THE EFFECT OF CLASSROOM RACIAL COMPOSITION ON ACADEMIC ACHIEVEMENT AND ON CONCOMITANTS OF ACADEMIC ACHIEVEMENT

by

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Abstract

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Adviser: Professor Kenneth B. Clark

In the face of mushrooming school integration nourished by "changing" neighborhoods and recent court rulings, many white parents who initially had accepted integration now complain that "too many" Blacks in desegregated schools will lower the level of academic achievement among whites. Many Black parents, seeking upward mobility for their children, maintain that schools must have a substantial number of white students before their children can achieve academically.

This study was designed to determine: (a) if, in fact, school racial composition is associated with the academic success of students, and (b) the process by which desegregation affects students' levels of academic achievement.

Fifth- and sixth-grade Black students (N=131) and white students (N=338) in a northeastern school district served as subjects. Sampled classrooms were assigned to one of four levels of racial composition--12% Black, 22% Black, 35% Black, or 48% Black. A series of factorial and single factor analyses

was performed with level of classroom integration generally serving as the independent variable and academic achievement or concomitants of achievement serving as the dependent variable.

Dependent data were: (a) academic achievement, measured using the *Iowa Tests of Basic Skills* and the *STEP Test*, (b) Black-white shared meaning regarding school-related concepts, measured using a form of Osgood's semantic differential, and (c) interracial attitudes obtained using a paper-and-pencil test which extends the logic of social distance and social schemata.

Controlling for the effects of student SES, IQ and fate control, the study predicted that shared meaning would be directly proportional to the level of academic achievement among Black students and that there would be more Black-white shared meaning in integrated classrooms (35% and 48% Black) than there would be in segregated ones (12% and 22% Black). The study also predicted that racial distance would decrease as classroom integration increased.

Results indicated no significant differences in academic achievement associated with classroom racial composition for either Black students or white students. However, the data did reveal that having large proportions of Blacks in desegrated classrooms was associated with several concomitants of academic achievement. An important finding was that students in integrated classrooms had significantly more Black-white shared meaning ($P < .01$) than did students in segregated ones. Furthermore, Blacks in high-shared meaning

classrooms scored higher than did Blacks in low-shared meaning ones on the "vocabulary" ($P < .05$) and on the "arithmetic concepts" ($P < .10$) subsections of the *Iowa Tests*.

Retrospective analyses showed that Blacks in integrated classrooms were more psychologically related to school (measured using the semantic differential) than were Blacks in segregated classrooms ($P < .05$). The data also showed that Blacks and whites were more in agreement concerning their psychological relatedness to school when they were members of integrated classrooms.

Policy implications were discussed after taking into consideration limitations of the study. The salient policy implications were as follows:

(a) Looking at student diversity via connotative reaction to school-related concepts is a step in the direction of transferring the study of learning problems out of political and power arenas and into arenas of rational scientific inquiry.

(b) Classroom desegregation is not a process in which every Black gain is associated with a white student loss.

(c) Interracial concurrence regarding school-related concepts (shared meaning) and not interracial friendship (affective racial distance) appears to be the most important condition in the development of a facilitative educational climate for desegregated Black students.

(d) Classroom racial composition is firmly established as an educationally germane dimension having substantial potential influence on the academic achievement of desegregated Black students.

(e) Black-white shared meaning is the most essential of those intangible qualities found in desegregated schools--qualities which the Courts have decided are so important to the academic success of desegregated Black students.

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Formulation of the Problem

In the wake of the 1954 Brown decision making law-sanctioned school segregation unconstitutional, social science researchers conducted many studies designed to assess the impact of school desegregation on the academic achievement of both Black students and white students. These studies attempted to determine the influence of desegregation on concomitants of academic achievement, as well as on academic achievement itself. Many of the studies were designed specifically to determine if racial heterogeneity per se was responsible for any effect desegregation may have had on students' academic achievement.

Generally, desegregation research which has taken place since the Supreme Court Decision in 1954, can be categorized into three major types: (1) studies which were designed to illustrate differences in academic achievement between Blacks and whites under racially segregated conditions, (2) studies which compared the academic achievement of Black students under segregated and nonsegregated conditions but *did not* control for covariates of desegregation, and (3) studies which also compared the academic achievement of Blacks under segregated and nonsegregated conditions but *did* attempt to control for those covariates of desegregation which may have had an influence on academic achievement. In other words, the latter studies attempted to isolate the effect of racial heterogeneity per se on the academic achievement of Black students.

