUMMARY OF REGRESSION OF ACHIEVEMENT TEST SCORES OF TENTH GRADE WHITE STUDENTS ON THE BEST SET OF CONTROL VARIABLES

(Variables Assumed to Precede ESAP and Other Compensatory Programs)

Variable	Multiple r	r^2	Unique r^2	Simple r	Unstandardized Regression Coefficient B	Standardized Regression Coefficient beta
Mean score on SES index (whites) . .	0.60	0.35	0.35	0.60	10.51	0.64
Per pupil dollars spent	0.61	0.37	0.01	0.18	0.02	0.06
Total number of pupils	0.61	0.38	0.01	0.19	-0.04	-0.39
Total number of full-time specialists	0.63	0.39	0.02	0.20	1.70	0.31
Mean score on SES index (blacks) . .	0.65	0.42	0.02	0.33	2.24	0.19
Total number of part-time specialists (1971)	0.65	0.43	0.01	0.16	1.15	0.09
Per cent urban in the school district	0.66	0.43	0.00	0.23	-0.14	-0.08
Per cent of white students who selected school	0.66	0.43	0.00	-0.22	0.17	0.08
Is the school tracked	0.66	0.43	0.00	0.14	0.25	0.04
Number of white in-transfers	0.66	0.43	0.00	-0.34	-0.12	-0.04

The fact that the level of civil rights activity in the community shows such a strong association with the achievement levels of black fifth graders is interesting. Again, this variable is partially a surrogate for the degree to which the school district is urban, but that is by no means the only reason the variable has an effect. But, while it is easy to speculate that the level of civil rights activity produces a motivational boost to the black students, it is very difficult to demonstrate, and such analysis is not within the scope of this appendix.

White social status does not enter the equation directly at all, although the variable measuring the percentage of Jewish students in a school does represent it to some degree. Both the percentage of white students and the number of years the white students of a school have experienced integration have small positive effects. It is most interesting that years of integration experience has a stronger effect than current integration situation. This is especially noteworthy in light of the criticism of the Coleman report for its reliance on current integration data.[3]

Finally, the significant though small contribution to the explanation of black achievement at the fifth grade level which is made by the per pupil dollars spent within the school is interesting, since no significant contribution is made by this variable either to whites at the fifth grade level or to blacks at the tenth grade level. Some contribution is made by this variable to the achievement of tenth grade whites.

The most important aspects of Table B.1, which need to be kept in mind in the subsequent analysis of the effects of programs on achievement, are the small proportion of variance explained and the rather diverse nature of the variables that do explain the achievement scores of blacks at the fifth grade level.

Table B.2, showing the best regression equation for the achievement scores of white fifth graders, is quite different than Table B.1.

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[3] D. K. Cohen, T. F. Pettigrew, R. T. Riley, "Race and the Outcomes of Schooling" in F. Mosteller and D. P. Moynihan (eds.), On Equality of Educational Opportunity (New York: Random House, 1972).

The variables included in this equation explain approximately three times as much of the variance--53 per cent. The variables measuring socioeconomic status are much more important for this group than they are for blacks in the fifth grade. The per cent urban enters this equation directly, as do two characteristics of the schools themselves--the teachers' evaluation of the importance of tests and the principal's evaluation of the quality of white teachers.

If we consider having gone to kindergarten as a characteristic of socioeconomic background, then the first five variables that enter the equation are measures of socioeconomic background, and they account for 46 per cent of the variance, or 88 per cent of the explained variance. One might be tempted to consider the per cent Jewish as a characteristic of socioeconomic background, but since the per cent Jewish is so low (mean = .97 per cent, standard deviation = 2.92 per cent), the Jewish students' contribution to the variance in the achievement means comes not out of their own scores but, apparently, from their influence on others.

That the achievement scores of white students are higher in schools where teachers think tests are good indicators of achievement can be interpreted in different ways. It could mean that teachers in these schools teach students how to take tests. If this is so, they are more successful in this with white students than with blacks. Since these are, for the most part, schools that were previously all white, it may be that the teachers have been teaching whites how to take tests for a longer time period, or they may simply direct this teaching to whites. Alternately, since this attitude on the part of teachers predicts the achievement scores of only the white students in the fifth grade, it could be considered a form of racism in which the teachers interpret the better achievement scores of whites as indicative of superior underlying ability and in the process reinforce and intensify the existing differences.

The effect of urbanism is ambiguous. In this equation, and in both of the tenth grade equations, the per cent of the county population living in urban places is positively correlated with achievement, but enters negatively in the regression equation. Does this mean that, all else being equal, living in an urban place lowers achievement? This is possible, of course, but not necessarily true. Residents in urban areas will have opportunities to score higher on the social status variables--receive a daily paper, attend kindergarten, go to school with Jewish students, and so forth. Thus, our social status measures and the urbanism variable are hopelessly confounded. Our best estimates of achievement are constructed by permitting urbanism to enter negatively, but this does not imply a direct negative effect.

In Tables B.3 and B.4 we shift to the tenth grade students. Table B.3 shows the regression equation for black students in the tenth grade, and Table B.4 the regression for white students in the tenth grade.

At the tenth grade level, it is possible to explain a much larger proportion of the variance in the achievement level of black students. For this group, most of the variance is explained by characteristics of the students' socioeconomic background, which is not the case for black students in the fifth grade. Of the seven variables that enter this equation, five are characteristics of socioeconomic background. This includes the first three variables, which enter the equation explaining 35 per cent of the variance, or 85 per cent of the explained variance. The most substantively interesting interpretation of this is that being black or being white makes such a difference in one's initial chance for success in school that even coming from a relatively well-off black family does not help until one has had several years to overcome cognitive deficiencies, test-taking difficulties, or psychological barriers. The simplest explanation is that our measures of socioeconomic background at the fifth grade level are not sensitive enough to tap the range of variance that does have an effect on achievement. The data do not allow us to test these two interpretations.

The superintendent selection process has a significant effect for tenth grade blacks (as was the case for fifth grade blacks). In fact, there is a 16-point difference in the achievement test scores of blacks in the tenth grade between the 17 per cent in school districts with elected superintendents and the 83 per cent in other school systems. The difference for fifth graders is about the same--15 points. For tenth grade blacks, however, the superintendent selection process is apparently an even more important surrogate for the per cent urban in the district than it is for whether or not the school district is in the Deep South. The direction of the effect of per cent urban is reversed because the variable measuring the superintendent selection process enters the equation before the per-cent urban.

Table B.4 presents the effects of characteristics that are prior to the effects of the compensatory programs for white students in the tenth grade. This table shows that the per cent of variance explained for white students in the tenth grade (45 per cent) is second only to that of white students in the fifth grade. It also shows a very different and more diverse range of variables explaining that variance than even that for black fifth graders. Socioeconomic background again has the greatest effect; 37 per cent of the variance, or 82 per cent of the explained variance, is accounted for by socioeconomic background characteristics.

The rest of the results for white tenth graders are quite divergent from those for the other groups of students. Total resources seems to have a much greater effect at this level; three variables that measure overall resources show significant effects on achievement levels of white tenth grade students. These are: total per pupil dollars spent, total number of part-time specialists, and total number of full-time specialists in the year preceding the year of the testing.

There is also an indication from this table that the high achieving white students are not only high in socioeconomic status, but that they are also volunteers for the school. This is indicated both by the significant contribution of variables measuring the per cent of white students who elected to go to their respective schools and the per cent of white students who have transferred into the school. There is a suggestion here that these are volunteers for desegregation, since these schools are desegregated. It is quite possible, however, that these are simply good schools into which educationally aware families are sending their children. They are also large schools, and this tends to attract students. Thus, while the ols may be both effective and desegregated, the black and white students may be in separate classrooms that are quite different in their effectiveness. This is a point to which we shall return.

The four tables describing the effects of socioeconomic background, community characteristics, and school characteristics can be briefly summarized. For all groups, except black students in the fifth grade, approximately 50 per cent of the variance is explained by a combination of these characteristics. The combinations vary considerably from group to group, but the largest proportion of variance is explained by socioeconomic background characteristics for all groups, except, again, for blacks in the fifth grade. Racial integration has a significant though not a very strong effect, but a much more precise analysis of this is required and appears in Volumn II of this report. Overall level of effort (dollars and personnel) has very slight effect, except for white students in the tenth grade, where it is moderate. Finally, there is a set of interrelated variables that reappear in these tables--per cent urban in school district, per cent Jewish in school, the superintendent selection process, and the level of civil rights activity--which all suggest that cumulative characteristics of local culture make a difference.

The Effects of ESAP: Introduction

ESAP is a "program"--a collection of school activities strategically selected. In this appendix we will analyze the data in terms of individual school "activities" and also in terms of clusters of activities that tend to occur together. We will call the latter "strategies."

Having developed the control equations, we can now begin evaluating ESAP. The first step is to determine whether schools that received ESAP funds had higher achievement than those that did not. Second, we will decompose the ESAP program into the collection of activities that

ESAP most often funds--the "ESAP strategy." Finally, we will turn our attention away from ESAP and look at the effects of individual activites. However, before we begin that analysis and discussion, we must outline the set of criteria used in assessing the importance of independent variables. The criteria are applicable not only to the discussion of the effects of the ESAP program, but also, in the next section, to the discussion of the effects of the various types of activities within ESAP and related to ESAP.

A caveat must be entered at this point: that an activity shows a negative effect even after controlling for socioeconomic background, community characteristics, and school characteristics, should not be interpreted as evidence of a negative effect of that activity. It should instead be viewed as an activity that is utilized extensively in the schools that have a low level of achievement because of the characteristics of the students, of the community, or of the school. It is not likely that programs so used will show a positive regression coefficient or even a zero regression coefficient. The reader familiar with psychological statistics will recognize the statistical problem as attenuation due to measurement error. Briefly, measurement error in the control variables prevents beta from being as different from r as it should be--the difference between beta and r is underestimated. Alternately, a negative beta may be real, but only in the sense that schools that make heavy investments in activity "a" may do so because they do not highly value achievement, and are therefore not trying to raise it as much as they are trying to accomplish other things; or their use of strategy "a" may be indicative of a poor quality of education. Even in this case, however, it is hard to argue that activity "a" is single-handedly driving achievement down.

Since it is clear that some programs are more extensively or exclusively used in schools with low levels of achievement--as they should be--it is necessary to review how we can recognize this. Essentially, this can be done through a comparison of the zero-order correlation coefficient between the program and achievement test scores with the standardized regression coefficient (beta). A set of hypothetical comparisons between r and beta that outlines likely outcomes is presented below.

The zero-order correlation between an activity and achievement indicates simply whether schools with a particular activity have higher achievement than do other schools, without regard to difference in school social class. Beta is a measure of the difference between schools with an activity and those without it, after they have been matched statistically on social class. This statistical matching is always imperfect, and we must keep this imperfection in mind. To do so, we should focus on the following elementary rule: If beta is more positive than r, this activity is concentrated in low-SES schools; if beta is more negative than r, the activity is more likely to be found in high-status schools. Thus, we would interpret those hypothetical combinations of beta and r as follows:

r	beta	
+.10	+.05	Program occurs in high-SES schools, so that high r is misleading. Given imperfect controls, true beta may be 0; in any case, it is smaller than .05.
+.05	+.05	The tendency of program to be in high-performance schools is not an SES effect; this .05 is more interesting than that above.
-.05	+.05	Program is in low-SES schools, but controlling this reverses sign. This beta is definitely underestimated; true beta is higher than that in either case above. Evidence of a successful program.
+.05	+.10	Beta larger than r means program occurs in high-achievement schools, but not because they are high status. In fact, program is in high-performance, low-status schools. Evidence of success.
-.10	-.05	Most common case: program is in low-performance schools, but mostly or entirely because it is concentrated in low-SES schools. Effect probably not negative.

The criteria used in judging whether or not a program has an important influence on achievement are outlined below:

1. Beta must reach a minimum value of $\geq .07$ in order to be considered important. This is equivalent to just under one month in achievement level for black students, and equivalent to just over a month for white students. This result is statistically significant at the .05 level (one-tailed test) for elementary school programs, but is not significant for high school programs.

2. A minimum criterion is set to insure that the additional variance, which is added by the inclusion of the program variable in the regression equation after the control variables, must be at least .5 per cent. This means that at least .5 per cent of the variance in achievement must be unique to the variable in question.[4]

3. The step-wise regression must behave "reasonably." If the beta is larger than r, we must examine which control variable caused this change, and decide how far we trust that control.

4. Part of the "reasonable" criterion is that if (beta - r) is negative, its absolute value must be smaller than 4 x beta, and ideally much smaller than that. Since the controls are imperfect, their effect is understated; if beta is much less than r, it can be assumed that it is even smaller than shown. Conversely, if (beta - r) is positive, beta may be larger than the value shown.

5. For the same reasons as discussed above in (4), the ratio of the unique variance explained to r^2 should remain large, and certainly should not fall below .1. Values for this ratio are given whenever the unique variance added is .002 or greater.

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[4]We set minimum criteria for portions of the explained variance uniquely accounted for by the program in question. The values are: for black students in the fifth grade, 2.9 per cent; for white students in the fifth grade, 1.0 per cent; for black students in the tenth grade,, 1.2 per cent; for white students in the tenth grade, 1.1 per cent.

These are essentially quite conservative criteria, taking into account what we know concerning the dollar level of ESAP and the related compensatory programs under study, the short duration of these programs, that these programs represent a small proportion of educational resources, and our prior knowledge of the effects of socioeconomic background characteristics and other factors. If the ESAP program meets these criteria, or if other compensatory programs meet them, then we can be confident that they are having an effect on achievement.

The Effects of the ESAP Program

We now turn to Table B.5, which shows the results of the regression equations for the ESAP program itself. The independent variable here is simply whether or not the school received ESAP funds. While the regression analysis is not as accurate as the analysis of covariance, it is important to know if the results it yields are consistent with those of Appendix A, since this analysis is somewhat different in the control variables it uses and in the inclusion of the 300 supplemental schools. There are three equations for each of the four groups of students. First, there is an equation that enters the control variables and then the dummy variable describing whether or not there was an ESAP program in the academic year 1971-72. There is a second equation that enters the control variables first and then the dummy variable describing whether or not there was a program in the academic year 1970-71. Finally, there is an equation that enters the control variables and then both of the dummy variables for whether or not there were ESAP programs in both years. All twelve of these regression equations are summarized in Table B.5.

The results in Table B.5 are fairly consistent with the analysis of covariance. There is clear evidence that ESAP schools do not show higher achievement for fifth graders, or for tenth grade white students. The results are also consistent in that they show at least a weak effect for tenth grade black students as a result of having ESAP funds during the 1971-72 school year. Two of the criteria that we established are not

TABLE B.5

THE EFFECT OF ESAP ON ACHIEVEMENT: SUMMARY OF REGRESSION EQUATIONS OF CONTROL VARIABLES AND ESAP PROGRAM ON ACHIEVEMENT TEST SCORES

Student Group and Variance Explained by Control Variables	Years in Which School Has ESAP Funding	Simple Correlation Coefficient	Standardized Regression Coefficient beta	Beta-r	Simple r^2	Unique r^2 After Controls	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Fifth grade black	1970-1971	0.05	-0.01	-.06	0.00	0.00	-1.46	-0.25
(r^2 = 0.17)	1971-1972	-0.00	0.00	.0	0.00	0.00	NS	NS
	1970-1972	0.03	-0.01	-.04	0.00	0.00	-0.77	-0.13
Fifth grade white	1970-1971	0.02	0.00	-.02	0.00	0.00	NS	NS
(r^2 = 0.53)	1971-1972	0.03	-0.01	-.04	0.00	0.00	-1.56	-0.27
	1970-1972	0.02	-0.01	-.03	0.00	0.00	-0.81	-0.14
Tenth grade black	1970-1971	-0.03	-0.04	-.01	0.00	0.00	-4.39	-0.76
(r^2 = 0.41)	1971-1972	0.07	0.06	-.01	0.01	0.00	6.55	1.13
	1970-1972	0.03	0.01	-.02	0.00	0.00	0.93	0.16
Tenth grade white	1970-1971	-0.07	-0.09	-.02	0.01	0.01	-12.15	-2.09
(r^2 = 0.43)	1971-1972	-0.09	-0.09	.00	0.01	0.01	-12.80	-2.21
	1970-1972	-0.11	-0.13	-.02	0.01	0.01	-12.23	2.11

met, however. First, the standardized regression coefficient falls below the minimum level of .07, though only slightly (beta equals .06). Second, having the ESAP program does not make a unique contribution of at least .5 per cent of the variance explained.

The fact that the mere presence of ESAP did not result in higher levels of achievement should not be surprising. ESAP was a relatively small program in relation to all of the other compensatory education programs funded by federal, state, and local governments. ESAP was an even smaller effort relative to the total resources at work in school systems. ESAP was in operation for a very short period of time--at most for two years. Finally, and most important for our purposes, the name "ESAP" is used to describe a widely varied group of policies, procedures, and activities. If we examine the experimental schools separately from the control schools, we find that the amount of variance in student characteristics, school board characteristics, and programs operating was as large among the ESAP schools as among the control schools. Thus, if there were effective programs and ineffective programs operating under the name of ESAP, the regression analysis for the mere presence of ESAP could not be expected to show results, unless there was a preponderance of either effective or ineffective programs. This is not the case, as we shall see below.

The Effects of Activities Frequently Funded by ESAP: The ESAP Strategy

We saw in Chapter 1 that the experimental schools gave somewhat different answers to the 60 questions used to describe school activities. Thus, we have a good idea of what activities ESAP most frequently funded. Let us next make some assessment of what the effects would be if the particular constellation of school activities that ESAP programs were most likely to include had been used more extensively.[5] To do this, we constructed a variable that measured the ESAP strategy--that particular

[5] The suggestion to incorporate this type of analysis was made by a group of consultants who reviewed draft analyses at a conference held

constellation of activities selected by the experimental schools, but not the control schools. In so doing, we made a rather unusual use of regression analysis. The question was framed backwards--which group of activities predicts whether or not a school will be an experimental school rather than a control school? A dummy variable was constructed in which experimental schools equaled one and control schools equaled zero. Then a step-wise multiple regression was run with this dummy variable as the dependent variable, and all of the questions dealing with activities, specialists, and physical resources as independent variables. The unstandardized regression coefficients for the more important variables were then used to weight these variables, which were then summed to create the ESAP strategy.

The activities that make up the ESAP strategy are presented below. The fifth and tenth grades are shown separately, with their respective weights (or regression coefficients).

Fifth Grade

.172 Remedial reading programs

.285 Counselor's aides per pupil

.037 Administrators per pupil

.236 Demonstration or experimental classrooms

.057 Programs to improve intergroup relations among teachers

.111 Special classrooms for socially or emotionally maladjusted

.073 Social workers per pupil

Tenth Grade

.206 Gym teachers or coaches per pupil

1.519 Drama or speech teachers per pupil

.649 Truant officers per pupil

.216 Human or community relations literature

.251 Nurses per pupil

.229 Additional space

.240 Administrators per pupil

.232 Textbooks

.269 Testing materials

.137 Teacher's aides per pupil

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at the Russell Sage Foundation. James S. Coleman made the specific suggestion to construct a variable representing the "ESAP strategy." The particular construction of this variable was done subsequent to the Russell Sage Conference.

Fifth Grade	Tenth Grade
.033 Library aides per pupil	.595 Audio-visual aides per pupil
.066 Teacher's aides per pupil	.428 Drama or speech teachers per pupil
.084 Special classrooms for underachievers	.257 Library aides per pupil
	.256 Music or art teachers per pupil
	1.226 Social workers per pupil
	1.562 Psychologists per pupil
	.427 Counselor's aides per pupil
	.054 Vocational education teachers per pupil
	.148 Remedial math teachers per pupil
	.111 School furnishings
	.104 Renovations
	.073 Remedial reading teachers per pupil
	.106 Librarians per pupil
	.010 Community relations specialists per pupil

The particular combinations of activities that are most likely to be utilized by ESAP-funded schools are quite diverse and do not lend themselves to simple categorization. They are not, taken individually, the activities most likely to improve achievement test scores (though it must be pointed out again that the central goal of ESAP need not be the improvement of achievement test results). The question is--do these activities improve achievement when taken in combination? The answer seems to be "yes and no" (Table B.6).

The two constructed ESAP strategy variables were entered into the same regression equations as in Table B.5. Thus, we first controlled for

TABLE B.6

THE EFFECT OF ESAP ON ACHIEVEMENT: SUMMARY OF REGRESSION EQUATIONS USING ~~BEST~~ LINEAR APPROXIMATIONS OF ESAP-FUNDED ACTIVITIES

Student Group and Variance Explained by Control Variables	Simple Correlation Coefficient	Standardized Regression Coefficient beta	Beta-r	Simple r^2	Unique r^2 After Controls	Unique r^2 After Controls/ Simple r^2	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Fifth grade black (r^2 = .17)	.024	.026	.002	.0006	.0006	1.0	.04	.0
Fifth grade white (r^2 = .53)	--	--	--	--	--	--	--	--
Tenth grade black (r^2 = .41)	.042	.048	.006	.0017	.0022	1.3	1.76	.3
Tenth grade white (r^2 = .43)	.153	.047	-.106	.0234	.0022	.1	2.29	.4
Tenth grade black males	.088	.078	-.010	.0077	.0054	.7	2.81	.5

Note: Dashes (--) indicate results too small to be computed by regression program, beta $\cong$ .00.

predictors of achievement that were assumed to precede school activities. Table B.6 shows that the ESAP strategy variables do not meet our criteria for judging their contribution as significant for any of the four groups of students. Indeed, for white students in the fifth grade the regression program used does not even permit the variable to enter the equation. Thus, it seems likely that the selection of activities that distinguishes ESAP schools does not represent a coherent strategy aimed at the improvement of achievement test scores. If it does represent such a strategy, it is a failure.

The tenth grade regression equations, however, suggest the possibility of an effect. This led us to include the fifth row in Table B.6--the effect of the ESAP strategy on the achievement scores of black male students in the tenth grade--and here our criterion for the effectiveness of the strategy is met, consistent with the analysis of covariance results.[6]

The consistency of the analysis of covariance, the ESAP program presence regression, and now the ESAP strategy regression, is important. First, this suggests that our overall theory of the evaluation--that ESAP can be analyzed by breaking the program down into a set of activities--is sound. Second, this presents some evidence that the ESAP program was genuine. If the analysis of covariance results were a statistical fluke, doubling the sample size by including the supplementary schools in the analysis could be expected to destroy the effect. Finally, the consistency indicates that ESAP was not itself a "peculiar" program; the same collection of activities, funded in a different program, would show the same results. In fact, most of the activities that make up the ESAP strategy in the analysis are not ESAP-funded. A school contributes to the ESAP strategy to the

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[6] In addition to the table discussed above, regression equations were run entering the ESAP strategy variable with prior controls, simultaneously entering the factor variables that are presented below in Tables B.12 through B.15. When this was done, the ESAP strategy variable showed a significant effect for both whites and blacks in the tenth grade, but did not even enter the equation at the fifth grade level. This suggests that there are distinct and significant effects from pursuing different strategies. However, the problems of multicollinearity have not been solved for such an analysis.

extent that it has an activity that is frequently funded by ESAP, regardless of whether that particular program is ESAP-funded or not.

The Effects of School Activities

We turn now to the analysis of specific activities carried out within the schools. This analysis is for all activities in operation, whether or not they were funded by ESAP. It is much more useful to know which programs are effective and which are not, by whatever name they are called, than to know only which ESAP programs were effective.

Tables B.7 through B.10 present results of the same types of regressions as shown in Table B.5, but now we are examining the effects of 61 different measures of school activities or use of specialized personnel. In some instances the measures are very closely related and thus may be measuring different aspects of the same program (e.g., whether or not a school has funds for equipment and how many audio-visual aides are working in a school). Table B.7 presents these regressions for fifth grade blacks, Table B.8 for fifth grade whites, Table B.9 for tenth grade blacks, and Table B.10 for tenth grade whites.

Tables B.7 through B.10 present a tremendous amount of information concerning the effects of compensatory programs. Each of the four tables contains eight items of information for each of 61 different program variables. Not only would it be extremely tedious to discuss these tables line by line and column by column, but this would not add to the understanding of the effects of these activities beyond what the tables themselves do. Thus, any reader concerned with all of the details of these tables would do better to read the tables themselves than to read our discussion of them. Each table consists of four parts. Part A presents results for 19 measures of the presence of certain activities. A positive beta indicates that the presence of an activity, as reported by the principal, is associated with higher achievement. Part B codes these same activities differently; here the code states whether the program was in existence in 1970-71, 1971-72, or both. An activity operating for two years may show results, while the same activity may not show effects during its first year. Part C shows the impact of employing 19 different kinds of school specialists. Here the variable is the number of such specialists for each 1,000 pupils. Part D shows the achievement in schools that received materials or physical plant modifications. As in Part B, the scoring covers two years, with the highest value of the variable being for supplies received in both 1970-71 and 1971-72.

The tables give the following data: the zero-order correlation, the beta, and the difference; the total variance explained by this variable (r^2) and the amount of variance uniquely explained by the variable when it is entered in the regression equations after the controls; next, for all cases where B > .035, the ratio of the unique variance to the total variance; and finally, the unstandardized regression coefficient, expressed first on test score units (where 10 units = 1 additional correct response, so the score range is from 0 to 570) and then in number of achievement months gained. These last two columns are in a sense the most important, since they are the only columns that show the achievement gain one can expect. In Part A, this is the gain attributable to the existence of the program. In Part B, the numbers are usually smaller, but they show the gain in scores for each additional year the activity has been in existence. A school that did not have a specific activity in either year is scored zero; a school with an activity in the first year only is scored one; the second year only, two, and both years, three. Thus, the achievement in schools with two years of an activity is higher than in schools without the activity by an amount equal to three times the amount shown in the last two columns of Part B. Part C gives the gain attributable to one additional specialist for each 1,000 pupils, while Part D shows a per-year gain, as in Part B.

Using the more stringent criteria discussed earlier in this appendix, we find 14 program variables that demonstrate a significant effect on achievement test scores. Let us turn then to an examination of each of the four tables; we will focus on individual programs.

TABLE B.7

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE BLACK STUDENTS

Part A: Principal's Report of Activity Existence

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	.01	.02	.01	.00	.00		2.52	.4
Social worker or home visitor	.05	-.01	-.06	.00	.00		-1.59	-.3
Team teaching	.02	-.02	-.03	.00	.00		-1.87	-.3
Teacher aides	-.06	.04	.10	.00	.00		3.99	-.7
Teacher workshops or in-service training for teachers or teacher aides	.06	.04	-.02	.00	.00		5.69	1.0
Remedial reading program . . .	-.08	.01	.09	.00	.00		0.74	.1
Ungraded classrooms	-.03	-.05	-.02	.00	.00		-6.83	-1.2
Demonstration or experimental classrooms	.06	.04	-.02	.00	.00		5.41	.9
Special classrooms for under-achievers	-.01	.04	.05	.00	.00		4.30	.7
Special classrooms for socially or emotionally maladjusted .	-.01	.02	.03	.00	.00		2.40	.4
Achievement grouping of classrooms	.01	.05	.04	.00	.00		5.11	.9

[a]Yes/No coding of activity existence.

Note: Dashes (--) indicate coefficients too small for computation, beta $\approxeq$ .00; blanks indicate ratio not computable.

Table B.7, Part A--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Achievement grouping within classes	-.03	-.02	.01	.00	.00		-4.10	- .7
Major curriculum revisions . .	-.03	-.05	-.02	.00	.00		-5.51	-1.0
Program for tutoring low achieving students	-.06	-.07	-.01	.00	.00		-7.26	-1.2
Special program to increase parent-teacher contact (e.g., conferences)	-.06	-.08	-.02	.00	.01	1.8	-8.56	-1.5
Program to improve intergroup relations among students	.01	-.02	-.03	.00	.00		-1.57	- .3
Program to improve intergroup relations among teachers . .	--	--	--	--	--	--	--	--
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	.01	.01	-.00	.00	.00		1.86	.3

TABLE B.7

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE BLACK STUDENTS

Part B: Principal's Report of Activity Duration

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	.01	.02	.01	.00	.00		1.03	.2
Social worker or home visitor .	--	--	--	--	--	--	--	--
Team teaching	.01	-.03	-.04	.00	.00		-1.40	-.2
Teacher aides	-.04	.05	-.09	.00	.00		2.29	.4
Teacher workshops or in-service training for teachers or teacher aides	.11	.05	-.06	.01	.00	0.2	2.63	.4
Remedial reading program . . .	-.06	.03	.09	.00	.00		1.27	.2
Ungraded classrooms	-.03	-.06	-.03	.00	.00		-2.77	-.4
Demonstration or experimental classrooms	.05	.02	-.03	.00	.00		1.13	.2
Special classrooms for underachievers	-.02	.02	-.04	.00	.00		0.79	.1
Special classrooms for socially or emotionally maladjusted .	-.01	.00	-.01	.00	.00		0.31	.1
Achievement grouping of classrooms	.06	.06	.00	.00	.00		2.33	.4

[a]Activity coding: 3: two years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicate coefficients too small for computation, beta $\cong$ .00; blanks indicate ratio not computable.