The *Southern School News* reported a series of studies which were typical of the type of research that occurred during the early days of school desegregation. A major emphasis of this research was to illustrate the difference between the academic achievement of Black students and white students in segregated schools. For example, the *Southern School News* (1954) reported results of a survey conducted during the 1953-54 school year in the State of Texas. The survey assessed standard test scores of 80 per cent of the state's school children. In pointing out the difference between the academic achievement of Blacks and whites in segregated Texas schools, the researchers noted whites had very satisfactory standard test scores while the standard test scores of Blacks were unsatisfactory. Similar surveys with similar results were conducted in Dade County, Florida and in Nashville, Tennessee and reported in the *Southern School News* (1956).

Studies which demonstrated the difference between the achievement of Blacks and whites under segregation were not limited to the South. Ferguson and Plaut (1954) reported the results of a survey of over 10,000 public high school seniors. The survey covered over 30 public high schools in 11 northern states. Ferguson and Plaut found that of the more than 3,000 Blacks surveyed, fewer than 25 were in the upper 1/4 of their class. White students, on the other hand, demonstrated a high degree of academic achievement.

The first type of study, then, supported the Supreme Court Decision in showing that, under segregation, Blacks did

not achieve academically as well as did whites.

Once the schools began to desegregate, a second type of study assumed significance. This type of study assessed the difference between the academic achievement of students whose elementary school experience was segregated and those students who attended racially mixed elementary schools.

The Dumbarton Research Council (1966) discussed research which is illustrative of the second type of study. The research was conducted in Oakland, California. Forty per cent of Oakland's public high school graduates who had attended only Oakland schools since the first grade served as subjects. The results revealed that Blacks who had attended racially-mixed elementary schools performed better than did Blacks who attended all-Black elementary schools.

Samuels (1958) reported another study which is an excellent example of the type of study that compares the academic achievement of students under both segregated and desegregated conditions. Samuels' subjects were two matched groups of Black elementary school students in New Albany, Indiana. He compared the academic achievement of those Blacks who were attending segregated schools with that of those who attended desegregated ones.

By matching his subjects on IQ and SES, Samuels attempted to control two variables which were most likely to vary between Blacks in all-Black schools and Blacks in mixed schools--variables which were also likely to affect academic achievement.

Analysis of achievement test results revealed that the two groups of Blacks achieved equally in the first grade. However, in grade three and again in grade six, the group of Blacks that attended the mixed school scored progressively better than did the group that attended all-Black elementary schools.

No attempt was made in Samuels' study to control for school factors, i.e., characteristics of the school environment which could influence academic achievement. The second type of study (the type of study of which Samuels' research is an example) was concerned mainly with the *existence* of an effect on academic achievement associated with desegregation and not with the *reasons* for the effect.

A third type of research did attempt to determine the precise cause of desegregation-related changes in academic achievement. Two examples of the third more controlled type of study which arose after desegregation are as follows: (1) The Equal Educational Opportunities Survey, (Coleman Study) by the United States Office of Education (1966), and (2) Racial Isolation in the Public Schools (RIPS) by the United States Commission on Civil Rights (1967). These studies attempted to control some of the many variables (in addition to racial composition) which affect achievement under desegregated conditions.

The Equal Opportunity Survey by Coleman, et al was based on a national probability sample. Data were gathered via achievement tests, verbal tests, and questionnaires.

Student achievement was the major dependent variable with family background, attitudes, social class, and school characteristics as major independent variables. The data were analyzed to give between-group differences and presented to reveal the proportion of variance explained by a particular factor.

The RIPS study was a reanalysis of the Coleman, et al (1966) data. It was designed to study the relative effects of social class and racial composition of the school on the academic achievement of Blacks. The data were analyzed using cross-tabulations.