Table B.7, Part B--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Achievement grouping within classes	--	--	--	--	--	--	--	--
Major curriculum revisions . .	-.04	-.07	-.03	.00	.00		-2.79	-.5
Program for tutoring low achieving students	-.05	-.06	-.01	.00	.00		-2.52	-.4
Special program to increase parent-teacher contact (e.g., conferences) .	-.04	-.09	-.05	.00	.01	4.3	-3.30	-.6
Program to improve intergroup relations among students . .	.02	-.01	-.03	.00	.00		-0.26	-.6
Program to improve intergroup relations among teachers . .	.02	.00	-.02	.00	.00			.0
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	.08	.05	-.03	.01	.00	.4	4.21	.7

TABLE B.7

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE BLACK STUDENTS

Part C: Auxiliary Personnel Per Pupil

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Remedial reading teacher . . .	-.15	.01	.16	.00	.00		.24	.0
Remedial math teacher	-.02	.04	.06	.00	.00		1.70	.3
Music or art teacher	--	--	--	--	--	--	--	--
Drama or speech teacher . . .	.01	-.03	-.04	.00	.00		-3.35	-.6
Gym teacher or coach	.03	.06	.02	.00	.00		2.00	.3
Vocational education teacher .	.02	.08	.06	.00	.01	13.8	6.50	1.1
Counselor aides.	-.10	-.05	.05	.01	.00	.3	-10.59	-1.8
Guidance counselor	.01	.04	.03	.00	.00		2.31	.4
Psychologist	-.06	-.09	-.03	.00	.01	2.1	-8.06	-1.4
Social worker	-.02	-.06	-.04	.00	.00		-4.51	-.8
Speech therapist	.05	.01	-.04	.00	.00		.69	.1
Teacher aides	--	--	--	--	--	--	--	--
Library aide or clerk	.04	.03	-.01	.00	.00		1.80	.3
Librarian	--	--	--	--	--	--	--	--
Nurse	.08	.13	.04	.01	.02	2.4	5.55	1.0
Audio-visual specialist	-.00	-.02	-.02	.00	.00		-4.06	-.7
Truant officer/home visitor .	--	--	--	--	--	--	--	--
Community relations specialist	-.00	-.03	-.03	.00	.00		-1.50	-.3
Administrator (not listed above)	-.06	-.01	.05	.00	.00		-.30	-.1

[a]Number of school specialists per pupil.

Note: Dashes (--) indicate coefficients too small for computation, beta $\cong$ .00; blanks indicate ratio not computable.

TABLE B.7

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE BLACK STUDENTS

Part D: Funds Received for Materials and Plant

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
School furnishings	-.03	-.01	.02	.00	.00		-.28	-.0
Renovations	--	--	--	--	--	--	--	--
Additional space	--	--	--	--	--	--	--	--
Extra text books	.04	.08	.04	.00	.01	4.7	3.66	.6
Extra testing materials . . .	-.01	.08	.09	.00	.01	61.5	3.40	.6
Human or community relations literature	.10	.05	-.05	.01	.00	.2	2.04	.4

[a]Receipt of materials and supplies coding: 3: both years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicate coefficients too small for computation, beta $\cong$ .00; blanks indicate ratio not computable.

TABLE B.8

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE WHITE STUDENTS

Part A: Principal's Report of Activity Existence

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	-.01	.06	.07	.00	.00		9.28	1.6
Social worker or home visitor . .	-.02	-.02	-.00	.00	.00		-2.95	- .5
Team teaching	.16	.04	.02	.03	.00	.1	4.87	.8
Teacher aides	--	--	--	--	--	--	--	--
Teacher workshops or in-service training for teachers or teacher aides	.05	.02	-.03	.00	.00		3.91	.7
Remedial reading program	--	--	--	--	--	--	--	--
Ungraded classrooms	-.00	-.04	-.04	.00	.00		-6.85	-1.2
Demonstration or experimental classrooms	.06	-.01	-.07	.00	.00		-1.85	- .3
Special classrooms for underachievers	-.10	-.05	.06	.01	.00	.2	-6.66	-1.1
Special classrooms for socially or emotionally maladjusted . .	-.01	.02	.02	.00	.00		3.23	.6
Achievement grouping of classrooms	-.06	.02	.08	.00	.00		1.96	.4

[a]Yes/No coding of activity existence.

Note: Dashes (--) indicate coefficients too small for computation, beta $\cong .00$; blanks indicate ratio not computable.

Table B.8, Part A--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Achievement grouping within classes	.05	-.04	-.08	.00	.00		-7.36	-1.3
Major curriculum revisions . . .	-.01	-.06	-.06	.00	.00		-8.55	-1.5
Program for tutoring low achieving students	.12	.02	-.10	.01	.00	.0	2.61	.4
Special program to increase parent-teacher contact (e.g., conferences)	.06	-.04	-.10	.00	.00		-5.67	-1.0
Program to improve inter-group relations among students	.04	-.03	-.06	.00	.00		-3.42	- .6
Program to improve inter-group relations among teachers	-.02	-.06	-.04	.00	.00		-8.24	-1.4
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc..	.14	-.13	-.26	.02	.01	.6	- .25	.0

TABLE B.8

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE WHITE STUDENTS

Part B: Principal's Report of Activity Duration

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	-.03	.05	.08	.00	.00		2.70	.5
Social worker or home visitor . .	-.01	-.02	-.01	.00	.00		- .95	-.2
Team teaching	.17	.04	-.13	.03	.00	.1	1.85	.3
Teacher aides	--	--	--	--	--	--	--	--
Teacher workshops or in-service training for teachers or teacher aides	--	--	--	--	--	--	--	--
Remedial reading program	-.09	-.01	.08	.01	.00	.0	- .41	-.1
Ungraded classrooms	-.00	-.04	-.04	.00	.00		-2.46	-.4
Demonstration or experimental classrooms	.07	-.01	-.08	.01	.00	.0	- .40	-.1
Special classrooms for under-achievers	-.10	-.05	.05	.01	.00	.2	-2.34	-.4
Special classrooms for socially or emotionally maladjusted . .	-.01	.03	.04	.00	.00		1.63	.3
Achievement grouping of classrooms	-.05	.03	.08	.00	.00		1.32	.2

[a] Activity coding: 3: two years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicate coefficients too small for computation, beta ≅ .00; blanks indicate ratio not computable.

Table B.8, Part B--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Achievement grouping within classes	.07	-.02	-.09	.01	.00	.1	-1.02	-.3
Major curriculum revisions . . .	-.00	-.07	-.07	.00	.00		-3.19	-.6
Program for tutoring low achieving students	.14	.04	-.10	.02	.00	.1	1.93	.3
Special program to increase parent-teacher contact (e.g., conferences)	.04	-.07	-.11	.00	.00		-3.36	.6
Program to improve inter-group relations among students	.03	-.02	-.05	.00	.00		- .97	-.2
Program to improve inter-group relations among teachers	-.03	-.07	-.04	.00	.00		-3.00	-.5
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	.06	.01	-.05	.00	.00		.55	.1

TABLE B.8

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE WHITE STUDENTS

Part C: Auxiliary Personnel Per Pupil

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Remedial reading teacher.	-.23	-.02	.21	.05	.00	.0	- .69	-.1
Remedial math teacher	-.08	.06	.14	.01	.00	.6	3.38	.6
Music or art teacher	.05	.01	-.04	.00	.00		.28	.0
Drama or speech teacher	-.15	-.13	.02	.02	.01	.3	-3.49	-.6
Gym teacher or coach	.01	.02	.01	.00	.00		.57	.1
Vocational education teacher . .	.01	.04	.04	.00	.00		5.21	.9
Counselor aides	-.08	.05	.13	.01	.00	.3	11.41	2.0
Guidance counselor	.02	.06	.06	.00	.00		4.10	.7
Psychologist.	-.02	-.01	.01	.00	.00		- .58	-.1
Social worker	-.02	-.01	.01	.00	.00		- .64	-.1
Speech therapist	.04	-.03	-.07	.00	.00		-2.50	-.4
Teacher aides	-.08	.06	.14	.01	.00	.5	.54	.1
Library aide or clerk	-.03	.01	.04	.00	.00		.68	.1
Librarian	.09	.03	-.06	.01	.00	.1	1.65	.3
Nurse	-.07	-.02	.07	.01	.00	.1	- .84	-.1
Audio-visual specialist	-.03	-.02	.02	.00	.00		-3.18	-.5
Truant officer/home visitor . . .	-.09	-.05	.04	.01	.00	.3	-1.75	-.3
Community relations specialist .	-.01	.02	.03	.00	.00		.81	.1
Administrator (not listed above).	.02	.01	-.01	.00	.00		.17	.0

[a]Number of school specialists per pupil.

Note: Dashes (--) indicate coefficients too small for computation, beta ≈ .00; blanks indicate ratio not computable.

TABLE B.8

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, FIFTH GRADE WHITE STUDENTS

Part D: Funds Received for Materials and Plant

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
School furnishings	-.08	-.06	.02	.01	.00	.5	-2.88	-.5
Renovations	-.05	-.06	-.01	.00	.00		-3.24	-.6
Additional space	-.09	-.08	.01	.01	.01	.9	-5.88	-1.0
Extra text books	-.04	-.01	.03	.00	.00		- .72	- .1
Extra testing materials	.00	.07	.07	.00	.01	∞	3.77	.6
Human or community relations literature	.11	.02	-.09	.01	.00	.0	.74	.1

[a]Receipt of materials and supplies coding: 3: both years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicate coefficients too small for computation, beta ≈ .00; blanks indicate ratio not computable.

TABLE B.9

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE BLACK STUDENTS

Part A: Principal's Report of Activity Existence

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	-.01	-.04	-.03	.00	.00		- 5.89	-1.0
Social worker or home visitor program	.09	.11	.02	.01	.01	1.4	10.29	1.8
Teacher aides	--	--	--	--	--	--	--	--
Teacher workshops or in-service training for teachers or teacher aides	.04	.02	-.02	.00	.00		2.37	.4
Remedial reading program	--	--	--	--	--	--	--	--
Vocational training courses . . .	-.19	.06	.12	.03	.00	.1	6.20	1.1
Minority group history or culture courses	.13	.05	-.07	.02	.00	.2	5.17	.9
Special classrooms for under-achievers	.02	.03	.00	.00	.00		2.54	.4
Special classrooms for socially or emotionally maladjusted . .	-.14	-.10	.04	.02	.01	.5	-11.50	-2.0
Achievement grouping of classrooms	.07	-.02	-.10	.01	.00	.0	- 2.40	- .4
Major curriculum revisions . . .	.04	-.01	-.06	.00	.00		- 1.25	- .2

[a]Yes/No coding of activity existence.

Note: Dashes (--) indicate coefficients too small for computation, beta $\approxeq$ .00; blanks indicate ratio not computable.

Table B.9, Part A--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Extracurricular activities geared toward minority students	--	--	--	--	--	--	--	--
Late bus for students who stay late for extracurricular activities	--	--	--	--	--	--	--	--
Program for tutoring low achieving students	.08	-.03	-.11	.01	.00	.1	-2.70	-.5
Special program to increase parent-teacher contact (e.g., conferences)	.12	.05	-.07	.01	.00	.2	4.24	.7
Program to improve intergroup relations among students . . .	.08	-.01	-.09	.01	.00	.0	-1.18	-.2
Program to improve intergroup relations among teachers . . .	.12	.07	-.05	.01	.00	.3	6.43	1.1
Biracial advisory committee of students	--	--	--	--	--	--	--	--
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc..	.10	.05	-.05	.01	.00	.2	6.65	1.1

TABLE B.9

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE BLACK STUDENTS

Part 3: Principal's Report of Activity Duration

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	.00	-.06	-.06	.00	.00		-2.93	-.5
Social worker or home visitor program	.10	.11	.01	.01	.01	1.1	3.57	.6
Teacher aides	.02	.01	-.01	.00	.00		.48	.1
Teacher workshops or in-service training for teachers or teacher aides	.03	-.01	-.04	.00	.00		- .33	-.1
Remedial reading program	.02	.02	.00	.00	.00		.54	.1
Vocational training courses . . .	-.01	-.05	-.04	.00	.00		-2.12	-.4
Minority group history or culture courses	--	--	--	--	--	--	--	--
Special classrooms for under-achievers	--	--	--	--	--	--	--	--
Special classrooms for socially or emotionally maladjusted . .	-.12	-.08	.04	.01	.01	.5	-3.66	-.6
Achievement grouping of classrooms.	.10	-.02	-.12	.01	.00	.0	- .82	-.2
Major curriculum revisions . . .	.07	-.02	-.09	.01	.00	.1	- .71	-.1

[a]Activity coding: 3: two years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicate coefficients too small for computation, beta $\cong$.00; blanks indicate ratio not computable.

Table B.9, Part B--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Extracurricular activities geared toward minority students	-.01	-.01	.00	.00	.00		- .29	-.1
Late bus for students who stay late for extracurricular activities	--	--	--	--	--	--	--	--
Program for tutoring low achieving students	.09	-.03	-.12	.01	-.00	.1	- .91	.2
Special program to increase parent-teacher contact (e.g., conferences)	-.11	.05	.16	.01	.00	.2	1.63	-.3
Program to improve intergroup relations among students . . .	--	--	--	--	--	--	--	--
Program to improve intergroup relations among teachers . . .	.13	.08	-.05	.02	.01	.3	2.53	.4
Biracial advisory committee of students	-.08	-.01	.07	.01	.00	.0	- .29	.1
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc..	-.12	.04	.16	.01	.00	.1	2.16	.4

TABLE B.9

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE BLACK STUDENTS

Part C: Auxiliary Personnel Per Pupil

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Remedial reading teacher	-.06	.11	.16	.00	.01	2.8	3.86	.7
Remedial math teacher	.03	.10	.07	.00	.01	9.3	5.35	.9
Music of art teacher	-.01	-.02	-.01	.00	.00		- .64	-.1
Drama or speech teacher	.10	.04	-.07	.01	.00	.2	3.25	.6
Gym teacher or coach	.02	.10	.08	.00	.01	20.0	2.16	.4
Vocational education teacher . .	-.10	-.03	.07	.01	.00	.1	- .31	-.1
Counselor aides	.04	-.06	-.10	.00	.00		-3.86	-.7
Guidance counselor	.07	-.04	-.11	.00	.00		-1.80	-.3
Psychologist	-.01	-.02	-.02	.00	.00		-3.67	-.6
Social worker	-.07	-.04	.03	.01	.00	.3	-4.36	-.8
Speech therapist	-.09	-.01	.08	.01	.00	.0	-1.50	-.3
Teacher aides	-.13	-.03	.10	.02	.00	.1	- .36	-.1
Library aid or clerk	-.06	-.11	-.05	.00	.01	3.4	-6.45	-1.1
Librarian	--	--	--	--	--	--	--	--
Nurse	.01	.01	-.00	.00	.00		.25	.0
Audio-visual specialist	.03	.08	.05	.00	.01	7.6	13.04	2.2
Truant officer/home visitor . . .	--	--	--	--	--	--	--	--
Community relations specialist .	-.10	-.03	.07	.01	.00	.1	-1.18	-.2
Administrator (not listed above)	-.08	.01	.09	.01	.00	.0	.33	.1

[a]Number of school specialists per pupil.

Note: Dashes (--) indicate coefficients too small for computation, beta ≅ .00; blanks indicate ratio not computable.

TABLE B.9

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE BLACK STUDENTS

Part D: Funds Received for Materials and Plant

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
School furnishings	.06	.04	-.02	.00	.00		1.45	.2
Renovations	.13	.05	-.08	.02	.00	.1	1.63	.3
Additional space	.14	.09	-.05	.02	.01	.4	4.58	.8
Extra text books	-.00	-.05	-.05	.00	.00		-1.66	-.3
Extra testing materials	--	--	--	--	--	--	--	--
Human or community relations literature	--	--	--	--	--	--	--	--

[a]Receipt of materials and supplies coding: 3: both years; 2: this year only; 1: last year only; 0: neither year.

<u>Note</u>: Dashes (--) indicate coefficients too small for computation, beta ≅ .00; blanks indicate ratio not computable.

TABLE B.10

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE WHITE STUDENTS

Part A: Principal's Report of Activity Existence

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	.05	.03	-.03	.00	.00		5.01	.9
Social worker or home visitor program	.04	.01	-.03	.00	.00		1.55	.3
Teacher aides	-.01	.04	.06	.00	.00		5.07	.9
Teacher workshops or in-service training for teachers or teacher aides	.00	.06	.05	.00	.00		8.74	1.5
Remedial reading program	-.06	-.02	.04	.00	.00		-2.24	- .4
Vocational training courses . . .	--	--	--	--	--	--	--	--
Minority group history or culture courses	--	--	--	--	--	--	--	--
Special classrooms for under-achievers	--	--	--	--	--	--	--	--
Special classrooms for socially or emotionally maladjusted	-.10	-.03	-.07	.01	.00	.1	-4.76	- .8
Achievement grouping of classrooms	.08	.01	-.07	.01	.00	.0	1.53	.3
Major curriculum revisions . . .	.12	.05	-.07	.01	.00	.2	6.80	1.2

[a]Yes/No coding of activity existence.

Note: Dashes (--) indicate coefficients too small for computation, beta ≅ .00; blanks indicate ratio not computable.

TABLE B.10, Part A--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Extracurricular activities geared toward minority students	.11	.05	-.054	.01	.00	.2	7.11	1.2
Late bus for students who stay late for extracurricular activities	-.00	-.04	-.035	.00	.00		-6.68	-1.2
Program for tutoring low achieving students	.13	.01	-.125	.02	.00	.0	1.20	.2
Special program to increase parent-teacher contact, (e.g., conferences)	.07	.04	-.034	.01	.00	.3	4.65	.8
Program to improve intergroup relations among students . . .	.06	-.04	-.096	.00	.00		-5.25	-.9
Program to improve intergroup relations among teachers . . .	.14	.08	-.067	.02	.01	.3	9.10	1.6
Biracial advisory committee of students	--	--	--	--	--	--	--	--
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	.02	.04	.015	.00	.00		7.37	1.3

TABLE B.10

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE WHITE STUDENTS

Part B: Principal's Report of Activity Duration

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Guidance counselors	.09	.08	-.01	.01	.00	.1	1.64	.3
Social worker or home visitor program	.06	.02	-.04	.00	.00		.69	.1
Teacher aides	.01	.07	.06	.00	.01	45.1	3.04	.5
Teacher workshops or in-service training for teachers or teacher aides	.02	.06	.04	.00	.00		3.17	.6
Remedial reading program . . .	-.07	-.05	.02	.01	.00	.4	-2.04	-.4
Vocational training courses . .	-.10	-.08	.02	.01	.01	.6	-5.10	-.9
Minority group history or culture courses	--	--	--	--	--	--	--	--
Special classrooms for under-achievers	-.05	-.02	.03	.00	.00		- .98	-.2
Special classrooms for socially or emotionally maladjusted .	-.08	-.02	.06	.01	.00	.1	-1.10	-.2
Achievement grouping of classrooms	.09	.01	-.08	.01	.00	.0	.42	.1
Major curriculum revisions . .	.13	.04	-.09	.02	.00	.1	1.94	.3

[a] Activity coding: 3: two years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicates coefficients too small for computation, beta ≅ .00; blanks indicate ratio not computable.

Table B.10, Part B--Continued

Activity	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
Extracurricular activities geared toward minority students	.11	.05	-.06	.01	.00	.2	2.32	.4
Late bus for students who stay late for extracurricular activities	-.02	-.03	-.01	.00	.00		-2.31	-.4
Program for tutoring low achieving students	.15	.02	-.13	.02	.00	.0	.80	.2
Special program to increase parent-teacher contact (e.g., conferences).	.08	.04	-.04	.01	.00	.2	1.64	.3
Program to improve intergroup relations among students . .	.03	-.05	.02	.00	.00		-2.31	-.4
Program to improve intergroup relations among teachers . . .	.14	.05	-.09	.02	.00	.1	2.21	.4
Biracial advisory committee of students	.02	.03	.01	.00	.00		1.62	.3
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	.04	.03	-.01	.00	.00		2.08	.4

TABLE B.10

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE WHITE STUDENTS

Part C: Auxiliary Personnel Per Pupil

Activity[a]	Simple Corre-lation Coeffi-cient r	Stan-dardized Regres-sion Coeffi-cient beta	Beta-r	Total Variance Ex-plained: Simple r^2	Unique Variance Ex-plained: After Controls	Ratio: Unique Variance / Total Variance	Unstan-dardized Regres-sion Coeffi-cient B	Number of Achieve-ment Months Gained (B)/5.8
Remedial reading teacher	-.22	-.03	.19	.05	.00	.0	1.24	-.2
Remedial math teacher	-.05	.04	.10	.00	.00		2.69	.5
Music or art teacher	.15	.04	-.12	.02	.00	.1	1.62	.3
Drama or speech teacher	.12	.02	.10	.01	.00	.0	1.89	.3
Gym teacher or coach	.06	.06	.00	.00	.00		1.56	.3
Vocational education teacher	-.20	.04	.23	.04	.00	.0	-.45	-.1
Counselor aides	.13	.07	.04	.02	.01	.3	6.04	1.0
Guidance counselor	.12	.03	.09	.02	.00	.1	1.63	.3
Psychologist	--	--	--	--	--	--	--	--
Social worker	-.02	.02	.04	.00	.00		3.17	.5
Speech therapist	-.05	-.00	.04	.00	.00		-1.32	-.2
Teacher aides	-.09	.06	.15	.01	.00	.4	.98	.2
Library aide or clerk	-.01	-.05	-.04	.00	.00		-4.35	-.8
Librarian	-.10	.03	.13	.01	.00	.1	1.75	.3
Nurse	--	--	--	--	--	--	--	--
Audio-visual specialist	.17	.12	-.04	.03	.02	.5	25.19	4.3
Truant officer/home visitor	-.01	-.01	-.00	.00	.00		-1.40	-.2
Community relations specialist	--	--	--	--	--	--	--	--
Administrator (not listed above)	.04	.05	.01	.00	.00		2.41	.4

[a]Number of school specialists per pupil.

Note: Dashes (--) indicate coefficients too small for computation, beta $\approx$ .00; blanks indicate ratio not computable.

TABLE B.10

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, TENTH GRADE WHITE STUDENTS

Part D: Funds Received for Materials and Plant

Activity[a]	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance	Unstandardized Regression Coefficient B	Number of Achievement Months Gained (B)/5.8
School furnishings	0.03	0.05		0.00	0.00		2.44	.4
Renovations	0.14	0.07		0.02	0.01	.3	3.49	.6
Additional space	0.09	0.07		0.01	0.01	.7	3.75	.6
Extra text books	--	--	--	--	--	--	--	--
Extra testing materials . . .	-0.00	0.02		0.00	0.00		0.97	.2
Human or community relations literature	0.03	-0.03		0.00	0.00		-1.38	-.2

[a]Receipt of materials and supplies coding: 3: both years; 2: this year only; 1: last year only; 0: neither year.

Note: Dashes (--) indicate coefficients too small for computation, beta ≅ .00; blanks indicate ratio not computable.

Table B.7 shows the results for black students in the fifth grade. In this table there are four variables that exceed the criteria. They are the number of vocational education teachers and the number of nurses per 1,000 pupils, and the purchase of textbooks, and of testing materials in the past two years. These results are interesting, although not necessarily what one would expect from a reading of educational theory. In Parts A and B, none of the effects meet our criteria. The largest result in Part B is an unstandardized regression coefficient of 4.21, indicating a gain of .7 months in achievement, associated with the use of audio-visual equipment. There is no corresponding effect in Part A for this variable, probably because of the badly skewed marginals: 95 per cent of the schools claim to have such equipment. In an earlier analysis, a rough coding of the size of the program, taken from the principal's questionnaire, was used, and schools that had a "satisfactory" quantity of instructional equipment showed achievement gains of 7 points (1.2 months) over those with a less than satisfactory amount. This coding scheme was not used because this is the only one of the 70 cases where the coding made a difference, and we felt that more objective coding was generally preferable to subjective coding by size. We do, however, think that this one result is important.

A sixth result, in Part C of Table B.7, is worth citing. While the number of remedial reading teachers per 1,000 students shows a very small positive association (.01) with achievement, this is in contrast to a large negative zero-order association (-.15). Thus, the positive gain of beta over r is +.16, by far the largest in Table B.7. Given our suspicion that our control equation for fifth grade blacks is poor, this is an intriguing result, suggesting that remedial reading teachers may be making a difference.

When we turn to white students in the fifth grade we find only one variable that shows an effect on achievement--whether or not the school received money for testing materials. In this case, the achievement test score is improved by 3.77 points for each year the school received the materials. Four variables have B = .06, just below our criterion: number of remedial math teachers (which, like fifth grade black effects of remedial reading, shows a very large beta - r), guidance counselors in Table B.8, Part C, and a counseling program in Part A, and number of teacher's aides.

It is interesting to note that providing testing materials has a positive impact on both black and white students at the fifth grade level and also that some form of individual career-oriented instruction (vocational counselors for black students and guidance counselors for white students) has an effect. We shall return to this point after we have reviewed Tables B.9 and B.10.

When we turn to the effects of programs on achievement at the tenth grade level (Tables B.9 and B.10), we find a great many more program variables showing a significant impact on achievement. For black students in the tenth grade there are eight variables that show a significant impact on achievement, while for white students there are five. Three variables show a positive effect on both black and white students and one of these is the strongest predictor of achievement for both.

For black students in the tenth grade, Table B.9 shows several program variables to have a significant impact on achievement. Number of audio-visual specialists shows a strong effect on achievement scores for black students in the tenth grade. Part C of Table B.9 shows that having an audio-visual specialist raises achievement test scores 13.04 points, over two months in grade equivalence. This is the strongest effect we have observed so far and, in fact, is the strongest effect in all four tables except for that of this same variable on test scores of white students in the tenth grade. Another strong effect among black students in the tenth grade is the construction of additional space. This adds 7.50 points to achievement test scores if it occurred in 1972, and 11.25 if space was provided in both years. Each remedial reading teacher per 1,000 students adds 5.89 points to achievement scores. The number of gym teachers or coaches who are working in the school also has a significant impact on achievement. Intuitively, this variable's effect on achievement seems something of an anomaly. However, we also observed in our analysis that having winning athletic teams was a predictor of achievement at the tenth grade level, and in Appendix C we will see that number of gym teachers is related to racial attitudes. We have speculated that such characteristics of the athletic program are either causes of higher levels of morale or surrogate measures for higher levels of morale, and that the real predictor of achievement is level of morale. Unfortunately, we do not have the data to pursue this speculation precisely, or even to confirm or disprove it.

Two variables that predict achievement test scores of blacks in the tenth grade measured by the duration of the activity are the social worker and home visitor program, and intergroup relations programs for teachers. It is only at the tenth grade levels that the measures of duration show any effect. For whites at the tenth grade level, the duration of guidance counseling and intergroup relations programs for teachers has an effect. It is quite possible that the speculation concerning whether or not programs have been operating long enough to really have an effect applies not only to programs started during the given academic year, but also to programs only two academic years old. Two years is a short time in which to change the academic style of a school; two years out of the thirteen a student spends in elementary and high school is not a very major contribution to such a student's education, especially when it is two years of only supplementary efforts. It is encouraging that even the limited effects we see here indicate that when programs are continued over a longer period of time than a single academic year they show some results.

Turning to whites in the tenth grade (Table B.10), we find that the variable audio-visual specialists is the best predictor of achievement, raising achievement scores of whites by 25.19 points, or 4.38 months. Number of counselor's aides also increases the achievement of white students in the tenth grade. In this case the increase is 6.04 points, or 1.56 months.

Two characteristics of material resources show an effect on the achievement scores of whites in the tenth grade: having funds for renovations and having funds for additional space. Both show effects of approximately the same magnitude--a little over one-half month increase in achievement test scores for having the resource in the first year, or a little over a month if in 1971-72. Finally, as was noted above, having guidance counseling and intergroup relations activities for teachers for more than one year has a marginal impact on achievement.

As was the case with white students in the fifth grade, it is not possible to simply and precisely summarize the effects of this variety of activities on achievement. However, we do again have the same general pattern, with physical resources and audio-visual equipment being the best predictors of change, along with non-instructional guidance and counseling.

The consistency of the results is reflected in the summary in Table B.11. This table shows the results that meet our criterion, plus a few others that fall only slightly below. When we examine the 19 activities, we find that 12 of them appear more than once, and two appear three times. Of the 10 that appear twice, four show up for both races in one grade, four for both grades of one race, and only two show a match across opposite grade and race, the least desirable kind of consistency. The consistency of the results encouraged us to embark on the analysis of specific activities in Chapter 3.

Grouping of Activities into General "Strategies"

In another effort to ascertain whether or not these activities had an impact on achievement we analyzed the degree to which there were distinct strategies combining a few or several activities and assessed whether or not programs in combination had an impact on achievement. To do this, we conducted a two-stage factor analysis of the variables at both the fifth and tenth grade levels. The first stage of the factor analysis included all of the activity variables that were used in Tables B.7 through B.10. At the second stage, only those variables that had a strong positive loading on one of the four factors were included. This second stage provides us with somewhat "purer" factors, thus more accurately reflecting distinct strategies, if such exist. It eliminates random "noise."

TABLE B.11

POINTS OF CONSISTENCY IN EFFECTIVE ACTIVITIES IN TABLES B.7 THROUGH B.10

Student Group	Activity
Both tenth grades, one fifth grade	Gym teachers[a]
Both tenth grades	Audio-visual, space, teacher relations
Both fifth grades	Testing
Both fifth grades, one tenth grade	Teacher's aides[a]
Both black groups	Vocational education,[b] remedial reading[b]
Both white groups	Guidance counseling, counseling aides[b]
Two groups, opposite grade and race	Remedial math,[b] teacher in-service education[a]
One group only	Social workers, renovations, human relations literature,[b] nurses, textbooks, achievement grouping,[b] instructional equipment[b]

[a]Activity below criterion for two groups.

[b]Activity below criterion for one group.

The results of the factor analysis are not totally reflective of clear and distinct strategies, but they do make some sense as different orientations. The factor analysis is given in Appendix F

At the fifth grade level, the four factors can be described as follows:

1. Programs and personnel aimed at non-instructional auxiliary services
2. Programs related to intergroup relations and curricular reorganization
3. Basic instructional services
4. Social work and guidance.

For the tenth grade, the four factors are somewhat different:

1. Programs involving intergroup relations and teacher training, teacher's aides
2. Basic instructional services
3. Intergroup relations programs and hardware
4. Guidance and counseling.

The next question is, of course, whether or not these different strategies or orientations toward compensatory education actually produce different achievement results. The answer, as shown in Tables B.12 through B.15, is basically no.

For black students in the fifth grade, Table B.12 shows that none of the variables constructed from these factor scores even comes close to meeting the criteria that we set down at the beginning of this section. The highest standardized regression coefficient is .04 for basic instructional services. For white students in the fifth grade (Table B.13), the same is true. None approach showing a significant effect, although again, basic instructional services comes closest.

Turning to the tenth grade, we again find that no variable approaches significance for either black students or white students. For black students (Table B.14), basic instructional services again shows

TABLE B.12

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, USING A FACTOR-ANALYTIC GROUPING OF ACTIVITIES INTO STRATEGIES

Fifth Grade Black Students

Factor	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance
Group 1: Auxiliary Personnel, Non-Instructional	.02	.02	.00	.00	.00	
Group 2: Intergroup Relations and Curricular Reorganization	.02	.02	-.01	.00	.00	
Group 3: Basic Instructional Services	.02	.04	.02	.00	.00	
Group 4: Social Work and Guidance	.02	.02	.01	.00	.00	

Note: Blanks indicate ratio not computable.

TABLE B.13

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT,
USING A FACTOR-ANALYTIC GROUPING OF
ACTIVITIES INTO STRATEGIES

Fifth Grade White Students

Factor	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance
Group 1: Auxiliary Personnel, Non-Instructional	.05	.02	-.03	.00	.00	
Group 2: Intergroup Relations and Curricular Reorganization	.06	-.05		.00	.00	
Group 3: Basic Instructional Services	-.15	.03	.18	.02	.00	
Group 4: Social Work and Guidance	-.01	-.03	-.01	.00	.00	

Note: Blanks indicate ratio not computable.

TABLE B.14

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT,
USING A FACTOR-ANALYTIC GROUPING OF
ACTIVITIES INTO STRATEGIES

Tenth Grade Black Students

Factor	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance
Group 1: Intergroup Relations, Teacher Training, Teacher's Aides	.09	.02	-.06	.01	.00	
Group 2: Basic Instructional Services	-.11	.04	.15	.01	.00	
Group 3: Intergroup Relations, Materials and Physical Plant	.10	.04	-.06	.01	.00	
Group 4: Guidance and Counseling	-.02	-.04	-.02	.00	.00	

Note: Blanks indicate ratio not computable.

TABLE B.15

EFFECT OF SCHOOL ACTIVITIES ON ACHIEVEMENT, USING A FACTOR-ANALYTIC GROUPING OF ACTIVITIES INTO STRATEGIES

Tenth Grade White Students

Factor	Simple Correlation Coefficient r	Standardized Regression Coefficient beta	Beta-r	Total Variance Explained: Simple r^2	Unique Variance Explained: After Controls	Ratio: Unique Variance / Total Variance
Group 1: Intergroup Relations, Teacher's Aides	.07	.05	-.02	.005	.00	.5
Group 2: Basic Instructional Services	-.17	.02	.19	.029	.00	
Group 3: Intergroup Relations, Hardware	.11	.04	-.07	.012	.00	.2
Group 4: Guidance and Social Work	.10	.03	-.07	.009	.00	

<u>Note:</u> Blanks indicate ratio not computable.

the strongest suggestion of an effect. However, for white students in the tenth grade (Table B.15), the consistency of this suggestion is broken--basic instructional services shows the weakest effect of all four strategies. Two factors--"intergroup relations with aides" and "intergroup relations with hardware"--show weak effects for white students in the tenth grade, with larger betas than any of the other three tables.

These tables do offer some suggestion that a more detailed and refined effort at analysis of differing educational strategies--including characteristics of the schools and types of activities--could be a fruitful path for further analysis of these data. The failure of the factor analysis, coupled with some of the consistencies we saw in Tables B.7 through B.10, suggests that there may indeed be strategies that "work" in raising achievement, but these strategies are probably not the strategies that various school administrators are now advocating.

In Pursuit of Spurious and Intervening Variables and Interaction Effects

At this point in the analysis, we attempted to find an explanation for the effect of programs on achievement. Several of these efforts proved to be fruitless. It is not very useful to review these blind alleys in detail, but certainly we should outline them in order to clarify how we did arrive at some explanations as to why these programs, or some of these programs, affected achievement. We pursued the notion that the duration of a program was very important; that very few programs could be expected to have an effect in a single year, but might over the duration of two years. Thus, we combined the principal's report on the adequacy of the program with the variable measuring the duration of the program. This was an additional effort to see if there was interaction effect that disguised actual impacts of programs, e.g., two year programs reported to be funded at an inadequate level, while adequately funded programs had only been in existence for one year. It turned out that no such interaction existed and the interaction of duration and adequacy had little impact on our interpretation. This does not lead us to conclude that the short duration of activities is not a problem, but that two years is still not a long enough duration.

The additional analysis that we carried out was geared to trying to understand why activities for which we have observed a significant impact did have such an impact. (We abandoned any effort to see if other characteristics of the schools were masking the impact of the programs that did not show a significant impact at the zero-order level or with background controlled. It is possible that some programs had effects that we did not discover, but we concentrated instead on the possibility that some of the effects we did discover were false.) One line of speculation led us to question whether or not there was a specific or even unique combination of programs that had an impact, or indeed, where the impact of some of these programs was because of their correlation with other programs. We pursued this by combining the programs that we found to have a significant impact into a single regression equation with the background factors entered first, then into a variety of combinations of programs. The results showed no important departure from the results shown in Tables B.7 through B.10.

Another line of analysis that we pursued into a blind alley was whether or not these programs were surrogates for the overall level of effort in compensatory programs. We had some measures of such effort, in terms of the number of full-time specialists and part-time specialists in the school for both the 1970-71 and 1971-72 academic years. Other variables were created by combining these into an overall index, and by combining other reports on the adequacy and the duration of programs into overall indices of the scale of effort. We then examined the correlation of these measures with programs that were found to be effective and entered the correlations into regressions with these specific programs. While there was some correlation between the programs found to be effective and the overall level of effort, the impact of the overall level of effort on the effects of these specific programs, when examined in a regression, was again not large and not a significant departure from the results of Tables B.7 through B.10.

The final line of analysis that was pursued concerned the question of whether or not these programs were actually surrogate measures for school characteristics that might have an impact on achievement which was disguised by the correlation of school characteristics with program characteristics. This line of analysis was pursued thoroughly and comprehensively and did show some important departures and some suggestions as to why these programs had an effect, but these results that reveal an impact and offer suggestions for interpretation are a miniscule part of that analysis.

The analysis was conducted by first taking each of the program variables that showed a significant impact on achievement and correlating each of these with all of the characteristics of schools that we had measured. Second, when characteristics of the schools showed a significant association with the program variables, we reran the regression equations entering student background characteristics first, the characteristics of the school second, and third, the compensatory program variable. Thus, we were able to determine whether the school variable in the regression altered the impact of the compensatory program on achievement. Finally, when there was an effect of the school variable on the impact of programs, we divided the sample into the schools above the median and those below it, on the school characteristics, in order to see in what way the interaction effect was taking place.

The results of the first step in this process showed that a small proportion of school characteristics were correlated with types of school activities. More importantly, it showed that the school variables that were correlated with having effective activities were characteristics describing race relations within the school. Particularly involved here were characteristics describing race relations among the staff of the school--both relations between teachers and principals and relations among teachers. These are variables describing whether or not teachers have friends of different race, the quality of intergroup relations, whether there are interracial textbooks available, whether or not there are interracial projects available, and a variety of other variables. Two related variables that turn out to be important at the fifth grade level are whether or not teachers find grouping of students by achievement level a helpful procedure and whether or not teachers use classroom discussion in teaching.

There is clearly a suggestion at this point in the analysis that the combination of impersonal teaching resources and individual personal counseling as effective programs is related both to the interracial atmosphere of the school and to permitting teachers to escape from the lecture and chalk-board style of teaching. However, an analysis of that would go beyond the immediate purpose of this analysis, and will not be pursued.

APPENDIX C

MULTIPLE REGRESSION ANALYSIS OF ATTITUDES TOWARD INTEGRATION

Selection of Control Equations

As a first step, the control variables for the analysis were located as follows:

1. All the variables in the study were correlated with attitude toward integration for each of the grade/race/location subgroups.

2. Those variables with significant correlations ($p<05$) were run in regression equations. The variables were divided into three groups:

   (a) Those logically prior to school programs (such as community or student characteristics)

   (b) Those not logically prior to school programs, but logically prior to student racial attitudes (such as principal attitudes)

   (c) Those not prior to student attitudes (such as teacher reports of student behavior). These were discarded.

3. All variables in group (a) were combined in multiple regression equations; and those that contributed less than 0.5 per cent additional variance were dropped. The remainder became the control variables for the analysis of program impact. Then variables in group (b) were added, again discarding those which added less than 0.5 per cent to the variance explained.

Thus, two equations were generated for each student subgroup. These equations are given in Tables C.1 through C.8, which show first, the correlations; second, the betas when only group (a) variables (i.e., the control variables) were included; third, betas when both (a) and (b) variables were entered; and last, the variance added when the variable was entered in the order given in the table.

Analysis of School Programs

The relationships of attitudes toward integration with 43 school program variables were analyzed by introducing each program variable into the control variable equation. The per cent of variance explained was computed by entering the program variable after all the control variables were in the equation. The results are given in Tables C.9 through C.16. These tables show:

Column 1: The zero-order correlation of the program variable with the integration attitude scale

Column 2: The standardized regression coefficient when this program variable is combined with the control variable in a regression equation

Column 3: The difference between Columns 1 and 2, indicating the extent to which the control variables have changed the apparent impact of the program variable

Column 4: The correlation coefficient squared

Column 5: The explained variance uniquely added when the program variable is entered after the controls in the regression equation

Column 6: The ratio of Column 4 to Column 5, indicating again the impact of the control variables in reducing (if the ratio is under 1.0) or increasing (if it is over 1.0) the apparent effect of the program variable

TABLE C.1

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF FIFTH GRADE BLACK RURAL STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	-.03			
STATE	Border state (low category: Deep South)	.15	.02	-.00	.03
SES99W	White students' socioeconomic status	.02	.09	.09	
Community-Demographic Variables:					
GRADEW	Mean earliest grade white students integrated	-.27	-.24*	-.22	.05
BLWKHD	Early assignment of blacks to white school	.20	.13	.14	.03
BNEARD	Number of blacks reassigned for desegregation	.16	.29*	.27	.03
BUSREL	Little protest about school busing	.02	.21*	.21	.02
BICYCB	Per cent black students own bicycles	.15	.16*	.12	.02
RCHNGP	Racial composition of school did not change this year	-.15	-.12	-.16	.01
FOSTAB	Per cent black students who do not get food stamps	.00	-.10	-.17	.01
GRADEB	Mean earliest grade black students integrated	-.24	-.10	-.11	.01
NEWDEB	Per cent black students' families get newspaper regularly	.07	-.06	-.11	.00
Teacher-Attitude Variables:					
TIPNOT	No racial tipping point for school quality	.15		.17	.05
ETALKT	Amount of classroom discussion	.19		.17	.02
HIPDST	Principal likes integrated schools	.19		.05	.02
TWO(T)	Teachers like integrated schools	.16		.16	.00
Mean Achievement Test Score (Black Students)		.17		.13	.01
Black Students' Socioeconomic Status		.06		.11	.00
Low Level of Racial Tension		.04		.09	.00
Variance Explained			21%	32%	

[a] Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b] Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

* Betas are significant at .025 level.

TABLE C.2

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF FIFTH GRADE BLACK URBAN STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	.04		—	
STATE	Border state (low category: Deep South)	.02	.04	-.03	
SES99W	White students' socioeconomic status	-.01	.02	.07	.03
SES99B	Black students' socioeconomic status	-.12	-.19*	-.25	
Community-Demographic Variables:					
GRADEB	Mean earliest grade black students integrated	-.12	-.15*	-.16	.02
WNEARD	Number of whites reassigned for desegregation	.08	.27*	.28	.03
GRADEW	Mean earliest grade white students integrated	-.11	-.13	-.07	.02
PRIORP	School was black before desegregation	.08	.07	-.04	.02
BLKWHD	Early assignment of blacks to white schools	-.05	-.13	-.14	.01
PRSEXP	Female principal	-.10	-.09	-.09	.01
CLSPSB	Per cent black students attending closest public school	.13	.11	.09	.01
BLACKL	Black community displeased with local schools	-.01	-.08	-.07	.00
Principal-Teacher Attitude Variables:					
TWO(T)	Teachers like integrated schools	.10		.15	.02
MEET9P	Number of school-community meetings about desegregation	.11		.11	.01
Mean Achievement Test Score (Black Students)		.19		.16	.02
Low Level of Racial Tension		.14		.11	.01
Variance Explained			14%	20%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level.

TABLE C.3

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF FIFTH GRADE WHITE RURAL STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	-.26			
STATE	Border state (low category: Deep South)	.33	.23*	.09	.25
SES99B	Black students' socioeconomic status	-.10	-.07	-.08	
Community-Demographic Variables:					
GRADEW	Mean earliest grade white students integrated	-.48	-.35*	-.32	.11
PRACEP	Black principal	.30	.28*	.06	.04
RCHNGP	Racial composition of school did not change this year	-.23	-.19*	-.18	.04
WOTRAP	Per cent of white students who transferred out this year	.28	.15*	.10	.03
TOPUPP	Number of pupils in the school	-.11	-.18*	-.19	.02
DISADP	Per cent student body disadvantaged (gov't definition)	.08	-.25*	-.24	.02
BLSUPL	Black community opposed desegregation	-.18	-.14*	-.12	.01
PURBAN	Per cent urban in county/city (1960)	.11	.10	.07	.01
FOSTAW	Per cent white students who don't get food stamps	-.18	-.11	-.12	.01
TRANSW	Per cent white students who ride school bus	-.26	-.08	-.06	.01
PNONWH	Per cent nonwhite in county/city (1960)	.04		-.16	.00
NEWDEW	Per cent white students' families get newspaper regularly	.18		.08	.00
Principal-Teacher Attitude Variables:					
RATT9P	Principal has relatively liberal racial attitudes	.36		.18	.03
WCONTT	Much contact between teachers and white students	.02		.14	.01
(SES99W)	White students' socioeconomic status	-.10		-.20	.00
LNHIST	Teacher studied minority group history	.35		.09	.01
HIPDST	Principal likes integrated schools	.33		.08	.00
TWO(T)	Teachers like integrated schools	.05		-.05	.00
Mean Achievement Test Score (White Students)		.17		.18	.01
Variance Explained			54%	62%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level.

TABLE C.4

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF FIFTH GRADE WHITE URBAN STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	.13		——	
STATE	Border state (low category: Deep South)	.10	.02	.02	
SES99B	Black students' socioeconomic status	.12	.06	-.02	.05
Community-Demographic Variables:					
FOSTAW	Per cent white students who don't get food stamps	.37	.30*	.33	.10
GRADEW	Mean earliest grade white students integrated	-.20	-.25*	-.21	.05
BICOML	Ineffective (or no) biracial committee on school desegregation	-.15	-.28*	-.25	.05
CATH9P	Per cent Catholics in student body	.23	.08	.10	.03
BICYCW	Per cent white students own bicycle	.27	.27*	.26	.02
INTYRD	Early desegregation of white schools	.15	.22*	.04	.03
SHABYO	School building is in good physical condition	.05		-.24	.01
GRADEB	Mean earliest grade black students integrated	-.20		-.12	.01
SIBLSW	Mean number siblings of white students	-.28		-.14	.00
SES99W	White students' socioeconomic status	.24		-.21	.01
KINDGW	Per cent white students who attended kindergarten	.21		.06	.00
Teacher Attitude Variables:					
IPROJT	School has intergroup relations projects	.22		.20	.04
TINTEO	Little informal interracial contact among teachers	-.18		-.21	.03
MCONTT	Much contact between teachers and minority students	.23		.15	.02
RDISCT	Many classroom discussions about race	.16		.04	.00
TWO(T)	Teachers like integrated schools	.17		-.06	.00
Mean Achievement Test Score (White Students)		.22		.14	.01
Low Level of Racial Tension		.02		-.04	.00
Variance Explained			32%	46%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level

TABLE C.5

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF TENTH GRADE BLACK RURAL STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	-.13			
STATE	Border state (low category: Deep South)	.01	.13	-.01	.03
SES99W	White students' socioeconomic status	.03	.06	-.01	
Community-Demographic Variables:					
PPDOLD	Dollar expenditures per pupil (district average)	-.15	-.19	-.19	.03
WPROTD	No white protests this year	-.13	-.16	-.16	.02
RENEWB	Per cent black students' families get newspaper regularly	-.04	-.03	-.10	.00
PRAGEP	Principal's age	.08	.12	.16	.00
LONG9P	Principal's tenure at this school	-.16	-.22*	-.21	.04
Teacher Variables:					
REPMGT	Principal counsels teachers unfair to blacks	-.16		-.11	.02
EXTACT	Amount of integration of extracurricular activities	-.06		-.05	.00
TWO(T)	Teachers like integrated schools	.26		.18	.06
THREE(T)	Good informal interracial contact among students	.16		.22	.03
Mean Achievement Test Score (Black Students)		.20		.24	.04
Officers of Parent-Teacher Organization Are All One Race		.22		.20	.03
Variance Explained			11%	30%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level.

TABLE C.6

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF TENTH GRADE BLACK URBAN STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	-.10			
STATE	Border state (low category: Deep South)	-.08	-.23	-.15	.02
SES99W	White students' socioeconomic status	-.03	.12	-.02	
Community-Demographic Variables:					
CRACTL	Much civil rights activity in community	.41	.44*	.38	.20
ONHOMB	Per cent of black students whose parents own their home	-.28	-.28*	-.30	.04
TOPUPP	Number of pupils in the school	.10	.24*	.21	.05
Teacher-Principal Attitude Variables:					
HISDST	Superintendent likes desegregation	-.28		-.30	.06
XTPART	More participation in extracurricular activities	.21		.27	.06
AGEGRT	Per cent of teachers under 36 years old	.27		.17	.03
REPWHT	Principal counsels teachers unfair to whites	-.13		-.18	.02
WHEADP	White students better off in integrated schools	.15		.17	.03
TWO(T)	Teachers like integrated schools	.06		-.07	.00
Mean Achievement Test Score (Black Students)		.19		.21	.03
Low Level of Racial Tension		.19		.04	.00
Variance Explained			31%	54%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level.

TABLE C.7

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF TENTH GRADE WHITE RURAL STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	.20	.		
STATE	Border state (low category: Deep South)	.22	.11	.13	.14
SES99B	Black students' socioeconomic status	.04	-.07	-.02	
Community-Demographic Variables:					
PRIORP	School was black before desegregation	.26	.42*	.35	.12
NOINTW	Per cent no pre-high school integration	-.10	-.19*	-.14	.05
ALINTW	Per cent all education in integrated schools	.18	.16	.06	.01
PURBAN	Per cent urban in county/city (1960)	.12	.13	.14	.01
BLACKL	Black community displeased with local schools	-.04	-.07	-.09	.00
MOED1W	Per cent white mothers graduated from high school	.02	.19*	.13	.00
SES99W	White students' socioeconomic status	-.03	-.19*	-.14	.01
EXPERT	Per cent teachers never taught opposite race	.04		.07	.00
Principal-Teacher Attitude Variables:					
MABILT	Minority students' ability level	-.18		.23	.04
PREJUT	Teachers have relatively liberal racial attitudes	.22		.15	.02
LNHIST	Teacher studied minority group history	.10		.13	.01
ELITEP	Integrated student elite	.06		.12	.01
TWO(T)	Teachers like integrated schools	.19		.03	.00
Low Level of Racial Tension		.11		.16	.02
Mean Achievement Test Score (White Students)		.12		.06	.00
Variance Explained			35%	46%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level.

TABLE C.8

CORRELATIONS, REGRESSION COEFFICIENTS, AND ADDITIONAL VARIANCE CONTRIBUTED BY PREDICTORS OF TENTH GRADE WHITE URBAN STUDENT RACIAL ATTITUDES, WHEN ENTERED IN THE ORDER LISTED

Variable Name	Predictor	Zero-Order Correlations	Standardized Regression Coefficients[a] Beta'	Beta	R^2 Contributed
The Basic Equation:					
PWHITP[b]	Per cent white in student body	-.15			
STATE	Border state (low category: Deep South)	.28	-.03	.07	
SES99W	White students' socioeconomic status	.12	.29*	.13	.26
SES99B	Black students' socioeconomic status	.06	-.05	-.04	
Community-Demographic Variables:					
YEARIW	Per cent whites also students here last year	-.30	-.20*	-.18	.07
WHOFFP	Per cent white of school's faculty and staff	.16	.31*	.12	.05
BLACKL	Black community displeased with local schools	.33	.39*	.43	.06
INTYRD	Early desegregation of white schools	.08	.27*	.19	.05
PRIORP	School was black before desegregation	.30	.18	.42	.02
CRACTL	Much civil rights activity in community	.32		.13	.01
RPTA9P	Officers of PTA are integrated	-.06		.40	.10
Principal-Teacher Attitude Variables:					
ELITEP	Integrated student elite	-.04		.20	.03
BTQUAP	Black teachers in this school are high quality	.25		.09	.02
PQUALT	Principal quality	.20		.19	.01
TWO(T)	Teachers like integrated schools	.15		-.09	.001
Mean Achievement Test Score (White Students)		.30		.28	.04
ONE(T)	Low level of racial tension	.39		.22	.03
Variance Explained			51%	77%	

[a]Beta' is the coefficient obtained from the regression equation which includes only those variables which are used as controls in Chapter 3.

[b]Betas omitted for student racial composition (PWHITP) which was entered with a quadratic term.

*Betas are significant at .025 level.

TABLE C.9

FIFTH GRADE BLACK RURAL PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.1 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling .	-.0691	-.0466	.0225	.0047	.0017	.3617
Social worker or home visitor program . .	.1002	.0831	-.0171	.0104	.0061	.5865
Teacher's aides program	-.0145	-.0491	-.0346	.0002	.0021	10.5000
Remedial reading program	-.0147	.0522	.0669	.0002	.0023	11.5000
Special classrooms for underachievers . . .	.0065	.0858	.0793	.0000	.0067	.0000
Special classrooms for socially or emotionally maladjusted . .	.0352	-.0326	-.0678	.0012	.0009	.7500
Achievement grouping of classrooms	-.1435	-.0790	.0645	.0205	.0054	.2634
Major curriculum revisions	.0290	.0553	.0263	.0008	.0028	3.5000
Extent of demonstration classrooms . .	-.1733	-.1321*	.0484	.0300	.0163	.5433
Grouping within classrooms	-.1805	-.1519*	.0286	.0325	.0207	.6349
Program for tutoring low achieving students .	.0388	.0004	-.0384	.0015	.0000	.0000
Special program to increase parent-teacher contact (e.g., conferences)	-.0522	-.0497	.0025	.0027	.0022	.8148
Program to improve intergroup relations among students . . .	-.0032	.0086	.0118	.0000	.0000	.0000
Program to improve intergroup relations among teachers . . .	.0072	.0614	.0542	.0000	.0031	.0000

[a]The standardized coefficients in this table are not entered simultaneously. They represent the coefficient for each variable as if it were entered immediately following the control equation.

*Betas are significant at .05 level.

(Continued)

TABLE C.9--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	-.0328	-.0642	-.0314	.0010	.0038	3.8000
Team teaching	.1123	.0758	-.0365	.0126	.0051	.4047
Extent of ungraded classrooms	-.1149	-.1103	.0046	.0132	.0113	.8560
Remedial reading teacher	-.0028	.0313	.0341	.0000	.0008	.0000
Remedial math teacher .	-.0220	.0453	.0673	.0004	.0016	4.0000
Music or art teacher . .	.2062	.1502*	-.0560	.0425	.0184	.4329
Drama or speech teacher.	.0716	.0632	-.0084	.0051	.0034	.6666
Gym teacher or coach . .	.1549	.1086	-.0463	.0239	.0104	.4351
Vocational education teacher	.0924	.0945	.0021	.0085	.0078	.9176
Counselor's aides . . .	.0697	.0282	-.0415	.0048	.0007	.1458
Guidance counselor . . .	.0269	.0432	.0163	.0007	.0015	2.1428
Psychologist	.1802	.0413	-.1389	.0324	.0012	.0370
Social worker	.0237	.0113	-.0124	.0005	.0001	.2000
Speech therapist	.2108	.2578*	.0470	.0444	.0524	1.1801
Teacher's aides	.0432	.0606	.0172	.0018	.0031	1.7222
Library aide or clerk .	.1046	.0932	-.0114	.0109	.0068	.6238
Librarian	.2391	.1587*	-.0804	.0571	.0221	.3870
Nurse	.1156	.1365*	.0209	.0133	.0174	1.3082
Audio-visual specialist.	.1113	.0833				
Truant officer/home visitor	.0673	.0618				
Community relations specialist	.0558	.1032	.0494	.0031	.0103	3.3225
Administrator (not listed above)	.1389	.2308*				
Texts	.1037	.1480*	.0443	.0107	.0208	1.9439
Test materials	-.0059	.0648	.0707	.0000	.0037	.0000
Literature	.0868	.0519	-.0349	.0075	.0023	.3066
Furnishings	.0814	.0385	-.0429	.0066	.0013	.1969
enovations	.1242	.0849	-.0393	.0154	.0060	.3896
pace	-.0626	-.0887	-.0261	.0039	.0071	1.8205

TABLE C.10

FIFTH GRADE BLACK URBAN PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.2 BETA'CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling . . .	-.0403	-.0230	.0173	.0016	.0004	.2500
Social worker or home visitor program	-.0163	-.0143	.0020	.0002	.0001	.5000
Teacher's aides program .	.1033	.0744	-.0289	.0106	.0048	.4528
Remedial reading program .	.0086	.0086	.0000	.0000	.0000	.0000
Special classrooms for underachievers	.0139	-.0089	-.0228	.0001	.0000	.0000
Special classrooms for socially or emotionally maladjusted	.0804	.0871	.0067	.0064	.0070	1.0937
Achievement grouping of classrooms	.0521	.0266	.0056	.0027	.0005	.1851
Major curriculum revisions	.1596	.1043	-.0553	.0254	.0098	.3858
Extent of demonstration classrooms	.2241	.1887*	-.0354	.0502	.0322	.6414
Grouping within classrooms	-.1443	-.1604*	-.0161	.0208	.0227	1.0913
Program for tutoring low achieving students . . .	.0270	.0613	.0343	.0007	.0032	4.5714
Special program to increase parent-teacher contact (e.g., conferences) . .	.0483	.0692	.0209	.0023	.0040	1.7391
Program to improve intergroup relations among students	.0780	.0355	-.0425	.0060	.0011	.1833
Program to improve intergroup relations among teachers	.0371	.0175	-.0196	.0013	.0002	1538
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	.0388	.0243	-.0145	.0015	.0005	.3333

[a]The standardized coefficients in this table are not entered simultaneously. They represent the coefficient for each variable as if it were entered immediately following the control equation.

*Betas are significant at .05 level.