The three types of studies discussed above illustrate a progression in complexity from the first to the third type. One result of there being several types of desegregation studies is that many different designs, controls, and variables have been used. Despite the various types of desegregation research and the ensuing complexity of methodology, recent reviewers of the desegregation literature (St. John, 1970; O'Reilly, 1970; and Weinberg, 1970) have concluded that desegregation does improve the academic achievement of Black students. The reviewers point to a few cases where the evidence has pointed to no gain in the academic achievement of Blacks associated with desegregation, but only in rare cases did the research reviewed show an actual decrease in the academic achievement of Blacks as a consequence of school desegregation. Although the reviewers reported that whites show no marked increase in academic

achievement, the evidence is strong that whites do not show a decrement in academic achievement when they are in desegregated schools.

When they are considered in summary form, studies of school desegregation appear to present consistent findings. However, when these studies are examined more closely, their results are seen to be conflicting. Light and Smith (1971) examined 22 desegregation studies with respect to experimental designs, controls, dependent variables, and outcomes. These authors reported that the variety of experimental techniques used and measures taken in the 22 studies was enormous. The principal conclusion drawn by Light and Smith was that contradictions among the results were more striking than were similarities. For example, of those studies which considered reading, verbal ability, and math achievement as dependent variables, some showed achievement gains in only one area. The conflicting results may be a function of much of desegregation research being plagued by complex methodological and design problems.

In summary, then, desegregation research progressed from research designed to document differences between the academic achievement of Blacks and whites under segregated conditions--to studies devised to demonstrate the effect of desegregation on academic achievement--to research planned to isolate the cause of any impact desegregation had on academic achievement. As the research attempted to isolate the specific reason desegregation influenced academic achieve-

ment, and attempted to determine the impact of racial mixing per se on academic achievement, the designs, controls, and significant variables became more complex. Even though reviews of the desegregation literature report a general finding that desegregation improves the academic achievement of Blacks and does not negatively affect the academic achievement of whites, the presence of various type of desegregation research has led to serious contradictions in the general findings. These contradictions apparently are the product of methodological and design problems associated with the complex multifarious desegregation studies.

Methodological and Design Considerations in Desegregation Research

Racial Composition and Achievement

Although there is general agreement among desegregation researchers that the racial composition of a school affects academic achievement, the precise proportion of whites in the school or classroom has not been considered in detail. For example, does having 60 per cent whites in the school produce effects different from those that would be produced in a school with 90 per cent whites? What is the functional relationship between proportion whites in a school and the achievement of Black students? Desegregation studies generally have considered categories too broad to give any information regarding specific proportions of Blacks in a school. For example, the Coleman, et al (1966) study and other studies using the Coleman data relied upon the following categories of proportions of whites: "none", "less than half", "half", and "more than half". Most other desegregation studies did not attend specifically to classroom racial composition. These studies considered desegregated schools as a single class of events and as a consequence simply compared Blacks in several desegregated schools with Blacks in all-Black schools.

Berkun and O'Reilly (1970) reviewed a group of ten desegregation studies which were conducted in New York State. These studies used a variety of proportions of whites

ranging from less than 8 per cent to more than 75 per cent. Based on their review of these studies, Berkun and O'Reilly concluded:

> The results, however, are consistent with the findings of other more extensive studies (Coleman, *et al*, 1966; Wilson, 1967) in that they indicate that high proportions of (lower status) minority group pupils in integrated school settings are associated with inconsistent or negative results in relation to the educational effectiveness of school integration. When the proportions of disadvantaged Negro students fall in the range of from 10 to 30 per cent, appromimately, the results tend to indicate facilitating effects on achievement. *There is also the bare suggestion from the data that very small proportions of Negro students in integrated schools may not be educationally desirable, although this question is much in need of more definitive study.* (p. 237) (Emphasis mine)

This Berkun and O'Reilly study pointed out the need to consider categories of proportions of whites which are smaller than the categories used in the Coleman, *et al*, study.