(Continued)

TABLE C.10--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Team teaching	.0572	.0025	-.0547	.0032	.0000	.0000
Extent of ungraded classrooms	.2794	.2869*	.0075	.0780	.0696	.8923
Remedial reading teacher .	.0517	.0999	.0482	.0026	.0078	3.0000
Remedial math teacher . . .	.0648	.0702	.0054	.0041	.0044	1.0731
Music or art teacher . . .	.0636	-.0058	-.0694	.0040	.0000	.0000
Drama or speech teacher . .	.0785	.0498	-.0295	.0061	.0020	.3278
Gym teacher or coach . . .	.1128	.0186	-.0942	.0127	.0002	.0157
Vocational education teacher	-.0886	-.0731	.0155	.0078	.0050	.6410
Counselor's aides	.1272	.1155	-.0117	.0161	.0116	.7204
Guidance counselor	.0697	.0287	-.0410	.0048	.0007	.1458
Psychologist	.0209	.0843	.0634	.0004	.0058	14.5000
Social worker	.0242	.0315	.0073	.0005	.0007	1.4000
Speech therapist	.0230	.0327	.0097	.0005	.0008	1.6000
Teacher's aides	.1330	.1126	-.0204	.0176	.0098	.5566
Library aide or clerk . . .	-.1248	-.1209*	.0039	.0155	.0131	.8451
Librarian	.1339	.1364*	.0025	.0179	.0147	.8212
Nurse	.1053	.0728	-.0325	.0110	.0052	.4727
Audio-visual specialist . .	.1139	.0987	-.0152	.0129	.0091	.7054
Truant officer/home visitor	.0031	-.0262	-.0293	.0000	.0005	.0000
Community relations specialist	.0462	.0697	.0235	.0021	.0043	2.0476
Administrator (not listed above)	.1367	.0656	-.0711	.0186	.0036	.9135
Texts	-.0423	-.0719	-.0296	.0017	.0047	2.7647
Test materials	-.0285	-.0025	.0260	.0008	.0000	.0000
Literature	.0307	.0135	-.0172	.0009	.0001	.1250
Furnishings	-.0067	-.0838	-.0771	.0000	.0060	.0000
Renovations	.0752	.0556	-.0196	.0056	.0028	.5000
Space	-.0069	.0357	.0426	.0000	.0010	.0000

TABLE C.11

FIFTH GRADE WHITE RURAL PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.3 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling . . .	.0712	-.0052	-.0764	.0050	.0000	.0000
Social worker or home visitor program	-.0201	-.0395	-.0194	.0004	.0014	3.5000
Teacher's aides program .	.0033	-.0836	-.0169	.0000	.0057	.0000
Remedial reading program .	-.0827	-.0498	.0329	.0068	.0022	.3235
Special classrooms for underachievers	-.0502	.0648	.0515	.0025	.0037	1.4800
Special classrooms for socially or emotionally maladjusted	.0173	-.0192	-.0365	.0002	.0003	1.5000
Achievement grouping of classrooms	-.1009	-.0668	.0341	.0101	.0037	.3663
Major curriculum revisions	-.0218	.0431	.0649	.0004	.0015	3.7500
Extent of demonstration classrooms	-.0655	-.0214	.0441	.0042	.0004	.0952
Grouping within classrooms	-.0827	-.0808	.0019	.0068	.0074	1.0882
Program for tutoring low achieving students . . .	.0911	-.0282	-.1093	.0082	.0006	.0731
Special program to increase parent-teacher contact (e.g., conferences) . .	.0555	.0788	.0233	.0030	.0057	1.9000
Program to improve inter-group relations among students	-.0213	-.0631	-.0418	.0004	.0035	8.7500
Program to improve inter-group relations among teachers	-.1193	-.0525	.0668	.0142	.0024	.1690
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	-.0347	-.1242*	.0895	.0012	.0141	11.7500

[a]The standardized coefficients in this table are not entered simultaneously. They represent the coefficient for each variable as if it were entered immediately following the control equation.

*Betas are significant at .05 level.

TABLE C. 11--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Team teaching	.1214	.0558	-.0656	.0147	.0028	.1904
Extent of ungraded classrooms	-.0091	.0013	.0104	.0001	.0000	.0000
Remedial reading teacher .	.0498	.0119	-.0379	.0024	.0001	.0416
Remedial math teacher . . .	.0018	.0659	-.0641	.0000	.0040	.0000
Music or art teacher . . .	.1345	.0909	-.0436	.0180	.0070	.3888
Drama or speech teacher . .	.1136	.0676	-.0460	.0129	.0042	.3255
Gym teacher or coach . . .	.0989	.0479	-.0510	.0097	.0020	.2061
Vocational education teacher	.1408	.0797	-.0611	.0198	.0054	.2727
Counselor's aides	.0248	-.0009	-.0257	.0006	.0000	.0000
Guidance counselor	.1832	.0974	-.0858	.0335	.0085	.2537
Psychologist	.2097	.0982	-.1115	.0439	.0078	.1776
Social worker	.0207	-.0397	.0190	.0004	.0014	3.5000
Speech therapist	.0356	.0426	.0070	.0012	.0013	1.0833
Teacher's aides	.1569	.1154*	-.0415	.0246	.0102	.4146
Library aide or clerk . . .	.1125	-.0399	-.1524	.0126	.0012	.0952
Librarian	.1647	.0756	-.0891	.0271	.0048	.1771
Nurse	-.0069	.0482	.0551	.0004	.0021	5.2500
Audio-visual specialist . .	.0440	-.0883	-.1323	.0000	.0064	.0000
Truant officer/home visitor	.0245	-.0165	-.0410	.0006	.0002	.3333
Community relations specialist	-.0084	.0051	.0135	.0000	.0000	.0000
Administrator (not listed above)	-.0093	.0572	.0665	.0000	.0028	.0000
Texts	-.0620	-.0161	.0459	.0036	.0030	.8333
Test materials	-.0626	-.0295	.0331	.0039	.0007	.1794
Literature	.1708	-.0602	-.2310	.0291	.0002	.0068
Furnishings	-.0461	-.1051*	.0590	.0021	.0105	5.0000
Renovations	.0724	.0055	-.0669	.0052	.0000	.0000
Space	-.0363	.0260	.0623	.0013	.0005	.3846

TABLE C.12

FIFTH GRADE WHITE URBAN PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.4 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling . . .	.0127	-.1094	-.1221	.0001	.0106	106.0000
Social worker or home visitor program	-.1449	-.0826	.0623	.0209	.0059	.2822
Teacher's aides program .	.0131	-.0040	-.0171	.0001	.0000	.0000
Remedial reading program .	.0228	.0055	-.0175	.0005	.0000	.0000
Special classrooms for underachievers	.1108	.0064	-.1044	.0122	.0000	.0000
Special classrooms for socially or emotionally maladjusted	-.1276	-.1382*	-.0106	.0162	.0170	1.0493
Achievement grouping of classrooms	-.1551	-.1229	.0322	.0240	.0140	.5833
Major curriculum revisions	.0640	.0294	-.0346	.0040	.0007	.1750
Extent of demonstration classrooms	.0662	.0718	.0056	.0043	.0047	1.0930
Grouping within classrooms	-.0607	-.1191	-.0584	.0036	.0134	3.7222
Program for tutoring low achieving students . . .	.1247	.1229	.0018	.0155	.0134	.8645
Special program to increase parent-teacher contact (e.g., conferences) . .	.0365	.0231	-.0134	.0013	.0004	.3076
Program to improve intergroup relations among students	.1583	.1705*	.0122	.0250	.0274	1.0960
Program to improve intergroup relations among teachers	.0170	.0092	-.0078	.0002	.0000	.0000
Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	-.0174	-.0789	.0615	.0003	.0057	19.0000

[a]The standardized coefficients in this table are not entered simultaneously. They represent the coefficient for each variable as if it were entered immediately following the control equation.

*Betas are significant at .05 level.

TABLE C.12--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Team teaching	.0941	.0729	-.0212	.0088	.0047	.5340
Extent of ungraded classrooms	.0675	.0410	-.0265	.0045	.0013	.2888
Remedial reading teacher .	-.0312	.0343	.0655	.0009	.0009	1.0000
Remedial math teacher . . .	-.0289	-.0537	-.0248	.0008	.0027	.3375
Music or art teacher . . .	.0927	.0255	-.0672	.0085	.0004	.0470
Drama or speech teacher . .	-.0174	.0165	.0339	.0003	.0002	.6666
Gym teacher or coach . . .	.0287	-.0259	-.0546	.0008	.0005	.6250
Vocational education teacher	-.1233	-.0751	.0482	.0152	.0053	.3486
Counselor's aides	-.0747	-.0159	.0588	.0055	.0002	.0363
Guidance counselor	.0973	-.0142	-.1115	.0094	.0001	.0106
Psychologist	.0054	.0522	.0468	.0000	.0022	.0000
Social worker	-.0375	-.0010	.0365	.0014	.0000	.0000
Speech therapist	.0939	-.0130	-.1069	.0088	.0001	.0113
Teacher's aides	-.0068	-.0454	-.0386	.0000	.0016	.0000
Library aide or clerk . . .	-.0229	-.0014	.0215	.0005	.0000	.0000
Librarian.	.1697	.0216	-.1481	.0287	.0003	.0104
Nurse	.1190	.0986	-.0204	.0141	.0073	.5177
Audio-visual specialist . .	.0156	.0131	-.0025	.0002	.0001	.5000
Truant officer/home visitor	-.0252	.0486	.0738	.0006	.0020	3.3333
Community relations specialist	-.0205	.0326	.0531	.0004	.0009	2.2500
Administrator (not listed above)	.0919	.0446	-.0473	.0084	.0013	.1547
Texts	.0111	.0083	-.0028	.0001	.0000	.0000
Test materials	.0022	-.0337	-.0359	.0000	.0010	.0000
Literature	.1518	.0997	-.0521	.0230	.0092	.4000
Furnishings	.1869	.1419*	.0450	.0349	.0188	.5386
Renovations	.0320	-.0603	-.0923	.0010	.0032	3.2000
Space	.1123	.0549	-.0574	.0126	.0027	.2142

TABLE C.13

TENTH GRADE BLACK RURAL PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.5 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling . . .	.0128	-.0093	-.0221	.0001	.0000	.0000
Social worker or home visitor program	-.0017	.0056	.0073	.0000	.0000	.0000
Teacher's aides program .	.0147	.0519	.0372	.0002	.0021	10.5000
Teacher workshops or in-service training for teachers or teacher aides	.0373	-.0006	-.0379	.0013	.0000	.0000
Remedial reading program .	.0939	.0429	-.0510	.0088	.0016	.1818
Vocational training courses	.0254	.0280	.0026	.0005	.0006	1.2000
Minority group history or culture courses	-.2029	-.2070*	-.0041	.0411	.0399	.9708
Special classrooms for underachievers	.0863	.1723*	.0860	.0074	.0240	3.2432
Special classrooms for socially or emotionally maladjusted	-.0620	-.0375	.0245	.0038	.0013	.3421
Achievement grouping of classrooms	.0356	.0653	.0297	.0012	.0037	3.0833
Tracking[b].	.0833	.1749	.0918	.0069	.0238	3.4492
Major curriculum revisions	-.0941	-.1513	-.0572	.0088	.0203	2.3068
Extracurricular activities geared toward minority students	-.0710	-.0802	-.0092	.0050	.0059	1.1800
Late bus for students who stay late for extracurricular activities . . .	.0706	.0379	-.0327	.0049	.0010	.2040
Program for tutoring low achieving students . . .	-.1193	-.1487	-.0294	.0142	.0193	1.3591

[a]The standardized coefficients in this table are not entered simultaneously. They represent the coefficient for each variable as if it were entered immediately

TABLE C.13--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/Simple R^2
Special program to increase parent-teacher contact (e.g., conferences)	.0039	-.0198	-.0237	.0000	.0003	.0000
Program to improve intergroup relations among students . .	-.0508	-.0426	.0082	.0025	.0016	.6400
Program to improve intergroup relations among teachers . .	-.0478	-.1107	-.0629	.0022	.0112	.5454
Biracial advisory committee of students	-.0813	-.0330	.0483	.0066	.0009	.1363
Equipment for students to use, such as reading machines, tape recorders, video tapes, etc.	-.1126	-.0549	.0577	.0126	.0026	.2063
Remedial reading teacher . . .	.0368	.0522	.0154	.0013	.0023	1.7692
Remedial math teacher	-.1213	-.1130	.0083	.0147	.0119	.8095
Music or art teacher	.0323	.0361	.0038	.0010	.0011	1.1000
Drama or speech teacher . . .	-.2227	-.2673*	-.0446	.0495	.0683	1.3797
Gym teacher or coach	.0696	.0604	-.0092	.0048	.0035	.7291
Vocational education teacher .	-.0291	-.0664	-.0373	.0008	.0035	4.3750
Counselor's aides	-.2336	-.2255*	.0081	.0545	.0470	.8623
Guidance counselor	.0404	.0385	-.0019	.0016	.0013	.8125
Psychologist	-.0589	-.0896	-.0307	.0034	.0074	2.1764
Social worker	-.0767	-.0[illegible]	.0071	.0058	.0046	.7931
Speech therapist	.0436	.0369	-.0067	.0019	.0011	.5789
Teacher's aides	-.1626	-.1175	.0451	.0264	.0111	.4204
Library aide or clerk	-.1578	-.1347	.0231	.0249	.0169	.6787
Librarian	-.1190	-.0688	.0502	.0141	.0037	.2624
Nurse	.1150	.1069	-.008[illegible]	.0132	.0097	.7348
Audio-visual specialist . . .	.0016	.0340	.0324	.0000	.0010	.0000
Truant officer/home visitor .	-.0004	.0188	.0192	.0000	.0003	.0000
Community relations specialist	-.1017	-.0904	.0113	.0103	.0069	.6699
Administrator (not listed above)	.0708	.0959	.0251	.0050	.0071	1.4200
Texts	.1538	.0996	-.0542	.0236	.0090	.3813
Test materials	.0048	-.0048	-.0096	.0000	[illegible]	[illegible]

TABLE C.14

TENTH GRADE BLACK URBAN PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.6 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling	-.0156	.0501	.0657	.0002	.0002	10.0000
Social worker or home visitor program	.1292	-.0423	-.1715	.0166	.0013	.0783
Teacher's aides program . . .	.0241	-.0577	-.0818	.0005	.0029	5.8000
Teacher workshops or in-service training for teachers or teacher aides	-.0927	-.0448	.0479	.0085	.0018	.2117
Remedial reading program . .	-.1735	-.0666	.1069	.0301	.0044	.1461
Vocational training courses .	.0574	.0176	-.0398	.0032	.0002	.0625
Minority group history or culture courses	-.1741	-.0982	.0720	.0303	.0078	.2574
Special classrooms for underachievers	-.1702	-.2212*	-.0510	.0289	.0398	5.1025
Special classrooms for socially or emotionally maladjusted.	-.2939	-.3278*	-.0339	.0863	.0915	1.0602
Achievement grouping of classrooms	-.0278	.06[illegible]3	.0951	.0007	.0045	6.4285
Tracking[b]	.0477	.0784	.0307	.0022	.0056	2.5454
Major curriculum revisions .	-.1827	-.1183	.0644	.0333	.0131	.3933
Extracurricular activities geared toward minority students	.1277	.0956	-.0321	.0163	.0084	.5153
Late bus for students who stay late for extracurricular activities	.0466	.0713	.0247	.0021	.0050	2.3805
Program for tutoring low achieving students	-.0796	-.0185	.0611	.0063	.0003	.0476
Special program to increase parent-teacher contact (e.g., conferences)	-.2059	-.1522	.0537	.0423	.0219	.5177

TABLE C.14--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Program to improve intergroup relations among students . . .	-.0728	-.0167	.0561	.0052	.0002	.0384
Program to improve intergroup relations among teachers . . .	.0497	-.0538	-.1035	.0024	.0025	1.0416
Biracial advisory committee of students	.0349	.0668	.0319	.0012	.0035	2.9166
Equipment for students to use, such as reading machines, tape recorders, video tapes, etc. .	-.0170	.0194	.0364	.000[illegible]	.0003	1.5000
Remedial reading teacher	-.1459	.0131	.1590	.0212	.0001	.0047
Remedial math teacher	-.2057	-.1112	.0945	.0420	.0110	.2619
Music or art teacher	-.1045	.0539	.1584	.0109	.0020	.1834
Drama or speech teacher	-.0151	.1198	.1349	.0002	.0105	52.5000
Gym teacher or coach	-.0855	.1171	.2026	.0073	.0098	1.3424
Vocational education teacher . .	-.0164	.0336	.5000	.0002	.0010	5.0000
Counselor's aides	-.0135	.0268	.0403	.0001	.0005	5.0000
Guidance counselor	-.1533	-.1034	.0499	.0235	.0072	.3063
Psychologist	-.0935	-.0707	.0228	.0087	.0047	.5402
Social worker	-.0390	-.1773	-.1383	.0015	.0263	17.5333
Speech therapist	-.1845	-.1768	.0077	.0340	.0305	.8970
Teacher's aides	.0324	-.0390	-.0714	.0010	.0013	1.3000
Library aide or clerk	-.1482	-.0133	.1349	.0219	.0001	.0045
Librarian	.0372	.0202	-.0170	.0013	.0003	.1538
Nurse	.0413	-.0340	-.0753	.0017	.0011	.6470
Audio-visual specialist	-.1050	-.0265	.0785	.0110	.0005	.0454
Truant officer/home visitor . .	-.0948	-.1088	-.0140	.0089	.0010	1.2359
Community relations specialist .	-.0988	-.2440*	-.1452	.0097	.0462	4.7628
Administrator (not listed above)	-.1530	-.1444	.0086	.0234	.0199	.8504
Texts	-.0892	.0079	.0971	.007[illegible]	[illegible]	[illegible]

TABLE C.15

TENTH GRADE WHITE RURAL PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES
AFTER TABLE C.7 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling	.0927	.0703	-.0224	.0085	.0045	.5294
Social worker or home visitor program	.0738	-.0155	-.0893	.0054	.0002	.0370
Teacher's aides program . . .	.0103	.0603	.0500	.0001	.0029	29.0000
Teacher workshops or in-service training for teachers or teacher aides	-.0697	.0627	.1324	.0048	.0032	.6666
Remedial reading program . .	.0211	.0040	-.0171	.0004	.0000	.0000
Vocational training courses .	-.0161	.0282	.0443	.0002	.0007	3.5000
Minority group history or culture courses	-.0084	-.0558	-.0474	.0000	.0029	.0000
Special classrooms for underachievers	.0850	.0141	-.0709	.0072	.0001	.0138
Special classrooms for socially or emotionally maladjusted.	.1005	-.0027	-.1032	.0101	.0000	.0000
Achievement grouping of classrooms	-.0482	-.1198	-.0716	.0023	.0121	5.2608
Tracking[b]	.1504	.0691	.0813	.0226	.0037	.1637
Major curriculum revisions .	.1976	.1014	-.0962	.0390	.0083	.2128
Extracurricular activities geared toward minority students	.1973	.0946	-.1027	.0389	.0077	.1979
Late bus for students who stay late for extracurricular activities	-.0490	-.1230	-.0740	.0024	.0116	4.8333
Program for tutoring low achieving students	-.1405	-.09[illegible]	.0409	.0197	.0091	.4619
Special [illegible] to increase pa[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE C.15--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Program to improve intergroup relations among students . . .	-.0035	-.0249	-.0214	.0001	.0007	7.0000
Program to improve intergroup relations among teachers . . .	.0979	.1040	.0061	.0095	.0104	1.0947
Biracial advisory committee of students	-.1382	-.0516	.0866	.0190	.0022	.1157
Equipment for students to use, such as reading machines, tape recorders, video tapes, etc. .	-.1749	-.0492	.1257	.0305	.0021	.0688
Remedial reading teacher	.0221	.0926	.0705	.0004	.0059	14.7500
Remedial math teacher	-.0251	.0040	.0291	.0006	.0000	.0000
Music or art teacher	.0749	.0255	-.0494	.0056	.0005	.0892
Drama or speech teacher	-.0427	-.0268	.0159	.0018	.0006	.3333
Gym teacher or coach	.0674	.1517*	.0843	.0045	.0187	4.1555
Vocational education teacher . .	-.0055	-.0308	.0253	.0000	.0007	.0000
Counselor's aides	.0306	-.0471	-.0777	.0009	.0019	2.1111
Guidance counselor	.0796	.0467	-.0329	.0063	.0017	.2698
Psychologist	.1406	.0554	-.0852	.0197	.0026	.1319
Social worker	.0643	.0447	-.0196	.0041	.0017	.4146
Speech therapist	-.0016	.0671	.0687	.0000	.0039	.0000
Teacher's aides	-.0539	.0867	.9209	.0029	.0055	1.8965
Library aide or clerk	.0566	.0154	-.0412	.0032	.0002	.0625
Librarian	-.0585	.0823	.1408	.0034	.0046	1.3529
Nurse	.0631	.0372	.0259	.0039	.0012	.3076
Audio-visual specialist	.0536	-.0305	-.0841	.0028	.0008	.2857
Truant officer/home visitor . .	.1398	.1337	-.0061	.0195	.0154	.7897
Community relations specialist .	.0950	.0354	-.0596	.0090	.0010	.1111
Administrator (not listed above)	.0001	.1611*	.1610	.0000	.0198	.0000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE C.16

TENTH GRADE WHITE URBAN PROGRAM EFFECTS[a] ON STUDENT RACIAL ATTITUDES AFTER TABLE C.8 BETA' CONTROLS HAVE BEEN ENTERED

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Guidance counseling	-.1385	-.0290	.1095	.0191	.0007	.0036
Social worker or home visitor program	.1679	-.0850	-.2529	.0281	.0037	.1316
Teacher's aides program . . .	.0854	.0111	-.0743	.0072	.0001	.0138
Teacher workshops or in-service training for teachers or teacher aides	.0818	.1058	.0240	.0066	.0085	1.2878
Remedial reading program . .	-.0809	-.0562	.0247	.0065	.0026	.4000
Vocational training courses .	-.1224	-.1080	.0144	.0149	.0103	.6912
Minority group history or culture courses	-.0774	-.1240	-.0466	.0059	.0128	2.1694
Special classrooms for underachievers	.1938	.0372	-.1566	.0375	.0010	.0266
Special classrooms for socially or emotionally maladjusted.	-.2487	-.1100	.1387	.0610	.0094	.1540
Achievement grouping of classrooms	.0750	.2150*	.1400	.0056	.0329	5.8750
Tracking[b]	.1629	.1088	-.0541	.0265	.0109	.4113
Major curriculum revisions .	.0463	.0346	-.0117	.0021	.0011	.5238
Extracurricular activities geared toward minority students	.0417	-.1293	-.1710	.0017	.0142	8.3529
Late bus for students who stay late for extracurricular activities	-.1594	-.0212	.1382	.0254	.0003	.0118
Program for tutoring low achieving students	.0435	.0080	-.0355	.0018	.0000	.0000
Special program to increase [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TABLE C-16--Continued

Variable	Simple Correlation Coefficient	Standardized Regression Coefficient Beta	B - R	Simple R^2	Unique R^2 After Controls	Unique R^2 After Controls/ Simple R^2
Program to improve intergroup relations among students . . .	.0946	.1625*	.0679	.0089	.0221	2.4831
Program to improve intergroup relations among teachers . . .	.1521	.1932*	.0411	.0231	.0314	1.3593
Biracial advisory committee of students	.0041	.0257	.0216	.0000	.0005	.0000
Equipment for students to use, such as reading machines, tape recorders, video tapes, etc. .	-.0313	.0504	.0817	.0009	.0020	2.2222
Remedial reading teacher	-.1012	.0112	.1124	.0102	.0001	.0098
Remedial math teacher	-.1002	-.0517	.0486	.0100	.0024	.2400
Music or art teacher	-.0326	.0251	.0577	.0010	.0004	.4000
Drama or speech teacher	.1710	.0383	-.132[illegible]	.0292	.0010	.0342
Gym teacher or coach	-.2379	-.2192*	.0187	.0565	.0332	.5876
Vocational education teacher . .	-.1144	-.0152	.0992	.0124	.0001	.0030
Counselor's aides	.1251	.1095	-.0156	.0156	.0097	.6217
Guidance counselor	-.0046	-.1581	-.1535	.0000	.0151	.0000
Psychologist	-.0116	-.0657	-.0541	.0001	.0038	38.0000
Social worker	.2925	-.0102	-.3027	.0850	.000[illegible]	.0000
Speech therapist	-.1592	-.1677*	-.0085	.0253	.0249	.9841
Teacher's aides	.0805	.0249	-.0556	.0064	.0005	.0781
Library aide or clerk	-.1078	-.0392	.0686	.0116	.0011	.0948
Librarian	-.0790	-.1214	-.0424	.0062	.0122	1.9677
Nurse	-.0915	-.0691	.0224	.0083	.0045	.5421
Audio-visual specialist	.0637	.0014	.0623	.0040	.0000	.0000
Truant officer/home visitor . .	.0064	-.0433	-.0497	.0000	.0017	.0000
Community relations specialist .	.0038	-.1300	-.1338	.0000	.0115	.0000
Administrator (not listed above)	.0313	-.0574	-.0887	.0009	.0025	2.7777

APPENDIX D

NOTES ON THE VALIDITY AND RELIABILITY OF THE ACHIEVEMENT TESTS

The Survey Test of Educational Achievement (STEA) used in this study is a set of shortened versions of five of the subtests of the ETS STEP battery. Each of the subtests is normally approximately one hour in length; for this study, each component was cut to approximately 12 minutes so that the entire test would be [illegible] minutes in length. This was done because we were attempting to measure the effects of school upon achievement, and were not interested either in diagnosing the ability of individual students or in analyzing individual correlates of achievement. The analysis would be limited to looking at mean achievement scores in each school. A school mean based upon from five to fifty students is considerably more reliable than a score for a single student. Consequently, we felt we could trade off test length against the number of students tested to produce a test score for the school as a whole that was at least as reliable as the usual test scores developed for individual students.

The Survey Test of Educational Achievement is a brief test, constructed by Darrell F. Bock, University of Chicago, designed to measure average classroom achievement in several subject matter areas. It is not intended for use in the assessment of individual students. The test provides for comparison of classroom means with respect to general educational achievement (total score), five subject matter areas (part-scores), and, if desired, individual items (per cent correct). The subject matter areas covered are (1) Reading (vocabulary and paragraph reading), (2) Mechanics of writing (capitalization and punctuation), (3) Mathematics computation, (4) Mathematics basic concepts, and (5) Science. Forms of the test have been [illegible] for the [illegible] grade [illegible] grade [illegible]. Each form [illegible]

Items for the tests have been selected from the Sequential Tests of Educational Progress (STEP), Version II, Norming Edition, published by Educational Testing Service Cooperative Test Division in 1969. Items from Form 4A, 2A, and 2B were used. The rationale for the STEP tests is described in the Book of Norms for STEP and SCAT published by the Cooperative Test Division in 1970. Item content for the STEP tests was designed to sample content and cognitive levels defined in the Taxonomy of Educational Objectives by Benjamin S. Bloom, et al. Of the seven STEP tests, two were excluded from the STEA test. English Expression was excluded because it required recognition of features of nonstandard English which vary greatly among regions, ethnic groups, and social classes. Evaluation of this aspect of expression was judged inappropriate for between-school comparisons. Social Studies was excluded for much the same reason: many of the items required information and judgments too closely involved with regional and class differences.

Items were selected from the STEP tests on the basis of item difficulty (per cent correct) and item discriminating power (part-whole correlation or r_{bis}). Item statistics were based on a national probability sample of 1,000 students at the fifth grade and tenth grade levels and supplied by the Cooperative Test Division. Item difficulties were chosen to center about 62.5, which is the point of maximum item response information for four alternative items when guessing is permitted (subjects are instructed to guess if they do not know the answer). Because it was thought that a Southeast population might fall below the national norm in school achievement, the item distributions were weighted somewhat more heavily toward easier items. Within this range of item difficulties, items with the highest possible discriminating power were selected. For the most part it was possible to keep r_{bis} above .50.

A pilot test of the STEA was conducted with 58 fifth graders and 35 tenth graders in Savannah, Georgia, and 69 fifth graders and 53 tenth graders in Beeville, Texas.

1. Does the test measure what it purports to measure, or does it measure something else?
2. Does the test measure what it purports to measure with reasonable accuracy?

The first question is a question of bias; the second is a question of degree of unbiased error, or lack of reliability.

With regard to the first question, the use of a well known and commonly used test relieves most of our anxieties about the content of the test. The 57 items used in each test were selected primarily on the basis of their high correlation with the other items in the longer test and because of their difficulty level. There is at best only a slight chance that the 57 items might represent a badly biased selection so that when combined into a single test they would fail to measure the principle components of the longer STEP battery.

The question of random error is more serious. Fundamentally, the question is, are 57 items enough to prevent the ability of the student from being swamped by random error?

The traditional method for analyzing such questions is to look at the correlations between the responses to various items and compute an overall reliability index. Since we are concerned, however, not with the reliability of individual scores, but of school means, this computation is not sufficient in itself. We have two additional techniques available to us: we can carry out an analysis similar to the computation of a reliability coefficient using school means, or we can carry out a cause and effect analysis of achievement to find out how much variance can be explained by causes of achievement, and how much remains possibly due to random error.

In terms of traditional individual-level reliability analysis, the shortened STEP test performs rather well. The reliability coefficients for tenth grade and fifth grade black and white boys and girls are shown in Table D.1. All of the reliability coefficients in this table are high enough to suggest that there should be no problems with the test. The values for black students are not as high as those for whites, especially

[illegible] because the test is too [illegible]

TABLE D.1

COEFFICIENTS OF GENERALIZABILITY (KR-20)

(For the STEA Test, Based on the ESAP-II Evaluation Sample--NORC Sample)

	Total Test
<u>Fifth Grade</u>:	
White male	.94
White female	.92
Black male	.89
Black female	.90
<u>Tenth Grade</u>:	
White male	.91
White female	.90
Black male	.85
Black female	.84

Note: N = 1,000 for each group.

are given in Table D. 2, and indicate that the mean score of black students is well below that of white students; furthermore, it is close to the zero-point of the test.

One problem with a short test is that it is difficult to use it to measure a wide range of abilities. STEA does perhaps as good a job in this respect as possible. Figure D.1, which gives the frequency distribution of individual fifth grade scores, shows a virtually flat distribution from one end of the scale to the other, with 5 per cent of the students making negative scores after correction for guessing. The test is perhaps more difficult than it might be; the alternative would be to make the test too easy for a significant number of students--and this might be preferable.

If we were to carry out an analogous analysis of reliability of the school means, we would obtain reliability coefficients that are extremely high. This is suggested by the data presented in Tables D.3 and D.4, which show the intercorrelations between the scores of the five subtests when means on the subtest are computed at the school level for one race. Each subtest is based on ten to fifteen questions, and the various subtests are in fact efforts to measure different components of achievement. Therefore we should expect that both random error and the differences in intent for each subtest should reduce the correlations. In fact, the correlations among the five subtests are quite high. Thus, we have no cause to be concerned about the quality of the tests.

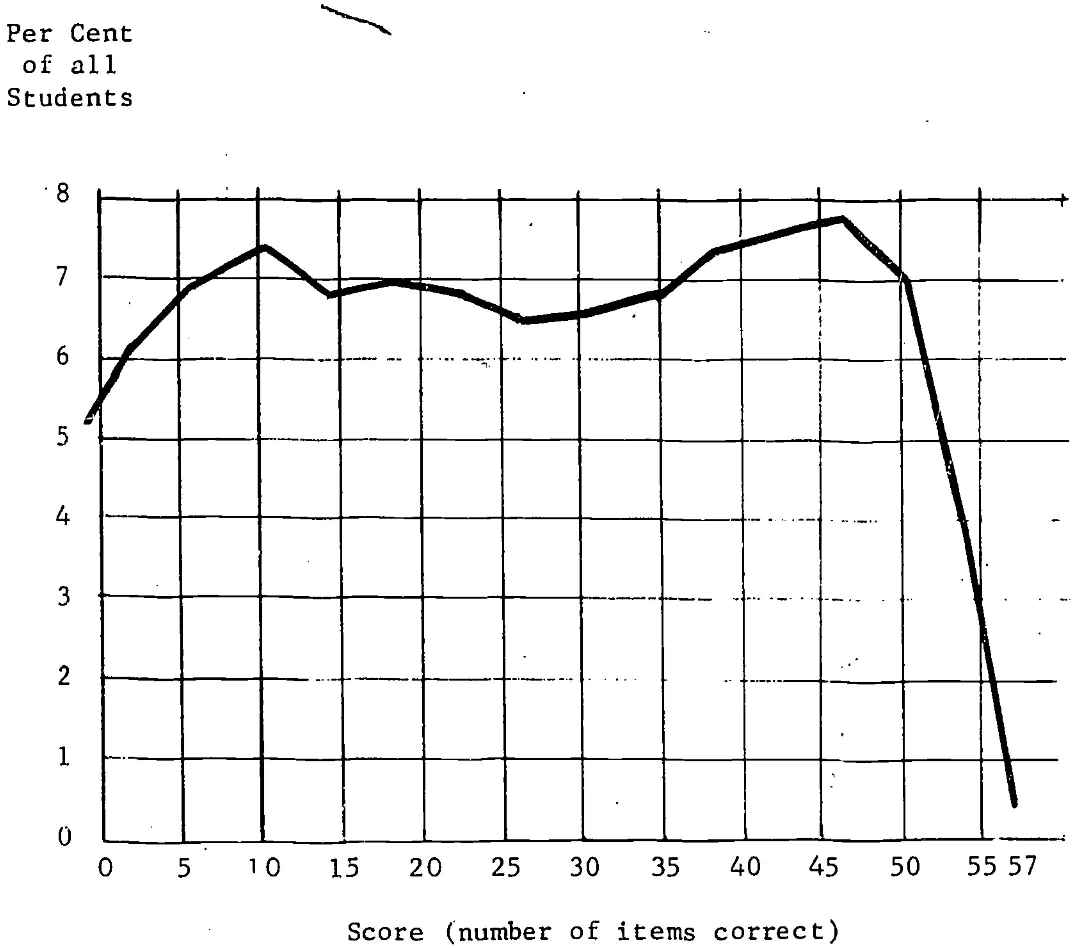
When we subject the tests to the last requirement mentioned above--the ability of causal factors to predict achievement--an unfortunate problem arises. Table D.5 shows that the overall measure of the background of the black students in elementary schools does not predict their achievement nearly so well as background predicts achievement at the other grades. Furthermore, in Table D.6 we see that an attitude variable that does an extremely good job of predicting achievement for white students is only moderately good for tenth grade blacks, and quite poor for fifth grade blacks. Whether social background or the locus of control attitude is used, approximately one-fourth as much variance can be explained at the

TABLE D. 2

MEANS AND STANDARD DEVIATION OF THE ACHIEVEMENT TESTS, BY GRADE AND RACE, AT THE INDIVIDUAL AND SCHOOL LEVEL

Grade and Race	Individual Level		School Level (Weighted)		Per Cent Variance Between Schools
	Mean	Standard Deviation	Mean	Standard Deviation	
Tenth grade white	269	134.4	266	60.9	20.5
Fifth grade white	341	147	332	63.9	19.0
Tenth grade black	116	105	118	46.5	19.6
Fifth grade black	170	132	171	53.3	16.2

Note: Score is 10 times the number of correct answers less correction for guessing.



Notes: Maximum score is 57
Minimum score is negative due to correction for guessing
N = 21,841

Fig. D.1--Distribution of Test Scores for All Fifth Grade Students

TABLE D.3

INTERCORRELATIONS BETWEEN SUBTESTS FOR TENTH GRADERS, BASED ON SCHOOLS WITH SIX OR MORE STUDENTS OF EACH RACE TAKING TESTS

Subtest	Reading	Language	Math Concepts	Math Computation	Science
Whites:					
Reading . .	x	.78	.75	.76	.80
Language . .		x	.74	.73	.71
Math concepts .			x	.88	.82
Math computation . .				x	.82
Science . .					x
Correlation with total score . .	.89	.89	.93	.92	.90
Blacks:					
Reading . .	x	.66	.57	.55	.59
Language . .		x	.61	.58	.53
Math concepts .			x	.64	.57
Math computation . .				x	.54
Science . .					x
Correlation with total score . .	.83	.87	.82	.78	.75

TABLE D.4

INTERCORRELATIONS BETWEEN SUBTESTS FOR FIFTH GRADERS, BASED ON SCHOOLS WITH SIX OR MORE STUDENTS OF EACH RACE TAKING TESTS

Subtest	Subtest				
	Reading	Language	Math Concepts	Math Computation	Science
Whites:					
Reading . .	x	.78	.68	.81	.82
Language . .		x	.73	.78	.80
Math concepts .			x	.80	.75
Math computation . .				x	.87
Science . .					x
Correlation with total score . .	.89	.92	.87	.93	.93
Blacks:					
Reading . .	x	.57	.50	.60	.62
Language . .		x	.64	.59	.58
Math concepts .			x	.68	.61
Math computation . .				x	.65
Science . .					x
Correlation with total score . .	.76	.85	.85	.83	.81

TABLE D.5

CORRELATION OF SES SCALE WITH ACHIEVEMENT, FOR EACH GRADE AND RACE

Grade and Race	School Level	Individual Level	N
Tenth grade white . .	.62	.27	6,165
Fifth grade white . .	.54	.27	1,038
Tenth grade black . .	.54	.24	3,492
Fifth grade black . .	.30	.17	7,072

TABLE D.6

CORRELATION OF LOCUS OF CONTROL AND ACHIEVEMENT, FOR EACH GRADE AND RACE

Grade and Race	School Level	Individual Level
Tenth grade white . . .	.51	.30
Fifth grade white . . .	.54	.28
Tenth grade black . . .	.28	.27
Fifth grade black . . .	.13	.12

There seem to be two reasons for this problem: (1) the correlation between social status and achievement is low for fifth grade blacks; (2) the fifth grade attitude test has a large amount of random error for black students. One reason why we believe that the problem is the measures of SES and not the test for this group of students is that when we look at the per cent of variance that can be explained by school--the amount that might conceivably be attributable to a "school effect," shown in Table D.2--we see that the amount of variance between schools for the fifth grade test is only slightly lower than that for the tenth grade test.

Another way to answer the questions, "Does the STEA test distinguish between fifth grade black student bodies?" and "Are the student-reported characteristics of the school the weak link in the fifth grade black analysis?" is to look at regression equations analyzing achievement. The regression equations presented in Appendix B indicate that only 17 per cent of the variance in fifth grade black achievement at the school level can be explained by student-reported social class characteristics. For fifth grade white students, the corresponding per cent of variance explained is 53 per cent. However, when we turn to characteristics of the school reported by the teachers and principal, we find that these variables predict fifth grade black performance as well as they do fifth grade white. If the fifth grade black achievement test had a large amount of error, we would not be able to find significant correlates of achievement in the teacher and principal data. That we can find these correlates in the teacher and principal data but not in the student data is further evidence that, taken together, the fifth grade black attitude questionnaire and the fifth grade black report of social class characteristics is the weak link. Of course, the fact that a small amount of variance in the fifth grade black test has been explained by social class means that it is easier for principal- and teacher-reported variables to "work." In order to allow for this factor, we estimated how much unexplained variance there was in the fifth grade black and fifth grade white tests. For fifth grade whites, perhaps one-fourth of the variance between the schools is merely sampling error resulting from the small number of white students interviewed in some schools. This, plus the large amount of variance explained by social status characteristics, means that there is perhaps one-half as much variance in the fifth grade white test to explain as there is the fifth grade black test. Therefore, a variable that enters the regression equation with a standardized regression coefficient of .1 on the black test would be expected to enter the white regression equation with a regression coefficient of only .07. In our analysis, however, we found 15 variables that would enter the fifth grade black equation with a beta of .1, and 15 that would enter the fifth grade white equation with a variance of .07. This finding suggests that the principal and teacher variables are predicting black achievement just as well as they are predicting white achievement.

Tables D.7, D.8, D.9, and D.10 present the correlations between the components of the SES scale and the subtests of the STEA test. The first three tables--those for tenth grade black, tenth grade white, and fifth grade white--are generally similar. They tend to show that the percentage of students living with both parents is a weak predictor of achievement. In addition, they tend to show that all the subtests are approximately equally well correlated with various indicators of social class. The fifth grade black test (Table D.10) is more interesting. First, we see that the only correlations between SES items and test scores that are above .3 are for the reading subtest. However, if the reader refers back to Table D.4, he will see that the reading subtest is itself poorly correlated with the total test score. Apparently, the achievement test for fifth grade blacks has a two-factor solution, with the reading subtest comprising one of the factors and the other four tests comprising the other factor. Thus, one of the reasons why the social status variables predict achievement poorly for the fifth grade black subgroup is the presence of this peculiar split in the achievement test.

It thus seems likely that measurement error is not the whole story; social status simply does not predict achievement for fifth grade blacks as well as it does for the other groups. One hypothesis comes to mind that might explain the peculiar results for this one subgroup. Obviously, blacks are different from whites, and elementary school students are different from high school students. Social status should predict achievement for two reasons: first, native ability is highly correlated with social class; and second, higher status students are less likely to be aggressive or

TABLE D.7

CORRELATIONS BETWEEN INDIVIDUAL SES ITEMS AND SUBTEST SCORES FOR TENTH GRADE WHITES

Item	SES Variable						
	Total SES	Mother's Education	Own Home	Live With Both Parents	Own Air Conditioner	Mean Number of Siblings	Daily Newspaper
Subtest:							
Reading . .	.62	.64	.16	.23	.36	-.43	.43
Language . .	.53	.47	.24	.32	.25	-.36	.35
Math concepts. . .	.50	.50	.17	.23	.31	-.32	.31
Math computation . .	.49	.50	.11	.21	.30	-.33	.32
Science. . .	.59	.62	.19	.25	.33	-.38	.37
Total achievement . . .	.60	.59	.20	.28	.34	-.40	.38
Total SES .	x	.84	.41	.30	.72	-.65	.73
Individual SES:							
Mother's education		x	.26	.09	.59	-.44	.62
Own home . .			x	.23	.08	-.11	.07
Live with both parents .				x	-.00	-.12	.07
Own air conditioner . .					x	-.26	.44
Siblings . .						x	-.52
Newspaper .							x

TABLE D.8

CORRELATIONS BETWEEN INDIVIDUAL SES ITEMS AND SUBTEST SCORES
FOR TENTH GRADE BLACKS

Item	SES Variable						
	Total SES	Mother's Education	Own Home	Live With Both Parents	Own Air Conditioner	Mean Number of Siblings	Daily News paper
Subtest:							
Reading . . .	.53	.49	.07	.19	.40	-.36	.39
Language. . .	.44	.39	.02	.22	.36	-.31	.32
Math concepts . . .	.39	.35	.00	.17	.25	-.36	.24
Math computation. . .	.43	.36	.11	.09	.34	-.34	.27
Science . . .	.31	.29	.18	.11	.21	-.19	.17
Total achievement . . .	.52	.47	.07	.21	.40	-.39	.36
Total SES . .	x	.74	.28	.33	.78	-.70	.70
Individual SES:							
Mother's education .		x	.03	.09	.62	-.27	.53
Own home . .			x	.20	.04	-.48	-.12
Live with both parents . .				x	.07	.07	.04
Own air conditioner . .					x	-.00	.51
Siblings . .						x	-.50
Newspaper . .							x

TABLE D.9

CORRELATIONS BETWEEN INDIVIDUAL SES ITEMS AND SUBTEST SCORES FOR FIFTH GRADE WHITES

Item	Total SES	Food Stamps	News-paper	Live With Both Parents	Bicycle	Number of Siblings
Subtest:						
Reading . . .	.62	.34	.55	.25	.50	-.55
Language . . .	.61	.24	.53	.35	.52	-.47
Math concepts.	.44	.15	.38	.28	.36	-.38
Math computation	.59	.27	.53	.30	.47	-.49
Science . . .	.61	.25	.54	.32	.50	-.47
Total achievement	.63	.28	.55	.34	.52	-.51
Total SES . .	x	.55	.70	.60	.77	.70
Individual SES:						
Food stamps .		x	.32	.24	.37	-.31
Newspaper . .			x	.21	.49	-.50
Live with both parents . .				x	.43	-.16
Bicycle . . .					x	-.51
Number of siblings . .						x

TABLE D.10

CORRELATIONS BETWEEN INDIVIDUAL SES ITEMS AND SUBTEST SCORES FOR FIFTH GRADE BLACKS

Item	Total SES	Food Stamps	News-paper	Live With Both Parents	Bicycle	Number of Siblings
Subtest:						
Reading . . .	.16	.41	.36	.20	.34	-.32
Language . . .	.09	.30	.19	.13	.12	-.16
Math concepts.	.00	.27	.14	.07	.10	-.12
Math computation . . .	.11	.30	.17	.12	.22	-.23
Science . . .	.14	.24	.25	.02	.17	-.20
Total achievement . . .	.11	.36	.26	.12	.20	-.23
Total SES . .	x	.71	.66	.50	.59	-.56
Individual SES:						
Food Stamps .		x	.40	.32	.30	-.32
Newspaper . .			x	.11	.37	-.38
Live with both parents . .				x	.11	.04
Bicycle . . .					x	-.36
Number of siblings . .						x

delinquent. For blacks, however, we suspect that there is not a strong correlation between social class and native ability, especially in the South, where opportunities for occupational advancement are still sharply limited for blacks. There is less opportunity for blacks of superior ability to locate jobs appropriate to that ability. One might expect to find many black sharecroppers' sons with as much native ability as black doctors' sons. For whites, we expect to find all aspects of social class working concurrently; that is, that middle class students have more native ability, fewer needs to act aggressively in the classroom, and more support for learning in the home. For blacks, however, we expect to find that middle class students have fewer problems with aggression and receive more educational support in the home, but not that they are necessarily of clearly superior learning ability. In high school, where adolescent delinquency is a critical problem, we might expect to find the middle-class student sorting himself out from his equally intelligent lower-class peers as they become more delinquent and he plays the role of the college-oriented student. At the elementary school level, where delinquency is not such a problem and all students like school reasonably well, the middle-class student has the advantage of coming from a more literate family and thus being able to read better. His lower-class classmates, however, often have as strong a native ability and consequently can be expected to do as well on other parts of the test. This is a highly speculative hypothesis, but it could be subject to test in some future study, and is therefore worth stating at this time.

A Note: General and Specific Components of the Achievement Subtest

The fact that we can correlate white and black scores on the test gives us a simple device to determine the degree to which the different subtests are related to school variables. If a subtest has a relatively low white-black correlation, we can argue that the test is not measuring materials specific to the curriculum of the school. If the correlation is high, we can argue that the cause of the high correlation is the common school experience of the white and black student. Table D.11 gives the intercorrelations between the white and black scores on all the tests. First, we see that the scores on the main diagonal are higher than those off the diagonal in all cases. This is as it should be. However, we also see that in two cases--the science test and the arithmetic test--the diagonal entries are not much higher than the off-diagonal entries. The correlation between the black and white science test scores is as high as the correlation between the math concepts test and the black science score. This would lead us to conclude that for the fifth grade, the science and math tests are not strongly affected by differences between schools in the way these subjects are taught. On the other hand, the language arts subtest and the math concepts subtest are the most school-specific. Surprisingly, the reading test also shows a slightly higher correlation than the science and arithmetic tests. However, this may be due to the fact that in the fifth grade, the reading test is more closely correlated with social class, and black and white social class are correlated in the schools.

TABLE D.11

CORRELATIONS OF BLACK AND WHITE SUBTEST SCORES
(Mean for Fifth Grade)

White

		Reading	Language	Science	Math Concepts	Arithmetic	Total
Black	Reading	.28	.25	.22	.18	.20	.21
	Language	.21	.30	.17	.18	.16	.18
	Science	.23	.23	.24	.24	.22	.23
	Math Concepts	.17	.23	.16	.33	.17	.18
	Arithmetic	.24	.22	.21	.22	.24	.22
	Total	.21	.23	.19	.20	.19	.29

APPENDIX E

SCALES

TABLE E.1

TENTH GRADE SOCIAL CLASS SCALE

Part A: Questions and Weights[a]

Questions	Coding Weights
How much education does your mother have? (If you don't know, it's all right to guess.)	
Did not go to high school	0
Went to high school but didn't graduate	2
Graduated from high school	4
Attended college	6
Blank	2
Do you live with both of your parents?	
Yes	4
No	0
Blank	0
How many brothers and sisters do you have?	
One	8
Two	7
Three	6
Four	5
Five	4
Six	3
Seven	2
Eight or more	1
None	9
Blank	6
Does your family get a newspaper regularly?	
Yes	4
No	0
Blank	0
Does your family own their home?	
Yes	4
No	0
Blank	0
Does your home have an air conditioner?	
Yes	4
No	0
Blank	0

[a]Coding scheme: Sum weighted responses and divide by 6. Do not score if 2 or more not answered. Enter whole digit plus first decimal.

TABLE E.1--Continued

Part B: Item Means and Standard Deviations

Item	Tenth Grade Black (N=145)		Tenth Grade White (N=160)	
	Mean	Standard Deviation	Mean	Standard Deviation
Mother's education . .	36.35	20.00	62.42	18.23
Live with both parents.	60.15	16.70	82.84	9.96
Number of siblings . .	47.70	8.84	.29	.06
Read newspaper	66.80	21.12	82.27	13.29
Own home	61.41	18.37	78.57	12.45
Own air conditioner . .	29.47	23.27	70.77	19.04

Part C: Item Intercorrelations

(Tenth grade white above diagonal, tenth grade black below)

Item	Mother's education	Live with both parents	Number of siblings	Read news-paper	Own home	Own air condi-tioner
Mother's education .		.12	-.45	.50	.24	.57
Live with both parents . .	.18		-.20	.14	.33	-.03
Number of siblings .	-.48	.02		-.48	-.12	-.30
Read newspaper .	.48	.07	-.44		.10	.42
Own home . .	.08	.24	.10	-.09		.08
Own air condi-tioner . .	.56	.06	-.46	.46	.04	

TABLE E.2

FIFTH GRADE SOCIAL CLASS SCALE

Part A: Questions and Weights[a]

Questions	Coding Weights
Do you own a bicycle?	
Yes	4
No	0
Blank	0
How many brothers and sisters do you have?	
One	8
Two	7
Three	6
Four	5
Five	4
Six	3
Seven	2
Eight or more	1
None	9
Blank	6
Do you live with both of your parents?	
Yes	4
No	0
Blank	0
Did anyone at home read to you when you were little--before you started school?	
Yes	4
No	0
Blank	0
Does your family own their home?	
Yes	4
No	0
Blank	0
Does your family buy groceries with food stamps or get surplus food?	
Yes	0
No	4
Blank	0
Does your family get a newspaper regularly?	
Yes	4
No	0
Blank	0

[a]Coding scheme: Sum weighted responses and divide by 7. If 2 or more not answered, do not score.

TABLE E.2--Continued

Part B: Item Means and Standard Deviations

Item	Fifth Grade Black (N=269)		Fifth Grade White (N=299)	
	Mean	Standard Deviation	Mean	Standard Deviation
Child owns a bicycle . . .	65.0706	15.365	86.3017	11.4920
Number of siblings	4.418	.873	2.7945	.6143
Live with both parents . .	63.9316	16.0593	84.9390	10.6561
Own home	66.93	20.75	72.0966	17.6904
No food stamps	64.455	21.874	84.8125	12.6633
Read newspaper	63.2528	21.2023	76.0821	16.6095

Part C: Item Intercorrelations

(Fifth grade white above diagonal, fifth grade black below)

Item	Own bicycle	Number of siblings	Live with both parents	Own home	No food stamps	Read news-paper
Own bicycle		-.47	.24	.34	.33	.38
Number of siblings	-.32		-.15	-.29	-.35	-.37
Live with both parents	.10	.04		.46	.21	.18
Own home	.13	.04	.35		.31	.31
No food stamps	.33	-.30	.32	.23		.26
Read news-papers	.31	-.39	.09	.03	.39	

TABLE E.3

COMMUNITY LEADERS' REPORT OF COMMUNITY CIVIL RIGHTS ACTIVITY

Part A: Questions and Weights[a]

Questions	Coding Weights
How much civil rights activity[b] has there been in (NAME OF CITY OR COUNTY) in the past ten years? Would you say a great deal, a moderate amount, or relatively little?	
Great deal	3
Moderate amount	2
Relatively little (or none)	1
In some communities civil rights activity has resulted in trouble--meaning either very bitter feelings, or many arrests, violence on the part of police or demonstrators, or property damage. Has there been, in your judgement a great deal of trouble here in the past decade, some trouble, or almost none?	
Great deal	3
Some	2
Almost none (or none)	1

[a]Coding scheme: Mean of civil rights activity score. If one not answered, do not score.

[b]Civil rights activity can include: Committee presenting demands, filing a suit, demonstrations, or anything the respondent wants to consider as civil rights activity.

Part B: Means and Standard Deviations

	Fifth Grade	Tenth Grade
Mean	16.599	16.238
Standard deviation .	3.925	3.980

TABLE E.4

TEACHERS' ASSESSMENT OF WHITE/MINORITY GROUP STUDENTS' ABILITY

Part A: Questions and Weights[a]

Questions	Coding Weights
What proportion of your (white/minority group) students would you say are performing adequately by the same standards?	
Almost all are doing adequate work	4
More than half are doing adequate work	3
Less than half are doing adequate work	2
Very few are doing adequate work	1
Does not apply	0
What proportion of your (white/minority group) students would you say have the potential to attend the largest state university in your state?	
Almost all	4
More than half	3
Less than half	2
Very few	1
Does not apply	0

[a]Coding scheme: Sum weighted responses and divide by 2. Do not score if either not answered.

Part B: Means and Standard Deviations

	Fifth Grade	Tenth Grade
Mean	18.776	19.208
Standard deviation .	3.829	2.983

TABLE E.5

TEACHERS' REPORT OF TEACHER CONTACT WITH WHITE OR MINORITY GROUP STUDENTS

(Fifth Grade)

Part A: Questions and Weights[a]

Questions	Coding Weights
We would like some additional information about two pupils in your class.	
First, think of the (white/minority group) student whose name is first in alphabetical order. Please answer each of the following about that child.	
Does that child talk to you a lot about what he or she is doing?	
Yes	1
No	0
Don't know	0
Does not apply	0
Does that child have a special interest in some school project?	
Yes	1
No	0
Don't know	0
Does not apply	0

[a]Coding scheme: Sum weighted responses and divide by 2. If either blank, do not score.

Part B: Means and Standard Deviations

	Contact with:	
	White Students	Minority Students
Mean	5.296	3.709
Standard deviation .	1.815	1.419

TABLE E.6

TEACHERS' REPORT ON DISCUSSION ABOUT RACE

Part A: Questions and Weights[a]

Questions	Coding Weights
Do you feel that you should let your students know how you feel about race relations, or would that be improper?	
I should let them know	2
That would be improper	1
How often do you have class discussions about race?	
Once a week or more	4
Once a month	3
Once every few months	2
No such discussions so far	1

[a]Coding scheme: Sum weighted responses and divide by 2. If either blank, do not score.

Part B: Means and Standard Deviations

	Fifth Grade	Tenth Grade
Mean	16.906	18.052
Standard deviation .	2.619	2.596

TABLE E.7

TENTH GRADE STUDENT REPORTS OF CONTACT WITH OTHER RACE

Part A: Questions and Weights[a]

Questions	Coding Weights
Think for a moment about the three students you talk with most often at this school. Are they the same race as you?	
Yes, all same race as me	1
No, one or more is from another race	4
Have you ever called a student of a different race on the phone?	
Yes	2
No	1
This school year, have you helped a student from another race with school work?	
Yes	2
No	1
This school year, have you asked a student from another race to help you with your homework?	
Yes	2
No	1

[a]Coding scheme: Sum and divide by 4. If more than 1 blank, do not score.

TABLE E.7--Continued

Part B: Item Means and Standard Deviations

Item	Tenth Grade Black (N=145)		Tenth Grade White (N=160)	
	Mean	Standard Deviation	Mean	Standard Deviation
Talked with friends of other race	34.81	17.98	18.20	14.91
Phoned different race students	39.49	18.54	24.11	14.13
Helped different race students with homework	63.84	21.83	61.17	18.06
Asked different race students for homework help	49.65	22.63	32.23	16.39

Part C: Item Intercorrelations

(Tenth grade white above diagonal, tenth grade black below)

Item	Talked with friends of other race	Phoned different race students	Helped different race students with homework	Asked different race students for homework help
Talked with friends of other race		.52	.53	.52
Phoned different race students	.24		.52	.58
Helped different race students with homework	.49	.40		.74
Asked different race students for homework help	.35	.45	.66	

TABLE E.8

LEVEL OF RACIAL TENSION
(Combined principal, teacher, and student reports)

Part A: Questions and Weights[a]

Questions	Coding Weights
The amount of violence varies from community to community and school to school. Thkinking about the entire current school year here at (NAME OF SCHOOL), how many instances of each of the following have occurred?	
A. Principal Reports:[b]	
A student being hurt in a fight seriously enough to require hospitalization?	
None	4
One	3
Two	2
Three	1
Four or more	0
A student being hurt seriously enough in a fight to require attention by a doctor or nurse?	
None	4
One	3
Two	2
Three	1
Four or more	0
A student's locker being broken into?	
None	4
One	3
Two	2
Three	1
Four or more	0
How many instances of a student being robbed by a gang or group of other students have occurred this school year?	
None	4
One	3
Two	2
Three	1
Four or more	0
A teacher being attacked by a student?	
None	4
One	3
Two	2
Three	1
Four or more	0
A robbery of school property worth over $50?	
None	4
One	3
Two	2
Three	1
Four or more	0

Table E.8--Continued

Questions	Coding Weights
B. Teacher Reports: On the whole, how would you evaluate the way in which desegregation is working out in your school?	
Almost no problems	Value is per cent answering "almost no problems" and "some minor problems"
Some minor problems	
Some serious problems	
Many serious problems	
Does not apply	
C. Teacher Reports: Here is a list of things that have happened in some desegregated schools. Please indicate whether or not each of these things happened at your school. A greater amount of fighting than before desegregation?	
Yes	
No	Value is per cent answering "yes"
Does not apply	
D. White Student Report On the whole, how would you say things are working out with both blacks and whites in the school?	
Almost no problems	4
Some minor problems	3
Some serious problems	2
Many serious problems	1
School does not have both black and white students	0
Blank	0
E. Black Student Reports[c] The way things are going between blacks and whites in this school, do you think things will be better or worse next year?	
Better	3
Same	2
Worse	1
School does not have both black and white students	0
Blank	0

[a]Coding scheme: Value of each was divided by standard deviation, then combined (A + B - C + D + E) for score.

[b]Coding scheme: Sum and divide by 6. If 2 or more blanks, do not score.

[c]Sum and divide by 2. If either blank, do not score.

TABLE E.8--Continued

Part B: Item Means and Standard Deviations

Item	Tenth Grade Black (N=136)		Tenth Grade White (N=154)	
	Mean	Standard Deviation	Mean	Standard Deviation
Principal report of little violence	32.22	6.80	32.31	6.86
Teacher report of no problems	80.16	18.40	80.64	18.14
Teacher report of greater fighting	27.93	24.57	28.39	24.41
White race relations . . .	9.27	2.20	9.12	2.20
Black race relations . . .	8.78	2.65	8.75	2.50
Blacks attacking whites .	33.14	26.39	42.45	30.30
Whites attacking blacks .	25.06	22.92	14.25	14.82
Favoritism to blacks . . .	31.29	15.81	53.06	19.36
Favoritism to whites . . .	62.68	20.38	60.83	19.21
Tension problems	48.59	18.11	51.97	21.43

Part C: Item Intercorrelations

(Tenth grade white above diagonal, tenth grade black below)

	Little violence	No problem	Greater fighting	Black race relations	White race relations	Blacks attacking whites	Whites attacking blacks	Favoritism to blacks	Favoritism to whites	Tension problems
Principal report of little violence		.43	-.32	.20	.30	-.47	-.38	-.12	-.27	-.30
Teacher report of no problems	.42		-.57	.39	.47	-.48	-.30	-.31	-.40	-.50
Teacher report of greater fighting	-.30	-.59		-.45	-.46	.55	.44	.27	.37	.47
Black race relations	.19	.40	-.47		.63	-.59	-.61	-.43	-.48	-.60
White race relations	.23	.41	-.45	.67		-.76	-.65	-.84	-.83	-.91
Blacks attacking whites	-.46	-.49	.58	-.65	-.58		.70	.54	.60	.74
Whites attacking blacks	-.13	-.29	.41	-.74	-.55	.66		.39	.37	.53
Favoritism to blacks	.03	-.24	.19	-.61	-.50	.24	.38		.62	.74
Favoritism to whites	-.24	-.29	.32	-.70	-.49	.40	.26	.22		.70
Tension problems	-.19	-.33	.39	-.72	-.38	.46	.36	.28	.43	

TABLE E.9

TEACHER ATTITUDES TOWARD INTEGRATED SCHOOLS

Part A: Questions and Values[a]

Questions	Values
As far as you know, how do each of the following feel about desegregation?	
A) Most white teachers in this school:	
Like it very much	
Like it somewhat	Value is per cent answering "Like it very much" and "Like it somewhat."
Do not care	
Dislike it somewhat	
Dislike it very much	
Don't know	
Does not apply	
B) Most minority teachers in this school:	
(Same as above)	(Same as above)
C) Teacher prejudice (See Table E.10)	
D) Some people say that black students would really be better off in all-black schools. Others say that black students are better off in racially mixed schools. What do you think?	
Most black students are better off in all-black schools	Value is per cent answering "mixed schools."
Most black students are better off in mixed schools	
E) What about white students--do you think that white students are better off in all-white schools, or are they better off in racially mixed schools?	
Most white students are better off in all-white schools	Value is per cent answering "mixed schools."
Most white students are better off in mixed schools	

[a]Value of each was divided by standard deviation, then summed (A + B + C + D + E) for score.

TABLE E.9--Continued

Part B: Item Means and Standard Deviations

Item	Fifth Grade		Tenth Grade	
	Mean	Standard Deviation	Mean	Standard Deviation
White teacher attitudes to desegregation .	32.89	22.56	27.40	20.11
Minority teacher attitudes to desegregation .	47.66	23.02	45.50	22.05
Teacher prejudice.	21.28	3.12	22.00	3.46
White students better off in mixed schools .	57.56	22.57	60.42	20.95
Black students better off in mixed schools .	74.29	22.01	73.49	18.01

TABLE E.10

TEACHER AND PRINCIPAL PREJUDICE SCORE[a]

Part A: Questions and Weights[b]

Questions	Coding Weights				
Now I will read some statements other people have made. For each, please tell whether you strongly agree, agree somewhat, disagree somewhat, or strongly disagree.	Strongly agree	Agree somewhat	Disagree somewhat	Strongly disagree	Blank
First, the amount of prejudice against minority groups in this country is highly exaggerated	1	2	3	4	2
You would like to live in an integrated neighborhood	4	3	2	1	3
The civil rights movement has done more good than harm	4	3	2	1	3
Blacks and whites should not be allowed to intermarry	1	2	3	4	2
If you have to choose one factor which accounts most for failure of the Negro to achieve equality, which would you choose--a lack of initiative and drive, or the restrictions imposed by a white society?					
A lack of initiative and drive			1		
Restrictions imposed by a white society			3		
Blank			2		

[a]Identical questions and scale used for teacher interview and principal interview.

[b]Coding scheme: Sum and divide by 5. If more than 2 blank, do not score.

TABLE E.10--Continued

Part B: Means and Standard Deviations

	Means	Standard Deviations
Teacher:		
Fifth grade	21.116	3.109
Tenth grade	21.995	3.463
Principal:		
Fifth grade	25.092	6.526
Tenth grade	25.021	5.617

TABLE E.11

PRINCIPAL'S REPORT OF INTEGRATED STUDENT ELITE

Part A: Questions and Weights[a]

Questions	Coding Weights
Are the student government officers in your school all of the same racial (ethnic) group, or are they from different groups?	
All same	1
Different	2
Are the cheerleaders in your school all of the same racial (ethnic) group, or are they from different groups?	
All same	1
Different	2

[a]Coding scheme: If either not answered, do not score.

Part B: Means and Standard Deviations

	Mean	Standard Deviation
Tenth grade	3.547	.645

TABLE E.12

PRINCIPAL'S REPORT OF PROGRAMS

(Questions and Weights)[a]

A) Now I want to ask you about some programs, courses, and personnel. First, please look at this list and tell me which of these programs you don't have here at (NAME OF SCHOOL). Now, let's go through the list of those you do have. Considering the size, composition, and needs of your particular student body, tell me for each one if it is large enough or too small.	Large enough . 1 Too small . . 2 None 3
Guidance counselors Social worker or home visitor Team teaching[b] Teacher aides Teacher workshops or in-service training for teachers or teacher aides Remedial reading program Ungraded classrooms[b] Demonstration or experimental classrooms[b] Vocational training courses[c] Minority group history or culture courses[c] Extracurricular activities geared toward minority students[c] Late bus for students who stay late for extracurricular activities[c] Biracial advisory committee of students[c] Special classrooms for underachievers Special classrooms for socially or emotionally maladjusted Achievement grouping of classrooms Achievement grouping within classrooms[b] Major curriculum revisions Program for tutoring low achieving students Special program to increase parent-teacher contact (e.g., conferences) Programs to improve intergroup relations among students Programs to improve intergroup relations among teachers Equipment for students to use, such as reading machines, tape recorders, video tape machines, etc.	Asked for Each Item Unless Response Was "None": B) Is that program available to (fifth/tenth) graders? Yes . . . . 4 No . . . . 5 C) Did the school have that program last year (1970-71)? Yes . . . . 6 No . . . . 7 (Weights are identical for each item.)

[a]Coding schemes: Size of Program--if Col. A = 1 and Col. B = 4, then score 2.
if Col. A = 2 and Col. B = 4, then score 1.
if Col. A = 3 or Col. B = 5, then score 0.

Years of Program--if Col. B = 4 and Col. C = 6, then score 3.
if Col. B = 4 and Col. C = 7, then score 2.
if Col. B = 5 and Col. C = 6, then score 1.
if Col. B = 5 and Col. C = 7, then score 0.

[b]Fifth grade only.

[c]Tenth grade only.

TABLE E.13

PRINCIPAL'S REPORT OF SCHOOL SPECIALIST PERSONNEL

Questions	Value
First, I'd like to ask some questions about various categories of personnel at this school.	
How many full-time and part-time staff members in each of the categories on the card are currently working at this school?	
Remedial reading teacher	
Remedial math teacher	
Music or art teacher	
Drama or speech teacher	
Gym teacher or coach	
Vocational education teacher	Value for each group (and for grand total) is number of full-time plus one-half the number of part-time staff.
Counselor aides	
Guidance counselor	
Psychologist	
Social worker	
Speech therapist	
Teacher aides	
Library aide or clerk	
Librarian	
Nurse	
Audio-visual specialist	
Truant officer/home visitor	
Community relations specialist	
Administrator (not listed above)	
Other (What?)	
Total	

TABLE E.14

PRINCIPAL'S REPORT OF NEW SUPPLIES/EQUIPMENT

(Questions and Weights)[a]

Questions	Coding Weights			
	A. 1971-72		B. 1970-71	
	Yes	No	Yes	No
A. During the 1971-72 school year, did this school receive any [ITEMS (1) - (6)]				
B. How about last year (1970-71), did this school receive any [ITEMS (1) - (7)]				
(1) School furnishings?	1	2	1	2
(2) Funds for renovation?	1	2	1	2
(3) Funds for additional space?	1	2	1	2
(4) More text books than usual?	1	2	1	2
(5) More testing materials than you usually do?	1	2	1	2
(6) Human or community relations literature?	1	2	1	2
(7) Buses?	1	2	1	2

[a]Coding scheme: For each item where A equals 1 and B equals 1, score 3; where A equals 1 and B equals 2, score 2; where A equals 2 and B equals 1, score 1; where A equals 2 and B equals 2, score 0.

TABLE E.15

PRINCIPAL'S REPORT ON AMOUNT OF TRACKING (FIRST SCORE)

Part A: Questions and Weights[a]

Questions	Coding Weights
When your present 10th graders were in 7th and 8th grades, approximately how many of them went to schools which had ability-grouping? Would you say almost all, over half, less than half, or very few?	
Almost all	4
Over half	3
Less than half	2
Very few	1
Here is a card which lists three ability-grouping procedures. Which best describes the ability-grouping procedure used in this school?	
Students are placed into programs--college preparatory, vocational, etc., by their own choice.	
Students are placed into programs or academic tracks primarily on the basis of test scores or teachers' recommendations.	
We don't have academic programs or tracks, either because the school is too small or because we disapprove of tracking.	
*Approximately what proportion of the 10th grade academic classes--English, Math, Social Studies, etc.--are separated by program, so that students are in class only with students in their ability-group level or program?	
All	4
More than half	3
About half	2
Less than half	1
*Are the non-academic classes, such as home room, gym, health, music, art--separated by ability-group levels or tracks?	
Yes, all are separated	3
Some are separated	2
None are separated	1
*How many different levels of 10th grade English are there in this school?	
One	1
Two	2
Three	3
Four	4
Five	5
Six	6
Seven or more	7

[a]Coding scheme: Sum and divide by 4. If more than 2 blanks, do not score.

*Asked if school had tracking.

Part B: Means and Standard Deviations

	Mean	Standard Deviation
Tenth grade . . .	26.645	9.740

APPENDIX F

SAMPLING OF SCHOOL DISTRICTS, EXPERIMENTAL-CONTROL PAIRS, AND SUPPLEMENTARY SCHOOLS

The sample consists of 555 schools, selected from 103 school districts in the South that received ESAP funds. ESAP funds were awarded at several different times during the summer of 1971; each time an award was made, a group of school districts (LEAs) were selected by sampling.

The strategy of the sampling was to stratify the LEAs by size and percentage minority, sampling each stratum with equal probability. Since large districts and districts with large percentage black enrollments were more likely to qualify for ESAP, the decision to sample with equal proportions from all strata at first seemed likely to produce enough large school districts for analysis. After the first group of ESAP awards were sampled, however, we decided to sample with certainty all school districts with enrollments of over 10,000 after that. In addition, we assumed that approximately 40 per cent of the districts sampled would be dropped from the final study for one reason or another. For example, districts in which four or fewer schools would receive ESAP funds would be dropped from the study because the selection of a control school would be somewhat more difficult under these circumstances. In addition, we assumed that some fraction--on the order of 25 per cent--would refuse to participate in the study. Consequently, a final sample of 173 school districts was selected. Fifty-three per cent of the school districts containing less than 10,000 students were sampled; 75 per cent of all districts with enrollments over 10,000 were sampled. The distribution of the final sample of LEAs by percentage minority and school enrollment size is shown in Table F.1.

TABLE F.1

DISTRIBUTION OF FINAL SAMPLE (LEAs) BY PER CENT BLACK AND BY SCHOOL ENROLLMENT

Per Cent Minority	Enrollment			
	0-9,999	10,000-24,999	25,000+	Total
45+	94 49	9 7	9 6	112 62
30-44	70 37	19 15	12 8	101 60
0-29	40 23	26 21	11 7	77 51
Total	204 109	54 43	32 21	290 173

Note: In each cell, the lower number is the sample, and the upper figure is the number eligible.

School districts were contacted by letter. The letter informed them that they had been awarded funds and stated that participation in the evaluation was a mandatory condition. As quickly as possible thereafter (usually within 10 days), the superintendent was contacted, told that an experimental design would be used for the evaluation, and asked to submit a list of schools that he would like to receive funds. He was further asked to group the schools in pairs on the basis of social characteristics. Exactly how he was to make this grouping was not specified, but most superintendents took this as an instruction to match on social class and racial composition of the schools. At this point, some school districts refused to participate in the evaluation. No doubt many superintendents realized that the power of the Office of Education to withdraw funds was essentially an empty weapon, as indeed it was; the ESAP legislation required districts to submit to evaluaiion, but said nothing about requiring the use of an experimental design.

Pairs of schools were sampled randomly from the school districts containing two or more pairs. One-half of the pairs (again, selected randomly) were designated as experimental-control pairs, and one of the two was randomly designated as not eligible for ESAP funds. The superintendents were notified by letter which schools would not be permitted to receive funds. Eighteen additional districts withdrew at this point, leaving a final sample of 107 school districts. Four of these school districts were dropped, some because the selected pair of schools was badly mismatched on racial composition and others because possible pecularities in the selection process may have resulted in an unanticipated bias. In four cases, we finally decided to match an experimental school in one district with a control school in another district. These matches were always within the same state (usually within the same region within the state), and the superintendent of one of the districts was contacted for advice about the decision.

When these procedures were completed, one-half of the sample schools had been selected. The school districts had been designated and the experimental and control schools selected.

The next step was to select the additional 100 ESAP-funded high schools and 200 ESAP-funded elementary schools in order to increase the sample size for the cross-sectional regression analysis. These schools were selected from the same districts as the experimental-control schools, but with a slightly different set of sampling priorities. It was deemed necessary to increase the amount of variation in the racial composition of schools and to increase the number of schools in the study that were desegregating in the fall of 1971. Most of the schools in the sample were predominantly white but with a significant black minority. This meant that the study of desegregation would be hampered--there would be too many schools that were 60-90 per cent white and too few that were 50 per cent or more black, or less than 10 per cent black. In addition, there were only eight school districts in the sample that were undergoing a significant amount of desegregation. For these reasons, the additional 300 schools were sampled using procedures that differed from those used for the experimental-control schools.

If the additional 300 schools (we will call them the supplemental sample) had been selected in the same manner as the experimental and control schools, with every school having an equal probability of falling into the sample once the school districts had been selected, we would simply select "n" supplemental schools in a district that had "n" experimental and control schools. Instead, we divided the school districts into two strata. Stratum I consisted of the eight school districts in which at least one school had changed its racial composition significantly between the fall of 1970 and the fall of 1971. By "significantly," we mean that the population of the smallest ethnic group (white, black, or Mexican-American) doubled and also increased by 10 per cent. Thus, a change from 10 per cent black to 20 per cent black is significant, or a change from 2 per cent white to 12 per cent white is significant, but a change from 2 per cent to 4 per cent for any group is not, since that would not be a 10 per cent increase. This stratum consisted of a group of schools in the Upper South. We decided to oversample the schools in Stratum I by a 4-3 ratio. Since there were 46 control and experimental elementary and high schools in these eight districts, and 234 in the remaining 92 districts of Stratum II, we selected 57 schools from Stratum I (a 24 per cent oversample) and 234 schools from Stratum II (an 11 per cent undersample) for the supplemental sample. Thus, 1.24 schools were selected for every control or experimental school in the desegregating LEAs in Stratum I, and .89 schools for every experimental or control school in the Stratum II LEAs.

After the total number of schools to be sampled from each school district had been determined as described above, the next step was to divide this sample into high schools and elementary schools, by designating two-thirds of the sample in each district as elementary schools and one-third as high schools. The schools were then drawn, and were weighted in order to overselect schools with certain kinds of racial experiences. Finally, schools were selected with probabilities proportional to these weights.

This sampling procedure occasionally fails; it requires, for example, that we select high schools from districts where all the ESAP funds went to elementary schools or where only two high schools exist and therefore had already been selected as experimental and control schools. In the final stage, we selected additional schools to bring the sample to completion by resampling all of the unselected high schools--sampling from each school district proportional to the number of schools already selected from that district, and again using the weights for racial experience indicated above. Note 1, at the end of this appendix, presents a more formal explanation of the sampling process for the supplemental sample outlined above.

The effect of this sampling procedure was to produce two intentional biases and one unintentional bias. First, there is a bias toward the selection of large school districts. Furthermore, since experimental and control schools were selected with constant probability, those districts with more ESAP-funded schools would produce more schools in the final sample. Thus, schools in large urban districts are over-represented. The other intentional bias was the overselection of schools that were 50 per cent or more black, or 90 per cent or more white--schools that are underrepresented in the process of funding schools via ESAP.

The unintentional bias occurred as a result of the refusal to participate of approximately one-fourth of the school districts contacted; some of these districts did so after learning which school would be the control school. This means that the experimental-control design is seriously hampered since, for example, schools that had particularly effective parent groups pressing the school system, or schools perceived by the school superintendent as particularly needy, perhaps were not permitted to become control schools. Note 2, at the end of this appendix, discusses this problem in more detail. This circumstance also produces a bias resulting from the fact that those school superintendents least sympathetic to evaluation research would have no schools at all in the sample. Obviously, the final sample is unrepresentative of Southern desegregated schools, but the degree to which it is so cannot be analyzed. We do not know the effects of the sample losses; further, we do not know how the ESAP-funded schools differ from all Southern schools. For these reasons, we made no attempt to weight the sample (although we could have weighted the schools in the analysis so as to produce a sample representative of all ESAP-funded schools whose superintendent was willing to cooperate with the analysis). The fact that we did not weight the sample means that the simple frequency distribution of many of the variables should be interpreted cautiously, since we have no accurate way of knowing how these frequency distributions should be modified to represent the total sample. In our description of ESAP programs, we will weight the frequencies back to represent the total universe of ESAP-funded school districts with cooperative superintendents. Even here, results should be interpreted cautiously, since we do not know whether this particular universe of ESAP-funded schools would be representative of ESAP schools funded the preceding year. In the correlational analysis in the rest of the report we will use unweighted results (or more correctly, results weighted only to correct for sampling error within the schools), since it is our opinion that the gains in representation of a weighted sample would be more than offset by the loss of statistical reliability.

The final ESAP sample was drawn from 11 states. In the most densely sampled state, 8.7 per cent of the universe of schools was selected. The number of schools sampled in each of the 11 states and the sampling ratios are shown in Table F.2.

TABLE F.2

NUMBER OF SCHOOLS SAMPLED AND SAMPLING RATIOS, BY STATE

State	Sampled	State Sampling Ratios (Per Cent)
Deep South:		
State 1 . . .	39	2.7
State 2 . . .	35	3.6
State 3 . . .	44	2.3
State 4 . . .	88	6.4
State 5 . . .	104	8.7
Peripheral South:		
State 6 . . .	7	0.6
State 7 . . .	52	1.2
State 8 . . .	55	2.9
State 9 . . .	47	2.2
State 10 . .	52	2.8
State 11 . .	68	3.6

If the two largest school districts in each of 10 states (and one in the eleventh) are designated as representing the 21 largest districts stratified by state, we find that 110 of our sample schools are from these districts, representing a sampling ratio of 3.9 per cent. Thus the largest school districts are oversampled by slightly over 50 per cent.

Sampling of Community Leaders, Teachers, and Students

The four community leaders were interviewed in order to gain a measure of community opinion toward the school as well as a measure of community activity vis á vis race relations and school desegregation that would not be biased by the viewpoint of the school system. The four community leaders were selected so as to increase inter-informant agreement; the four were designed to be as representative as possible of the moderate political view of the community. The selection was made by first asking a black man listed on the school district biracial committee for that school district to consent to a telephone interview. If he refused, other black males were substituted until one interview was completed. This informant was then asked to designate a white business or professional man in the community whom he would recommend as a respondent. After this white man was interviewed, he in turn was asked to recommend a black woman respondent. Finally, the black woman was asked to designate the name of a white woman. Thus the four interviews always represented two blacks and two whites; in almost all cases, they represented two men and two women. Since every respondent was designated by someone of the opposite race, this form of snowball sampling minimized the possibility of a respondent of racist views, either white or black, being interviewed. These four interviews turned out to be very important in the analysis; for example, the pooled response for each community in reporting the total level of civil rights activity turned out to be an effective predictor in several of our analyses.

The 50 students were selected from three classes. At the elementary school level, three fifth grade classes were selected; at the high school level, three tenth grade English classes were selected.

Since we were not sure whether the schools were tracked by achievement or not (and were not sure whether such tracking would reflect a pro- or anti-black bias), we felt it was necessary to sample the classrooms after stratifying them by racial composition. Hence, the senior interviewer in the school was asked to obtain the racial composition of every fifth grade classroom or every tenth grade English class. After ranking them on a scale ranging from those classrooms with the fewest black students to those with the most, one classroom was selected from the center of the distribution and one from near each end, according to a preordained formula. The effect of this was to produce a sample that is very close to the racial composition of that grade and that minimizes the possibility of selecting (by sampling variability) unusually high or low achieving classes. In some schools with unusually large classes it was necessary to select only two classes, and in some very small schools there was only one fifth grade class.

The 10 teachers in the elementary school were sampled by first selecting the three teachers of the three classrooms in which the students were interviewed. Then other teachers were sampled, with an effort to select those teachers who were most likely to have had these same students in their classes. Thus, other fifth grade teachers were not interviewed, but fourth grade and third grade teachers were. If the school had a guidance counselor, that person was also interviewed. Finally, a remedial reading teacher, if present, was selected for interview, as was the gym teacher. The selection of this group of teachers was designed (1) to maximize the possibility of the surveyed students having been in contact with the teacher; (2) to maximize the data collection from those teachers whose behavior would be most likely to affect the entire school and the climate of school opinion among the staff.

At the tenth grade level, a similar pattern was used, with the exception that all teachers selected were teachers who taught mainly in the tenth grade. The three English teachers whose classes were being interviewed were selected for interview; in addition, three math teachers, two history or social studies teachers, a gym teacher, and a counselor were interviewed. Various formulas for the substitution of alternates when these teachers were not available were worked out in advance.

Note 1: Selecting Supplementary Schools in ESAP Evaluation Survey

This section describes the procedure for selecting those schools that are neither experimental nor control schools in the ESAP evaluation study. The sample of LEAs and the sample of control schools and experimental schools were selected by the Office of Education. For the sampling of the supplementary schools, the frame consisted of all of the schools, not already members of matched experimental-control pairs, located within 100 school districts. The LEAs were selected at a prior stage. Each district of unmatched schools constituted a stratum from which a number n_i of schools were selected ($i = 1,2,\ldots\ldots,100$).

For purposes of determining overall sample sizes, the districts in turn were grouped into two super-strata, Stratum I consisting of 8 LEAs, and Stratum II consisting of the remaining 92.

1. It was decided that 57 schools would be selected out of N_I, the number of unmatched schools in Stratum I. From the N_{II} unmatched schools in Stratum II, a sample of 234 was desired.

2. In each district of Stratum I, the number n_i to be selected from District i was determined by an allocation of the 57 proportional to the number of matched schools in each district. The same method of allocation was used for the sample of 234 from Stratum II.

3. For a given District i, the desired sample n_i was further decomposed into n_{i1} and n_{i2} ($n_i = n_{i1} + n_{i2}$), where n_{i1} is the number of <u>elementary</u> schools to be selected from District i, and n_{i2} is the number of <u>high schools</u> to be selected. The sample n_i was allocated according to $n_{i1} = 2n_{i2}$.

4. Then the actual selection within each district was made from separate high school and elementary school substrata. Before selection, however, the schools in each stratum in the district (high school and elementary) were weighted in accordance with the following scheme:

	Weight
Schools experiencing significant racial change (as defined earlier)(in Stratum I districts only)	6
Schools of 1 per cent to 9 per cent minority (black, Mexican-American, etc.)	3
Schools of 10 per cent to 39 per cent minority	1
Schools of 40 per cent to 49 per cent minority	2
Schools of 60 per cent to 99 per cent minority	3

Then, selection was made for high schools and elementary schools independently, with probabilities proportional to the weights above.

5. As an example, let f_{i1j} be the selection rate for the ith elementary school in District i of Stratum I. Assume that there are N_1 schools in all in that district, each carrying a weight based on racial experience, w_{i1j} or w_{i2j}. It follows that

$$f_{i1j} = \frac{w_{i1j} n_{i1}}{\sum_j w_{i1j}}$$

where

$$n_{i1} = (\frac{2}{3})(\frac{N_i}{N_1})(57)$$

6. There is a problem with this approach, in that there may be some values n_{i2} for which an insufficient number of high schools exist in the district. The method used to supplement the sample of high schools short by X units, was to select X out of the high schools already chosen in the super-stratum. Then, an additional high school was selected from the district in which the high school selected for the second time was located.

Note 2: The School Districts that Withdrew from the Study

It was possible for districts to drop out of the experimental design after they had been told which school was chosen as a control and would not receive ESAP money. Districts that refused to go along with this plan were still given their ESAP grant. If the school districts which refused to cooperate at this point did so because the control school was particularly in need of funds, then the final sample of control schools would be biased in favor of richer schools.

Of the 173 districts that were initially selected, 18 asked to be dropped from the sample after controls were selected. All of these sent written requests to be dropped, and listed their reasons. One district indicated that ESAP had indeed chosen their poorest school as the control. None of the others gave this reason. Some said that school board members represented separate parts of the district, and leaving one school unfunded would create political tensions. Other districts said that there had been a lot of racial unrest in their area and that the funding scheme would only serve to rock the boat even more.

Most of the 18 superintendents felt ethically committed to giving every school an equal share of money. Some went on to say quite bluntly that if one school were left out of ESAP funding, they would make up the difference with Title I or local money.

Although it is possible that more of these 18 districts were reacting to the particular poverty of the control school, only one actually gave this as a reason. The others seemed to be reacting more to the local political situation and their own principles. On the basis of their statements, the control sample would not appear to be biased by the withdrawal of these districts.

APPENDIX G

CORRELATIONS BETWEEN PROGRAMS AND THE FACTOR ANALYSIS

This appendix presents the correlation matrices of the program variables used in this analysis, followed by a factor analysis of the programs.

The variables used in the analysis are described below. The first group of variables use the notation 729XPP, and refer to counts of the number of specialist (non-classroom teacher) personnel available in the school in 1972 computed on a per pupil basis. The variables ending in "Y" refer to the size of special programs in the school, and the variables ending in "Z" refer to purchases of materials and other tangible objects. The 729XPP variables are as follows:

RR729XPP	Remedial reading
RM729XPP	Remedial math
MU729XPP	Music and art teachers
GY729XPP	Gym teachers
VO729XPP	Vocational education instructors
CO729XPP	Counselor's aides
GU729XPP	Guidance counselors
PS729XPP	Psychologists
SO729XPP	Social workers
SP729XPP	Speech therapists
TE729XPP	Teacher's aides
LA729XPP	Library aides
LI729XPP	Librarian
NU729XPP	Nurses
AU729XPP	Audio-visual specialists
TR729XPP	Truant officers and home visitors
CR729XPP	Community relations specialists
AD729XPP	Administrators
DR729XPP	(High school only) drama and speech teachers

The "Y" variables are as follows:

GUIDSY	Guidance counselors
SOCWSY	Social work programs
TEAMSY	(Elementary school only) team teaching
AIDESY	Teacher's aides
TTRASY	Teaching training
READSY	Remedial reading
UNGRSY	(Elementary school only) ungraded classrooms
DEMNSY	(Elementary school only) demonstration classes
UACHSY	Special classrooms for underachievers
MALASY	Special classrooms for maladjusted students
GRRMSY	Grouping of classrooms by achievement
GRCLSY	(Elementary school only) use of achievement grouping within classrooms
CREVSY	Curriculum revision
XACTSY	(High school only) extracurricular activities
XBUSSY	Late transportation for after school extracurricular activities
TUTRSY	Tutoring programs
PARESY	Parent community relations program
SRELSY	Student intergroup relations
TRELSY	Teacher intergroup relations programs
EQUPSY	Instructional equipment for students to use

All of the above variables are coded 0 if the school has no program, 1 if the principal considers the program inadequate in size, and 2 if he considers it adequate in the factor analysis that follows. In the report, the variable is also coded as a simple yes-no variable and, in addition, on a scale from 3 to 0: 3 if the school has had the program for two years, 2 if the program is new this year, 1 if the program was in existence last year but since has been cancelled, and 0 if it had no program either year.

The "12Z" variables refer to tangible supplies, and are coded 0 if none were provided in the last two years, 1 if they were provided for one of the last two years, and 2 if they were provided for both of the last two years. The "12Z" variables are:

TEX12Z	Text books
TST12Z	Testing materials
LIT12Z	Human relations literature
FUR12Z	Furnishings
REN12Z	Renovations
SPA12Z	Space

In the tenth grade listing below, a variable TYPE99 is shown. This variable is coded 1 if the school is an experimental school and 0 if it is a control school which did not receive ESAP funds. Thus, its correlation with other programs is an indication of the extent to which particular programs were concentrated in particular high schools, with a high correlation indicating a high concentration in the experimental schools.

TABLE G.1

CORRELATIONS BETWEEN PROGRAM VARIABLES, FIFTH GRADE

	RR729XPP	RM729XPP	MU729XPP	GY729XPP	VO729XPP	CU729XPP	GU729XPP	PS729XPP	SC729XPP	SP729XPP
RR729XPP	1.00000	0.40120	-0.02341	0.07030	0.26216	0.02595	0.17441	-0.00961	-0.06176	-0.09176
RM729XPP	0.40120	1.00000	-0.00828	0.16500	0.01762	0.01232	0.10939	-0.11258	[illegible]	-0.05419
MU729XPP	-0.02341	-0.00828	1.00000	0.56195	0.01504	0.07783	0.50559	0.29899	0.07885	0.43798
GY729XPP	0.07030	0.16500	0.56195	1.00000	0.12037	0.04120	0.46108	0.10735	0.03361	0.28643
VO729XPP	0.26216	0.01762	0.01504	0.12037	1.00000	0.00174	0.18842	0.01404	-0.03473	-0.04611
CU729XPP	0.02595	0.01232	0.07783	0.04120	0.00174	1.00000	0.09300	0.10920	0.02010	0.03999
GU729XPP	0.17441	0.10939	0.50559	0.46108	0.18842	0.09300	1.00000	0.00138	0.03285	0.21531
PS729XPP	-0.00961	-0.11258	0.29899	0.10735	0.01404	0.10920	0.00138	1.00000	0.23239	0.41011
SC729XPP	-0.06176	-0.03093	0.07885	0.03361	-0.03473	0.02010	0.03285	0.23239	1.00000	0.12042
SP729XPP	-0.09176	-0.05419	0.43798	0.28643	-0.04611	0.03999	0.21531	0.41011	0.12042	1.00000
TE729XPP	0.23037	0.10472	0.27403	0.11708	0.11774	0.10664	0.24695	0.15509	0.14693	0.12267
LA729XPP	0.09800	0.09743	0.02765	0.05364	-0.00306	-0.02161	-0.07425	0.09083	-0.01257	0.00766
LI729XPP	-0.01625	0.04110	0.55603	0.46947	-0.01678	0.03572	0.42224	0.21514	0.09106	0.41031
MI729XPP	0.11753	0.03180	0.43517	0.30375	0.07700	-0.00363	0.29927	0.22909	0.05642	[illegible]
AU729XPP	0.05959	0.09299	0.05305	0.10968	0.17725	0.02725	0.09425	0.13531	0.11741	[illegible]
TR729XPP	0.03930	0.00533	0.02948	0.05505	0.00233	-0.02011	-0.01426	0.13467	0.03643	0.15347
CP729XPP	-0.05022	-0.04023	0.03366	0.00158	0.02071	-0.01850	0.04274	0.06956	0.13441	0.07427
AD729XPP	0.13577	0.00394	0.50113	0.42150	0.01921	0.06320	0.45066	0.00511	-0.00073	0.38146
GUIDSY	0.00735	0.03371	0.05686	0.06810	0.07220	0.12836	0.58027	-0.03859	-0.04352	-0.08253
SPCSSY	-0.03940	-0.07193	0.03137	0.04109	0.00445	0.07422	-0.00419	0.22724	0.37761	0.14741
TEASSY	-0.03400	0.04023	0.06388	0.10068	0.01118	0.03742	0.07337	0.04792	0.12196	[illegible]
AIDSSY	0.19321	0.03320	0.06519	0.00616	0.04244	0.04929	0.09466	0.01413	-0.10217	[illegible]
TTHASY	-0.03334	0.04702	-0.02167	-0.09241	-0.04632	-0.15794	0.06786	-0.08985	0.02178	-0.10011
PEODSY	0.43070	0.24150	0.05025	0.13340	0.07017	0.06484	0.14812	-0.03205	-0.01355	-0.02775
UNGPSY	-0.00273	-0.02337	0.07612	0.01658	-0.03003	0.06740	0.10372	0.07391	0.03240	0.11156
DIMSSY	-0.04701	0.03074	0.10388	0.01801	-0.00159	0.05443	0.02016	0.02759	[illegible]	-0.04412
USCHSY	0.02273	0.02023	-0.01549	0.10414	0.03231	-0.00936	0.06374	0.01471	[illegible]	[illegible]
MALASY	0.11327	0.19310	-0.00736	0.05012	0.00219	-0.01100	0.07408	0.05761	[illegible]	[illegible]
GENSSY	0.10359	0.07390	0.02858	0.05094	0.10398	-0.02407	0.09772	0.05155	0.17727	[illegible]
GECLSY	0.02110	-0.01376	0.03154	-0.04675	-0.02177	0.01329	0.05175	-0.03580	0.02260	[illegible]
CRTVSY	0.03404	-0.01273	0.07963	0.09378	0.04465	-0.04974	0.10941	-0.00480	0.11777	[illegible]
TUTSSY	-0.03007	0.00402	0.00242	-0.04361	-0.03315	0.03532	-0.03425	0.05411	0.04272	[illegible]
PAIDSY	-0.04090	0.00391	0.02727	0.04478	0.04591	-0.00502	-0.02607	-0.03510	0.06319	[illegible]
SPELSY	-0.00361	0.02005	0.03793	0.05246	-0.02325	-0.01293	0.03612	0.09541	[illegible]	[illegible]
TECLSY	0.00930	0.04079	0.02791	0.01215	0.01409	-0.07745	-0.00707	0.02090	0.12798	[illegible]
FCUPSY	-0.02239	-0.00075	0.04685	0.00556	-0.10137	-0.00020	0.07074	0.02403	[illegible]	[illegible]
TEX122	0.03709	-0.00200	0.07574	0.03402	0.06497	0.02175	0.11925	-0.01910	[illegible]	[illegible]
TST122	0.17332	0.03129	0.05379	-0.01347	0.13649	0.07403	0.21893	-0.03573	0.03370	[illegible]
LIT122	-0.07079	-0.00402	0.09242	0.10263	0.00301	0.00675	0.00737	0.12707	0.02561	[illegible]
FOR122	0.04975	0.03190	0.04531	0.05482	0.05365	0.00723	0.03721	0.06260	0.03116	[illegible]
REN122	0.01310	0.00309	0.08427	0.05641	0.00623	-0.02905	0.02902	0.10744	0.05961	0.04453
SPA122	0.00040	0.00031	-0.08037	-0.03635	0.04253	-0.09508	0.03053	0.03856	0.04483	-0.03657

TABLE G.1--Continued

	TE729XPP	LA729XPP	LI729XPP	NU729XPP	AU729XPP	TR729XPP	CR729XPP	AD729XPP	GUIDSY	SOCWSY
RF729XPP	0.23037	0.09006	-0.01825	0.11758	0.09924	0.05986	-0.05022	0.11577	0.05755	-0.05426
RM729XPP	0.10472	0.09745	0.04110	0.03118	0.09299	0.00533	-0.04623	0.00594	0.03671	-0.07195
MU729XPP	0.27403	0.02765	0.55603	0.43917	0.05305	0.02996	0.03368	0.50113	0.05686	0.05137
GY729XPP	0.11708	0.05504	0.46947	0.30675	0.10968	0.05505	0.00158	0.42150	0.06610	0.04109
VO729XPP	0.11474	-0.00500	-0.01678	0.09300	0.17725	0.00232	0.02071	0.01521	0.07220	0.00945
CO729XPP	0.10004	-0.02161	0.03572	-0.00363	0.02428	-0.02011	-0.01350	0.05320	0.12836	0.07422
GU729XPP	0.24095	-0.07465	0.42294	0.29937	0.09325	-0.01426	0.04274	0.45066	0.58027	-0.00419
PS729XPP	0.15509	0.00055	0.21514	0.22809	0.13531	0.18467	0.06956	0.00611	-0.05659	0.22724
SO729XPP	0.14893	-0.01257	0.09106	0.05942	0.11341	0.03563	0.13441	-0.00073	-0.04352	0.37761
SP729XPP	0.12267	0.00960	0.41031	0.31634	0.06306	0.19337	0.07427	0.38146	-0.08253	0.14741
TE729XPP	1.00000	0.09740	0.18904	0.20579	0.02315	-0.00891	0.06066	0.30493	0.09734	0.00376
LA729XPP	0.09740	1.00000	-0.15657	0.01466	0.06417	-0.02123	-0.04562	0.00465	-0.05389	-0.02951
LI729XPP	0.18904	-0.15657	1.00000	0.33243	-0.02249	0.13213	0.03769	0.31161	-0.01537	0.07306
NU729XPP	0.20579	0.01466	0.33243	1.00000	0.06221	0.13737	0.04233	0.26360	0.00273	0.07789
AU729XPP	0.02315	0.06417	-0.02249	0.06221	1.00000	0.08189	0.02615	0.02288	0.02981	0.12744
TR729XPP	-0.00891	-0.02123	0.13213	0.13737	0.08189	1.00000	0.02343	0.01924	-0.03610	0.14912
CR729XPP	0.06066	-0.04562	0.03769	0.04233	0.02615	0.02343	1.00000	-0.01099	0.00435	0.09252
AD729XPP	0.30493	0.00465	0.31161	0.26360	0.02288	0.01924	-0.01099	1.00000	0.06535	-0.09708
GUIDSY	0.09734	-0.05389	-0.01537	0.00273	0.02981	-0.03610	0.00435	0.06535	1.00000	0.07483
SOCWSY	0.00376	-0.02951	0.07306	0.07789	0.12744	0.14912	0.09252	-0.09708	0.07483	1.00000
TEAMSY	0.10704	0.00438	0.06870	0.08902	0.09429	-0.03794	-0.01783	0.06150	-0.01220	0.11518
AIGESY	0.24080	0.01317	-0.00520	0.05772	0.02932	0.06711	-0.04056	0.07182	0.16183	-0.04842
TTHASY	0.01753	-0.07023	-0.01212	-0.00267	0.00546	-0.06281	0.02295	0.06353	0.03452	-0.04760
PEASSY	0.19445	-0.05539	0.00072	0.09738	0.01160	-0.05484	0.03435	0.12258	0.17649	0.04411
UNGRSY	0.11493	0.00057	0.01236	0.04689	0.05928	-0.08986	-0.02163	0.15536	0.05704	0.03100
DEMNSY	0.12550	0.00529	0.01011	-0.03535	0.05287	-0.06793	-0.02481	0.00308	0.04302	0.04649
UACHSY	0.14580	0.11614	0.00935	0.09630	0.12782	-0.03647	-0.03047	0.13431	0.05340	0.00699
MALASY	0.03405	0.16197	0.06566	-0.04926	0.16268	-0.04972	-0.04555	-0.02007	-0.01632	0.00614
GF-MSY	0.13752	-0.13069	0.05392	-0.02098	0.16462	-0.03591	0.04476	-0.00112	0.10014	0.15936
GFCLSY	-0.03000	-0.02117	0.10385	0.02376	0.07561	0.01952	0.05639	0.01712	0.00747	0.05023
CREVSY	0.00340	-0.00925	0.02706	0.06752	0.15565	0.06500	-0.04731	0.10378	0.03032	0.02330
TUTPSY	-0.04595	0.00766	0.01861	-0.06607	0.12010	-0.01395	-0.03716	-0.07605	0.10212	0.11112
PAFESY	0.01072	0.04425	0.03265	-0.06532	0.04615	-0.09491	0.04499	0.04317	-0.03939	0.05446
SRLLSY	-0.00433	0.03416	0.04006	0.03575	0.07566	-0.04299	-0.01041	-0.04301	0.05365	0.10320
TFLLSY	0.07459	0.03024	-0.00426	0.04127	0.04013	-0.04370	-0.04365	-0.02469	0.05020	0.05952
EXUPSY	-0.03304	-0.00255	0.09957	-0.14333	0.05300	0.07075	0.02445	0.02497	0.04055	0.05257
TEX12Z	0.12329	-0.07414	0.05499	0.04599	-0.01904	0.05053	-0.01492	0.09625	0.05955	0.09317
TST12Z	0.24373	-0.10800	0.05541	0.06888	-0.05999	-0.07561	-0.03951	0.06997	0.21519	0.10384
LIT12Z	-0.02323	-0.04262	0.12043	0.02009	0.05270	-0.00648	0.01590	0.01967	0.00122	0.19537
FUR12Z	0.11274	-0.07005	0.08144	0.10569	-0.02909	0.11736	-0.00426	0.06405	0.02568	0.11753
REN12Z	0.01041	0.14395	0.04790	0.03901	0.12830	0.03755	-0.04685	0.04671	-0.01427	0.09402
SPA12Z	0.00902	-0.07657	-0.04395	-0.01489	0.05625	-0.00488	-0.05241	-0.00616	0.01486	0.06129

TABLE G.1--Continued

	TEAMSY	AIDESY	TTPASY	READSY	UNGRSY	DEMNSY	UACHSY	MALASY	GRRMSY	GRCLSY
RP729XPP	-0.05400	0.19621	-0.03334	0.43070	-0.06273	-0.04761	0.22673	0.11317	0.10549	0.02110
RM729XPP	0.04625	0.05526	0.04782	0.24156	-0.02357	0.05074	0.20825	0.19610	0.07390	-0.01376
MU729XPP	0.00688	0.06519	-0.02167	0.05025	0.07612	0.10388	-0.01599	-0.00756	0.02658	0.03154
GY729XPP	0.10068	0.00616	-0.09241	0.13340	0.01858	0.01801	0.10414	0.05012	0.05094	-0.04475
VO729XPP	0.01618	0.09244	-0.04632	0.07017	-0.03003	-0.00859	0.03231	0.09219	0.10345	-0.02177
CO729XPP	0.03742	0.04927	-0.13704	0.06484	0.05740	0.05443	-0.00936	-0.01100	-0.02857	[illegible]
GU729XPP	0.07337	0.09865	0.06786	0.14912	0.10372	0.02016	0.08374	0.07308	0.09777	0.00175
PS729XPP	0.06792	0.01415	-0.08935	-0.03205	0.07591	0.02759	0.01471	0.05761	0.05155	-0.02550
SO729XPP	0.12296	-0.10217	0.02178	-0.01355	0.03240	0.04997	-0.04124	0.02224	0.12727	0.03360
SP729XPP	0.02518	0.00264	-0.10011	-0.02775	0.11156	-0.04412	0.00830	-0.00828	-0.05214	0.00131
TE729XPP	0.10764	0.33666	0.01753	0.19445	0.11493	0.12998	0.14586	0.03465	0.13932	-0.05108
LA729XPP	0.00436	0.01817	-0.07025	-0.03539	0.06937	0.00529	0.11614	0.16197	-0.13049	-0.02117
LI729XPP	0.00670	-0.00520	-0.01212	0.00072	0.01236	0.01011	0.00935	0.06576	0.05552	0.10585
NU729XPP	0.08902	0.00772	-0.00267	0.09738	0.04689	-0.03585	0.09630	-0.04928	-0.02093	0.02376
AU729XPP	0.09329	0.02932	0.00546	0.08160	0.05928	0.05287	0.12782	0.16368	0.16462	0.02261
TR729XPP	-0.03794	0.00711	-0.08281	-0.05484	-0.02886	-0.06793	-0.03847	-0.04972	-0.03591	0.01982
CR729XPP	-0.01765	-0.04036	0.02295	0.03435	-0.02163	-0.02481	-0.03047	-0.04555	-0.09476	[illegible]
AD729XPP	0.00150	0.07182	-0.06893	0.12258	0.15536	0.00808	0.13431	-0.02007	-0.00117	0.01712
GUIDSY	-0.01220	0.18165	0.03452	0.17639	0.05704	0.04302	0.05340	-0.01432	0.10014	0.09757
SCCWSY	0.11518	-0.04642	-0.04760	0.04611	0.03100	0.04649	0.00699	0.00814	0.15986	0.03023
TEAMSY	1.00000	0.12986	0.05492	-0.09357	0.30416	0.33927	0.15699	0.16693	0.07630	0.07506
AIDESY	0.12986	1.00000	-0.02204	0.27634	0.06143	0.10868	0.13835	0.02032	0.14236	0.00573
TTPASY	0.05492	-0.02204	1.00000	0.04637	0.01121	0.10409	0.00846	0.03358	-0.04454	0.14261
READSY	0.09367	0.27634	0.04637	1.00000	-0.00466	0.03374	0.22031	-0.01090	0.23511	0.10212
UNGRSY	0.30416	0.06143	0.01121	-0.00466	1.00000	0.23256	0.09128	0.01657	0.06787	0.01386
DEMNSY	0.33927	0.10868	0.10409	0.03374	0.23256	1.00000	0.05551	0.06822	0.07701	0.07939
UACHSY	0.15699	0.13865	0.00846	0.22031	0.09128	0.05551	1.00000	0.18902	0.16788	0.03125
MALASY	0.16693	0.02032	0.03358	-0.01090	0.01657	0.06822	0.18902	1.00000	0.10391	-0.00228
GRRMSY	0.07630	0.14236	-0.04454	0.23511	0.05787	0.07701	0.16788	0.10391	1.00000	0.27634
GRCLSY	0.07506	0.00573	0.14261	0.10212	0.01386	0.07559	0.03125	-0.00228	0.27634	1.00000
CREVSY	0.30005	0.05105	0.08609	0.05117	0.22598	0.24116	0.05965	0.03034	0.10893	0.05153
TUTRSY	0.17385	0.11610	0.07439	0.06830	-0.09750	0.15258	0.11032	0.02312	0.03967	0.05540
PARESY	0.20515	-0.04605	0.32689	0.05102	0.15784	0.19606	0.08539	0.05190	0.04120	0.13756
SRFLSY	0.10724	0.05620	0.09743	0.08192	0.14592	0.21018	0.09721	-0.01404	0.00150	0.05592
TRELSY	0.11034	0.00235	0.24696	0.09773	0.11557	0.13659	0.04113	0.01633	0.07781	[illegible]
EQUPSY	0.01664	0.10205	0.00309	0.06039	0.02058	0.09509	0.02409	0.04364	0.05125	[illegible]
TFX12Z	0.15461	0.15400	0.01860	0.07905	0.01068	0.13041	0.08712	0.03905	0.10592	0.03154
TST12Z	0.02666	0.22376	0.00310	0.21376	0.09136	0.07056	0.08050	-0.02658	0.14583	0.03414
LIT12Z	0.16104	0.09674	0.00418	0.06821	0.03454	0.16965	0.01664	-0.09448	0.03543	0.07294
FUR12Z	0.07176	0.07127	-0.06743	0.20857	0.05418	0.06605	0.01528	-0.01204	0.02133	[illegible]
REN12Z	0.10991	0.02940	0.00643	0.06457	0.02038	0.04516	0.19665	0.12240	0.03228	[illegible]
SPA12Z	0.06309	-0.02856	0.03701	0.03987	0.03461	0.07300	0.06312	0.03659	0.05593	[illegible]

TABLE G.1--Continued

	CREVSY	TUTRSY	PARESY	SRELSY	TRELSY	EQUPSY	TEX12Z	TST12Z	LIT12Z	FUR12Z
RR729XPP	0.03404	-0.03087	-0.04098	-0.00581	0.06986	-0.02239	0.03769	0.17382	-0.07879	0.04975
KM729XPP	-0.01273	0.08402	0.00551	0.02686	0.04079	-0.03673	-0.00266	0.09129	-0.08492	0.03198
MU729XPP	0.07963	0.00242	0.02727	0.03793	0.02791	0.04685	0.07574	0.05379	0.09242	0.04531
GY729XPP	0.09378	-0.04301	0.04478	0.05246	0.01215	0.06556	0.03482	-0.01347	0.10263	0.05482
VO729XPP	0.04665	-0.03515	0.04991	-0.02325	0.01409	-0.10137	0.08497	0.13649	0.00301	0.05365
CG729XPP	-0.04974	0.03332	-0.00502	-0.01293	-0.07745	-0.09020	0.02175	0.07403	0.00675	0.00723
GU729XPP	0.10941	-0.03425	-0.02607	0.03612	-0.00707	0.07074	0.11925	0.21893	0.00737	0.03721
PS729XPP	-0.00600	0.03411	-0.03510	0.09541	0.02090	0.02403	-0.01910	-0.03573	0.12307	0.06260
SO729XPP	0.11777	0.04272	0.08319	0.09303	0.12798	0.05620	0.01678	0.03370	0.02561	0.03116
SP729XPP	0.04809	-0.05903	0.00001	0.00562	-0.03272	0.13250	0.01738	-0.04560	0.11673	0.05560
TE729XPP	0.06540	-0.04595	0.01672	-0.06433	0.07439	-0.03304	0.12329	0.24373	-0.02323	0.11274
LA729XPP	-0.00525	0.00706	0.04425	0.03418	0.05074	-0.06255	-0.07414	-0.10960	-0.04262	-0.07863
LI729XPP	0.02706	0.01801	0.03265	0.04006	-0.00426	0.09957	0.05490	0.05541	0.12043	0.09144
NU729XPP	0.05782	-0.00807	-0.06532	0.03575	0.04127	-0.14333	0.04599	0.05688	0.02009	0.10569
AU729XPP	0.15966	0.12010	0.04615	0.07866	0.04013	0.05300	-0.01904	-0.05999	0.05270	-0.02909
TR729XPP	0.00500	-0.01383	-0.09491	-0.04299	-0.08330	0.07075	0.05053	-0.07861	-0.00646	0.11736
CH729XPP	-0.04731	-0.03740	0.04499	-0.01041	-0.04065	0.02446	-0.01692	-0.03951	0.01590	-0.00426
AD729XPP	0.10678	-0.07605	0.04317	-0.04801	-0.02469	0.02697	0.06625	0.06397	0.01987	0.06405
GUIDSY	0.05032	0.10212	-0.00939	0.05365	0.05620	0.08055	0.08955	0.21519	0.00122	0.02558
SOCWSY	0.06330	0.11112	0.05646	0.10320	0.08952	0.09257	0.09317	0.10384	0.19537	0.11753
TEAMSY	0.30005	0.17363	0.20515	0.18724	0.11034	0.01664	0.15461	0.02666	0.16104	0.07176
AIDESY	0.05103	0.21610	-0.04605	0.03620	0.00235	0.10205	0.15400	0.22376	0.09674	0.07127
TTEASY	0.00603	0.07404	0.32639	0.09743	0.24636	0.00309	0.01850	0.00310	0.00419	-0.06743
READSY	0.05117	0.00830	0.05102	0.08192	0.09773	0.08039	0.07905	0.21376	0.05671	0.20857
UNGRSY	0.22598	0.09750	0.15784	0.14592	0.11957	0.02058	0.01068	0.08136	0.03494	0.05418
DEMNSY	0.24116	0.15436	0.19606	0.21018	0.13659	0.09509	0.13041	0.07096	0.16965	0.06605
UACHSY	0.09965	0.11032	0.08589	0.09721	0.06113	0.02909	0.08712	0.08050	0.01664	0.01528
MALASY	0.04034	0.02312	0.05190	-0.01404	0.01632	0.04364	0.03905	-0.02658	-0.09448	-0.01204
GENMSY	0.10803	0.03967	0.04120	0.06180	0.03748	0.05125	0.10580	0.14583	0.03563	0.02173
GECLSY	0.04693	0.05590	0.13756	0.09532	0.04517	0.13596	0.07164	0.03414	0.07384	0.03320
CREVSY	1.00000	0.11572	0.22131	0.18370	0.19360	0.00100	0.16732	0.13587	0.03904	0.11082
TUTRSY	0.11572	1.00000	0.20569	0.21951	0.00248	0.13936	0.05056	0.10112	0.16685	-0.01000
PARESY	0.22131	0.20569	1.00000	0.33289	0.41795	0.07582	0.07206	0.03834	0.14928	0.02605
SRELSY	0.18370	0.21951	0.33289	1.00000	0.50435	0.06822	0.03751	0.09916	0.24125	0.07676
TRELSY	0.19360	0.00248	0.41795	0.50435	1.00000	0.03272	0.04932	0.05707	0.19168	0.07210
EQUPSY	0.00100	0.13936	0.07592	0.06872	0.03272	1.00000	-0.00059	0.05493	0.11799	0.02610
TEX12Z	0.16732	0.05056	0.07206	0.03751	0.04932	-0.00059	1.00000	0.38315	0.23650	0.22390
TST12Z	0.13587	0.10112	0.03834	0.09916	0.05707	0.05493	0.38315	1.00000	0.18452	0.18647
LIT12Z	0.03904	0.16685	0.14928	0.24125	0.18168	0.11799	0.23660	0.18452	1.00000	0.30381
FUR12Z	0.11082	-0.01000	0.02605	0.07678	0.02310	0.02610	0.22390	0.18647	0.30361	1.00000
PEN12Z	0.07519	0.03629	0.10943	0.12887	0.02927	0.09549	0.14910	0.09925	0.10716	0.19730
SPA12Z	0.16165	0.05254	0.07345	0.07989	0.03782	0.09310	0.12147	0.12294	0.05711	0.16997

TABLE G.1--Continued

	REN12Z	SPA12Z
RE729XPP	0.01510	0.03640
RM729XPP	0.00669	0.00651
MU729XPP	0.06427	-0.03037
GY729XPP	0.05641	-0.03635
VD729XPP	0.00623	0.04253
CD729XPP	-0.02905	-0.09506
GU729XPP	0.02902	0.03053
PS729XPP	0.10744	0.03556
SD729XPP	0.05981	0.04488
SP729XPP	0.04453	-0.03657
TE729XPP	0.01041	0.03902
LA729XPP	0.14395	-0.07657
LI729XPP	0.04790	-0.04595
NU729XPP	0.06901	-0.01409
AU729XPP	0.12850	0.00825
TR729XPP	0.03755	-0.00488
CR729XPP	-0.04665	-0.05241
AD729XPP	0.04671	-0.00616
GUIDSY	-0.01427	0.01406
SOCWSY	0.09402	0.06129
TEAVSY	0.10991	0.06309
AIDESY	0.02940	-0.02636
TTEASY	0.00643	0.03701
RIZESY	0.00437	0.03367
UNGESY	0.02036	0.03401
DEMNSY	0.04516	0.07360
UACHSY	0.19665	0.06312
MALASY	0.12240	0.03659
GERMSY	0.03228	0.06898
GRCLSY	0.02537	0.02957
CHEVSY	0.07519	0.16165
TUTRSY	0.03629	0.05254
PARESY	0.10343	0.07345
SPELSY	0.12667	0.07989
TRELSY	0.02927	0.06762
EQUPSY	0.09549	0.09510
TEX12Z	0.14910	0.12147
TST12Z	0.09925	0.12294
LIT12Z	0.10716	0.05711
FUR12Z	0.15730	0.16997
REN12Z	1.00000	0.14090
SPA12Z	0.14090	1.00000

TABLE G.2

CORRELATIONS BETWEEN PROGRAM VARIABLES, TENTH GRADE

	TYPE99	RR729X	RM729X	MU729X	CR729X	GY729X	VO729X	CO729X	GU729X	PS729X	SO729X	SP729X
TYPE99	1.00000	-0.02353	-0.04561	0.05574	0.12338	0.17663	-0.06551	-0.01160	0.06512	-0.03759	-0.09473	-0.15152
RR729X	-0.02353	1.00000	0.40127	0.00072	0.02608	0.07637	0.05042	0.04720	-0.05546	0.10716	0.17957	0.18239
RM729X	-0.04561	0.40127	1.00000	-0.03437	0.12693	0.08907	-0.09839	0.00634	0.03690	0.08117	0.12088	0.22138
MU729X	0.05574	0.00072	-0.03437	1.00000	0.06093	0.28477	0.14561	0.14038	0.46073	0.16027	0.09425	0.06284
CR729X	0.12338	0.02608	0.12693	0.06093	1.00000	0.06272	-0.13039	0.19871	0.14815	0.04080	0.09002	-0.13513
GY729X	0.17663	0.07637	0.08907	0.28477	0.06272	1.00000	0.12443	0.00214	0.22505	-0.00489	-0.03100	0.00602
VO729X	-0.06551	0.05042	-0.09839	0.14561	-0.13039	0.12443	1.00000	0.02816	0.05926	0.26691	0.13295	0.16343
CO729X	-0.01160	0.04720	0.00634	0.14038	0.19871	0.00214	0.02816	1.00000	0.23489	0.12583	0.12310	-0.00537
GU729X	0.06512	-0.05546	0.03690	0.46073	0.14815	0.22505	0.05926	0.23489	1.00000	0.15031	0.17408	0.01842
PS729X	-0.03759	0.10716	0.08117	0.16027	0.04080	-0.00489	0.26691	0.12583	0.15031	1.00000	0.63476	0.41621
SO729X	-0.09473	0.17957	0.12088	0.09425	0.09002	-0.03100	0.13295	0.12310	0.17408	0.63476	1.00000	0.44982
SP729X	-0.15152	0.18239	0.22138	0.06284	-0.13513	0.00602	0.16343	-0.00537	0.01842	0.41621	0.44982	1.00000
TE729X	0.02484	0.30404	0.22129	-0.07819	-0.02431	0.11678	0.12017	0.20913	-0.01482	0.20052	0.34327	0.40722
LA729X	0.00644	-0.02465	-0.05325	-0.03636	0.11228	-0.04295	0.06045	0.23734	0.04895	0.11834	0.24739	-0.06036
LI729X	0.04555	0.09356	0.18394	0.05122	-0.15694	0.31607	0.00049	-0.05028	0.11786	0.04163	0.07201	0.13383
NU729X	-0.12162	0.07326	0.21827	-0.00404	-0.03883	-0.04111	-0.10292	0.01336	0.03448	0.01762	0.05409	0.16809
AU729X	-0.03755	0.04333	0.04530	0.10765	0.13342	0.04741	-0.04588	0.20107	0.12313	0.18948	0.24108	0.04931
TH729X	0.00624	0.09522	0.19545	-0.02033	0.13432	0.05705	0.02784	-0.04948	0.03863	0.29583	0.27245	0.35030
CF729X	0.05033	0.14547	0.09491	0.04696	0.21464	0.23470	-0.04197	0.02989	0.10200	0.23580	0.21056	0.11040
AD729X	0.05493	0.00833	-0.00018	-0.11553	-0.00609	0.10260	-0.25909	0.09492	0.13073	-0.10444	-0.01213	-0.04510
TEX12Z	-0.02715	-0.03285	0.06032	-0.02997	-0.08008	0.02619	0.02733	0.12719	0.03009	0.10304	0.13851	0.04701
TST12Z	0.07349	0.14760	0.15273	-0.14182	-0.07788	-0.02552	-0.08047	-0.01219	-0.00096	-0.04642	0.02530	0.09412
LIT12Z	0.11652	-0.15052	-0.11679	0.05433	0.10326	-0.11092	-0.07521	0.14400	0.17513	-0.05773	0.02565	-0.16078
FOR12Z	0.02686	-0.01209	0.06286	-0.01896	0.08213	0.03302	0.05585	0.10063	0.02736	-0.17476	-0.04706	-0.06575
REL12Z	0.04900	-0.00554	-0.07048	-0.01275	0.08190	-0.06945	0.14150	0.21845	0.02126	-0.02762	0.05359	-0.00142
SPA12Z	0.10372	0.03594	0.06140	-0.05959	0.00951	0.04565	-0.00282	0.07694	-0.02893	-0.05236	0.07032	0.03850
GUIDSY	-0.02222	0.04241	0.04522	0.11340	0.01835	-0.10646	0.09134	0.00778	0.23490	0.10596	0.06193	0.03222
SOCWSY	0.09166	0.04103	0.01832	-0.00427	0.16036	-0.04521	0.00555	0.04718	0.21999	0.25285	0.26688	0.14373
AIDESY	-0.00563	0.22529	0.16047	-0.03038	-0.00380	0.01896	0.19225	0.22932	0.02556	0.16326	0.14595	0.15497
TTRASY	0.04146	-0.00250	-0.01480	-0.05890	0.02145	-0.05502	0.07618	0.02798	-0.09522	0.16246	0.09310	0.05364
READSY	-0.10738	0.35946	0.35303	-0.01854	0.05268	-0.06828	0.05276	-0.02587	0.02743	0.13012	0.13249	0.14077
MHISSY	0.06997	-0.05547	0.01603	0.03194	0.26353	-0.03375	-0.05547	0.05299	0.17907	0.00252	0.08223	-0.12792
UACHSY	0.02911	0.23105	0.13677	0.01556	0.09399	-0.06496	-0.04895	0.04214	0.08757	0.03591	0.04355	-0.05737
MALASY	-0.07725	0.11789	0.09587	0.07297	-0.06905	-0.10217	0.19867	0.15911	0.07434	0.29525	0.24371	0.05495
GRAMSY	-0.01000	-0.04192	0.03482	-0.00959	0.01125	-0.14270	-0.30603	0.04040	0.00348	0.00938	-0.10375	-0.04227
CREVSY	0.02531	-0.02559	-0.00708	-0.03126	0.01203	-0.03998	0.00594	0.05349	0.11340	0.10815	0.10192	-0.01319
XACTSY	0.20722	0.00267	0.02959	-0.04426	0.09935	-0.04615	-0.17244	-0.00965	0.00463	0.04229	0.12210	-0.04445
XEUSSY	-0.10555	-0.07485	-0.09731	0.17240	0.01946	0.09041	0.14188	0.04738	0.27108	0.05554	0.00934	0.02019
TUTRSY	0.03571	0.20515	0.11630	0.07319	0.29269	0.04359	-0.04957	0.10694	0.00484	-0.00583	0.07173	-0.00735
PARESY	-0.03676	0.02176	0.05475	-0.10167	-0.00210	-0.05403	0.01606	0.04579	0.14173	0.19845	0.14575	-0.05510
SFFLSY	0.14551	-0.08750	-0.12048	-0.03394	0.10362	-0.06571	-0.02075	0.03614	0.04377	0.17434	0.10631	-0.13176
TEFLSY	0.10020	-0.03700	0.02126	-0.04257	0.08994	-0.15291	-0.05237	0.10932	0.13338	0.15012	0.13374	-0.09409
ECUPSY	-0.10724	0.03600	0.07179	0.05996	0.04439	0.01130	0.16824	0.06924	0.02286	0.05748	0.07526	0.07274

TABLE G.2--Continued

	TE729X	LA729X	LI729X	NU729X	AU729X	TR729X	CR729X	AD729X	TEX12Z	TST12Z	LIT12Z	FUR12Z
TYPE29	0.02404	0.00044	0.04955	-0.12102	-0.03735	0.09624	0.09833	0.09493	-0.02713	0.07345	0.11592	[illegible]
FR729X	0.30404	-0.02405	0.09336	0.07322	0.04333	0.09522	0.14547	0.00633	-0.03285	0.14730	[illegible]	[illegible]
AR729X	0.22129	-0.05525	0.18684	0.21827	0.04520	0.19645	0.09491	-0.00018	0.06032	0.15273	-0.11679	[illegible]
MU729X	-0.09619	-0.00636	0.06122	-0.00404	0.10765	-0.02033	0.04696	-0.11553	-0.02997	-0.14142	0.05433	-0.01876
DP729X	-0.02431	0.11220	-0.16694	-0.03883	0.13342	0.13432	0.21464	-0.00609	-0.08008	-0.07738	0.10326	0.08213
GY729X	0.11678	-0.04295	0.31607	-0.04111	0.04741	0.05965	0.23470	0.10260	0.02819	-0.02552	-0.11002	0.03302
VO729X	0.12017	0.00046	0.00049	-0.10392	-0.04588	0.02784	-0.04197	-0.25909	0.02733	-0.08047	-0.07521	0.05565
CO729X	0.20813	0.20754	-0.03028	0.01336	0.20107	-0.04948	0.02939	0.09492	0.12719	-0.01219	0.14400	0.10053
GU729X	-0.01402	0.04695	0.11736	0.03448	0.12313	0.03803	0.10200	0.13073	0.03009	-0.00036	0.17513	0.02736
PS729X	0.20052	0.11834	0.04163	0.01762	0.18848	0.29383	0.23580	-0.10444	0.10304	-0.04642	-0.05773	-0.17496
SO729X	0.34337	0.24729	0.07201	0.05409	0.28103	0.27246	0.31055	-0.01213	0.13851	0.02530	0.02565	-0.04706
SP729X	0.40722	-0.00036	0.13383	0.10509	0.04931	0.35030	0.11040	-0.04510	0.04701	0.09412	-0.16099	-0.00823
TE729X	1.00000	0.10296	0.29784	0.04810	0.09476	0.28731	0.27334	-0.03563	0.06152	0.10687	-0.15741	-0.00047
LA729X	0.10296	1.00000	0.07156	-0.06438	0.10182	0.24028	0.04472	-0.03218	0.00626	-0.13422	0.14705	0.09781
LI729X	0.29784	0.07156	1.00000	0.15607	-0.04592	0.30260	0.20272	0.23196	-0.04615	0.07200	-0.22201	-0.09712
NU729X	0.04810	-0.06438	0.15607	1.00000	-0.02145	0.02422	0.09216	0.05290	0.05859	0.11300	-0.01950	-0.03802
AU729X	0.09476	0.10182	-0.04592	-0.02145	1.00000	0.07061	0.04633	-0.03938	0.00482	-0.03907	0.09608	0.09835
TR729X	0.28731	0.24028	0.30250	0.02422	0.07061	1.00000	0.30877	-0.03140	-0.00602	0.06745	-0.08296	-0.00199
CR729X	0.27334	0.04472	0.20272	0.09216	0.04633	0.30877	1.00000	-0.04026	-0.01605	0.02851	-0.02066	0.05160
AD729X	-0.03563	-0.03218	0.23196	0.05290	-0.03938	-0.03140	-0.04026	1.00000	0.00745	0.10085	0.01985	-0.05348
TEX12Z	0.06152	0.00626	-0.04615	0.05359	0.00482	-0.00602	-0.01605	0.00745	1.00000	0.43256	0.20947	0.04944
TST12Z	0.10687	-0.13422	0.07200	0.11300	-0.03907	0.05748	0.02851	0.10085	0.43256	1.00000	0.22592	0.08637
LIT12Z	-0.15741	0.14705	-0.22201	-0.01950	0.09608	-0.08296	-0.02066	0.01985	0.20947	0.22592	1.00000	0.19968
FUR12Z	-0.00047	0.09781	-0.09712	-0.03802	0.09835	-0.00199	0.05160	-0.05348	0.04944	0.08637	0.19968	1.00000
REN12Z	-0.03732	0.10004	-0.09725	-0.04336	-0.01453	-0.07179	-0.01932	-0.03984	0.20979	0.14839	0.16387	0.35840
SFA12Z	0.03000	0.02870	-0.04535	0.04066	-0.01798	0.01229	0.07786	0.09162	0.22625	0.20165	0.10404	0.37335
GUIDSY	-0.06004	-0.02378	-0.20403	0.03860	0.06246	-0.07671	0.02521	-0.10370	-0.05691	-0.01143	0.04451	-0.07138
SFCASY	0.02540	0.12449	-0.09537	-0.01604	0.09652	0.34347	0.21041	-0.09017	-0.00472	0.00972	0.12263	-0.02948
AIDESY	0.53503	0.12374	-0.02539	0.06730	0.13223	0.11951	0.10758	0.00144	0.00502	0.08613	-0.01322	-0.15774
TTRASY	0.05917	0.10833	-0.02580	0.05948	-0.06414	-0.06402	0.05342	-0.11747	-0.05837	0.02243	0.09249	0.05544
READSY	0.09925	0.05040	-0.15640	0.15316	-0.01234	0.06461	0.00791	-0.13678	0.02233	0.04401	0.03717	0.04656
MPISSY	-0.07595	0.14317	-0.14580	-0.02811	0.05432	-0.14443	-0.01539	-0.01820	-0.05624	-0.07230	0.13789	0.02364
UACHSY	0.05513	0.00047	-0.14920	0.07821	0.17503	-0.05606	0.12315	-0.10283	-0.04905	-0.10539	0.14065	0.09132
MALASY	0.10027	0.17005	-0.07398	0.14802	0.22344	0.07079	0.07061	-0.03736	0.13901	0.02395	0.05975	-0.04345
GRPMSY	-0.00470	0.00316	-0.23819	0.07466	0.08697	-0.24023	-0.18783	-0.30661	-0.07317	-0.05637	0.15794	0.07267
CRFVSY	-0.05570	0.18799	-0.14223	0.02392	0.10177	-0.10591	-0.00266	-0.07826	0.07383	0.00774	0.21854	0.10163
XACTSY	-0.00289	0.15120	0.03207	0.13479	0.05288	0.16046	0.17746	0.04529	0.02052	0.10051	0.13367	0.05056
XBUSSY	-0.02563	-0.01604	-0.10362	-0.00130	-0.10410	0.00469	-0.00131	-0.04414	0.05352	-0.02958	0.08329	-0.03772
TUTRSY	0.03221	0.07092	-0.19996	0.10138	0.03027	-0.03833	0.08249	-0.12445	0.03583	0.05148	0.05279	-0.02512
PARESY	0.00520	0.14847	-0.00472	0.12535	0.03969	0.09352	0.19213	-0.01240	0.01671	0.08906	0.24236	-0.07665
SRELSY	-0.16772	0.20014	-0.14735	0.06803	0.07323	0.01345	0.13513	-0.06593	0.16598	0.04206	0.24623	0.03208
TRELSY	-0.00587	0.11046	-0.10064	0.10960	0.11748	0.02417	0.15343	0.00464	0.15771	0.13020	0.30122	0.02618
ECUPSY	0.10009	0.04947	-0.05506	0.04357	0.02931	0.00491	0.04673	-0.09938	-0.08570	0.06273	0.00229	-0.00069

TABLE G.2--Continued

	KENI22	SPAI22	GUIDSY	SOCHSY	AIDESY	TTRASY	READSY	WHISSY	UACHSY	MALASY	GRAMSY	CHEVSY
TYPE59	0.04506	0.10372	-0.02222	0.03166	-0.00563	0.04146	-0.10739	0.06997	0.02511	-0.07725	-0.01006	0.02931
RR729X	-0.00054	0.03394	0.04241	0.05103	0.22529	-0.00266	0.35946	-0.05547	0.23103	0.11739	-0.09192	-0.02359
RM729X	-0.07048	0.00140	0.04522	0.01832	0.16047	-0.01480	0.35303	0.01603	0.13677	0.09537	0.03482	-0.00708
MU729X	-0.01275	-0.00559	0.11340	-0.00427	-0.08088	-0.05850	-0.01654	0.03194	0.01556	0.07237	-0.00959	-0.03126
GA729X	0.00190	0.00751	0.01838	0.15036	-0.00380	0.02145	0.05268	0.26353	0.09399	-0.01995	0.01125	0.01208
GY729X	-0.00545	0.04503	-0.10546	-0.04521	0.01996	-0.05502	-0.06628	-0.03275	-0.06496	-0.10217	-0.14270	-0.07502
VO729X	0.14150	-0.00262	0.02134	0.00535	0.10225	0.07618	0.05276	-0.03947	0.04390	0.19857	-0.03363	0.05594
CC729X	0.21045	0.07094	0.00776	0.04716	0.22932	0.02796	-0.02567	0.04299	0.04214	0.15511	0.04020	0.06349
GU729X	0.02120	-0.02003	0.23690	0.21999	0.02556	-0.09528	0.02743	0.17907	0.04757	0.07434	0.00948	0.13380
PS729X	-0.02702	-0.03266	0.10596	0.25215	0.16326	0.10246	0.17012	0.00262	0.03671	0.29525	0.00938	0.10515
SO729X	[illegible]	0.07332	0.05193	0.25698	0.18595	0.03310	0.12243	0.01728	0.00395	0.24371	-0.10375	0.19192
SP729X	-0.00142	0.03350	0.03222	0.14373	0.15487	0.03364	0.14077	-0.12792	-0.05737	0.05475	-0.00227	-0.01314
TF729X	-0.05734	0.03000	-0.08684	0.07340	0.53303	0.05917	0.09425	-0.09595	0.05313	0.10927	-0.05475	-0.03579
LA729X	0.10084	0.02670	-0.02296	0.12549	0.12874	0.10033	0.05046	0.14819	0.04047	0.17053	0.00314	0.15759
LI729X	-0.09745	-0.04333	-0.20403	-0.09537	-0.02539	-0.02580	-0.15640	-0.14580	-0.14920	-0.07398	-0.23417	-0.14223
NU729X	-0.04536	0.04300	0.03869	-0.01604	0.06730	0.06946	0.15818	-0.02811	0.07921	0.16802	0.07486	0.02392
AU729X	-0.01453	-0.01798	0.06346	0.09352	0.13873	-0.05614	-0.01234	0.05482	0.17503	0.22344	0.00457	0.10177
TF729X	-0.07179	0.01229	-0.07811	0.35347	0.11951	-0.06402	0.05441	-0.14443	-0.03006	0.02979	-0.24023	-0.10591
CR729X	-0.01532	0.07700	0.02521	0.21041	0.10758	0.05342	0.08791	-0.01539	0.12315	0.07061	-0.19783	-0.00266
AC729X	-0.03984	0.09102	-0.10270	-0.09017	0.00144	-0.11747	-0.13678	-0.01820	-0.10283	-0.03936	-0.29561	-0.07875
TEX122	0.20575	0.03025	-0.06631	-0.00472	0.00502	-0.05837	0.02733	-0.09624	-0.04905	0.13501	-0.07317	0.07263
TST122	0.14899	0.20105	-0.01143	0.00992	0.08613	0.02243	0.04401	-0.07320	-0.10589	0.02375	-0.05537	0.00774
LIT122	[illegible]	0.10404	0.04651	0.12163	-0.01877	0.09245	0.03707	0.19780	0.14635	0.05975	0.15754	0.21755
FUP122	[illegible]	0.33333	-0.07138	-0.02568	-0.15774	0.05344	0.04856	0.02184	0.04122	-0.04365	0.05267	0.16167
KEN122	1.00000	0.30627	-0.07524	-0.04527	-0.09310	0.09752	0.04035	0.19615	0.04815	0.05270	0.00519	0.16037
SPA122	0.30627	1.00000	-0.13674	0.03976	-0.00035	0.05205	0.02467	0.07466	-0.06449	-0.05142	-0.10011	0.04927
GUIDSY	-0.07524	-0.13674	1.00000	0.13724	0.15649	0.35642	0.27805	0.20740	0.35288	0.17342	0.26093	0.29423
SOCHSY	-0.04527	0.03976	0.13794	1.00000	0.22263	0.14506	0.22356	0.16467	0.17006	0.04871	0.03302	0.19269
AIDESY	-0.09310	-0.00035	0.15649	0.22263	1.00000	0.26323	0.25763	0.05381	0.22294	0.14017	0.10577	0.06791
TTRASY	0.09752	0.05205	0.35462	0.14506	0.26323	1.00000	0.21638	0.26635	0.16585	0.02637	0.26843	0.20269
READSY	0.04035	0.02467	0.27805	0.22356	0.25763	0.21638	1.00000	0.19624	0.20256	0.12795	0.13974	0.15929
WHISSY	0.19616	0.07466	0.20740	0.16487	0.05381	0.26635	0.19624	1.00000	0.23056	0.14025	0.45560	0.26711
UACHSY	0.04815	-0.06449	0.35288	0.17006	0.22294	0.16585	0.20256	0.23056	1.00000	0.36700	0.25849	0.28413
MALASY	0.05270	-0.05142	0.17342	0.04871	0.14017	0.02637	0.12795	0.14028	0.38700	1.00000	0.05030	0.21609
GRAMSY	0.00519	-0.10011	0.26093	0.03302	0.10579	0.26848	0.13474	0.05540	0.28449	0.05030	1.00000	0.25076
CHEVSY	0.16037	0.04927	0.29823	0.19249	0.06791	0.20268	0.15828	0.20711	0.20413	0.21309	0.25030	1.00000
KACTSY	0.04707	0.10079	0.13438	0.10511	0.06288	0.06954	0.05849	0.23432	0.06760	0.12127	-0.01634	0.18051
ALUSSY	-0.02727	-0.01688	0.09455	0.20410	0.07032	0.14931	0.15699	0.09964	0.00371	-0.03235	0.05944	0.03447
TUTFSY	0.13336	0.04312	0.27332	0.04363	0.12692	0.19246	0.25375	0.25613	0.17515	0.04911	0.21462	0.19324
PARESY	-0.05039	0.14095	0.14199	0.23945	0.18691	0.24465	0.11643	0.29213	0.16928	0.19149	0.15220	0.22133
SFELSY	0.15473	0.05740	0.21395	0.30232	0.06361	0.35602	0.11685	0.49417	0.35257	0.23972	0.20933	0.32492
TPELSY	0.11060	0.21628	0.27830	0.21462	0.13529	0.37710	0.22750	0.29998	0.19039	0.21180	0.16546	0.29622
EQUPSY	-0.04072	0.00284	0.43738	0.24957	0.32800	0.48542	0.15600	0.16302	0.26590	0.12758	0.31034	0.15721

TABLE G.2--Continued

	XACTSY	XEUSSY	TUTFSY	PARESY	SRELSY	TRELSY	EQUPSY
TYPE99	0.20722	-0.10953	0.03571	0.09676	0.14351	0.10026	0.10724
RF729X	0.00267	-0.07485	0.10515	0.01176	-0.08750	-0.03766	0.03630
RM729X	0.02909	-0.03751	0.11630	0.05475	-0.12048	0.02126	0.07179
MU729X	-0.04420	0.17240	0.07319	-0.10167	-0.03094	-0.04257	0.05986
DF729X	0.05985	0.01948	0.20269	-0.00210	0.10362	0.06974	0.04439
GY729X	-0.04615	0.09081	0.04389	-0.05403	-0.06571	-0.15391	0.01130
VO729X	-0.17244	0.14188	-0.06387	0.01606	-0.02075	-0.05237	0.16824
CO729X	-0.00505	0.04768	0.10004	0.04579	0.08614	0.10982	0.04924
GU729X	0.00463	0.27108	0.00434	0.14173	0.04377	0.13338	0.03236
PS729X	0.04229	0.08954	-0.00533	0.13835	0.12438	0.15012	0.09766
SO729X	0.12210	0.00914	0.07178	0.14675	0.10821	0.13074	0.07628
SP729X	-0.04445	0.02019	-0.00738	-0.06210	-0.13186	-0.09405	0.02274
TE729X	-0.00287	-0.02505	0.03221	0.06520	-0.16772	-0.02587	0.10609
LA729X	0.15120	-0.01604	0.07892	0.14847	0.20614	0.11648	0.04947
LI729X	0.05207	-0.10562	-0.19396	-0.00472	-0.14735	-0.10064	-0.05506
NU729X	0.13479	-0.00180	0.10138	0.12535	0.06803	0.10960	0.04357
AU729X	0.08288	-0.10410	0.03027	0.03969	0.07323	0.11748	0.02931
TR729X	0.10040	0.00409	-0.03833	0.09352	0.01345	0.02617	0.00491
CF729X	0.17755	-0.00131	0.08248	0.19213	0.13513	0.15343	0.04673
AE729X	0.04529	-0.04414	-0.12445	-0.01240	-0.05593	0.00454	-0.09938
TFA12Z	0.02652	0.03562	0.03593	0.01671	0.16588	0.15771	-0.04570
TST12Z	0.10051	-0.03900	0.05168	0.03806	0.04206	0.13020	0.06273
LIT12Z	0.15687	0.06509	0.08275	0.24236	0.24623	0.30122	0.00229
FUR12Z	0.05056	-0.03772	-0.02512	-0.07865	0.03208	0.02618	-0.00069
REM12Z	0.04707	-0.02727	0.13352	-0.05839	0.15473	0.11060	-0.04072
SPA12Z	0.10079	-0.01038	0.04312	0.12095	0.09748	0.11428	0.06282
GUIDSY	0.13438	0.09405	0.27332	0.14139	0.21395	0.27830	0.43738
SOCWSY	0.10511	0.20410	0.04863	0.23945	0.30232	0.21662	0.24957
AIDESY	0.06288	0.07032	0.12692	0.18891	0.08361	0.13529	0.32800
TTRASY	0.00954	0.14931	0.19246	0.24465	0.36602	0.37710	0.48542
READSY	0.05849	0.15069	0.25376	0.11843	0.11685	0.22750	0.15600

The Factor Analysis

The factor analysis discussed in Chapter 1 was prepared in two stages. First, the entire list of program variables was factor analyzed using the yes-no coding of the program variables. The factor analysis was constrained to yield only the first four factors and was rotated with a varimax rotation. This factor analysis was examined. Those variables which did not load onto any of the four factors were then deleted from the correlation matrix and a second factor analysis prepared. The result of this was to produce somewhat cleaner results, with more distinction between the factors.

The factor loadings for the fifth and tenth grade analysis are shown in Tables G.3 and G.4. Since the program variables are taken from three different sections of the questionnaire, each with slightly different formats, there is a noticeable tendency for both factor analyses to form separate factors according to format. Thus, for example, for both analyses, one factor tends to be formed around the listing of the number of specialists per thousand students and another factor around the listing of supplies and facilities provided in the tenth grade. Thus, the important factor loadings are those in which a variable from one portion of the questionnaire loads on a factor containing items from other portions of the questionnaire. For example, in the tenth grade, we find that factor three contains not only the "Z" variables reflecting purchase of materials and supplies and building renovation, but also the human relations variables. This may explain why, in Chapter 2, we found a tendency for the "Z" variables to correlate with improved racial attitudes.

TABLE G.3

FIFTH GRADE PROGRAMS: VARIMAX ROTATED FACTOR MATRIX

	Factor 1	Factor 2	Factor 3	Factor 4
RR729XPP	0.02439	-0.05128	0.52629	-0.09648
MU729XPP	0.80813	0.07264	0.03036	0.16252
GY729XPP	0.65974	0.07619	0.06373	0.01880
GU729XPP	0.62488	0.03945	0.26018	-0.07274
PS729XPP	0.17851	0.01001	-0.01818	0.60504
SO729XPP	0.00583	0.18834	0.02538	0.48853
SP729XPP	0.51305	-0.04777	-0.11102	0.38941
TE729XPP	0.26214	0.03743	0.46891	0.12215
LI729XPP	0.64040	0.02879	-0.01635	0.20095
TR729XPP	0.06612	-0.12895	-0.01547	0.26151
AD729XPP	0.64582	0.00011	0.15258	-0.09097
SOCWSY	-0.05025	0.15526	0.05035	0.51727
TEAMSY	0.06760	0.38522	0.10294	0.10382
AIDESY	0.04928	0.01236	0.48022	-0.01984
READSY	0.04369	0.09276	0.58119	-0.05373
DEMNSY	0.02132	0.38520	0.09045	0.02243
GRRMSY	-0.01462	0.11412	0.32158	0.13650
CREVSY	0.08108	0.39204	0.11346	0.05199
PARESY	0.01651	0.59225	-0.05513	-0.05426
SRELSY	-0.01169	0.61012	-0.00054	0.04927
TRELSY	-0.03731	0.60987	0.03798	0.00200
TST12Z	0.03858	0.11592	0.41391	0.00031

TABLE G.4

TENTH GRADE PROGRAMS: VARIMAX ROTATED FACTOR MATRIX

	Factor 1	Factor 2	Factor 3	Factor 4
RR729X	-0.02273	0.40690	-0.00390	-0.06114
MU729X	-0.01160	-0.09186	-0.13852	0.48530
GU729X	0.06270	-0.07060	0.00631	0.49892
PS729X	0.09914	0.43359	0.04890	0.54803
SO729X	0.04500	0.55007	0.19719	0.53331
SP729X	-0.09264	0.56098	0.00311	0.24034
TE729X	-0.02538	0.78880	-0.00065	-0.12261
GUIDSY	0.58095	-0.00404	-0.15684	0.20254
AIDESY	0.33506	0.51775	-0.02084	-0.12199
TTRASY	0.64098	0.12120	0.05094	-0.07448
GRRMSY	0.45093	-0.09611	-0.11340	-0.01762
XACTSY	0.25570	-0.01042	0.24213	0.05012
SRELSY	0.57173	-0.14367	0.35241	0.11093
TRELSY	0.56961	-0.08419	0.40322	0.14630
EQUPSY	0.67706	0.16330	-0.06152	-0.03117
TEX12Z	-0.08018	0.06082	0.56850	0.05487
TST12Z	0.00351	0.13450	0.47693	-0.13315
LIT12Z	0.17893	-0.23271	0.38931	0.11277
REN12Z	-0.00501	-0.06192	0.43221	-0.00451
SPA12Z	-0.02835	0.05127	0.46306	-0.09610