A close inspection of the Coleman data reveals that the categories used by Coleman were not sufficiently sensitive to explain his major findings. Using the categories, "none", "less than half", and "more than half", and looking at "the proportion white classmates last year", Coleman was unable to explain changes in the academic achievement of Blacks which occurred between these broad categories. For example, a close look at the average reading comprehension scores of Black sixth-graders in the Metropolitan Northeast (the type of sample used in this research) by proportion of white

classmates last year (see Figure 1) shows that there was the largest positive relationship between reading scores and proportion of white students after white students exceeded 50 per cent. These data also showed that the reading scores

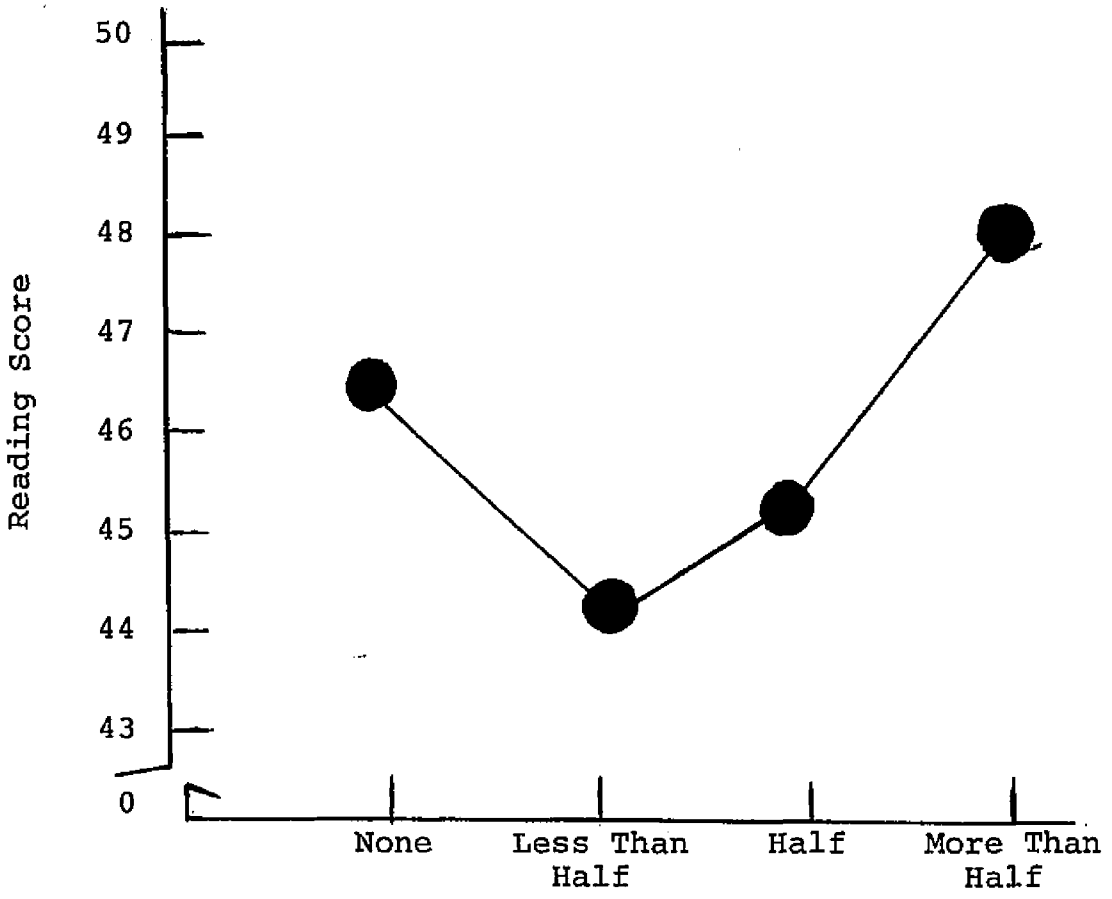

Fig. 1.--Average Reading Scores of Sixth-Grade Black Students by Proportion of White Classmates in Previous Year of Schooling: Metropolitan Northeast

Note.----Based on data from Coleman et al, 1966, p. 332

of Blacks go down sharply between the categories "none" and "less than half" proportion white classmates last year. In attempting to investigate the increase in Black achievement which occurs when "more than half" of the classmates last year were white, one can see that the greatest positive relationship between reading achievement and proportion of white students occurs only after the proportion of whites in the classroom last year exceeded 50 per cent. This suggests, then, that the critical range of Blacks in the classroom (regarding achievement gains associated with racial composition) is somewhere between one Black and 50 per cent Black. Coleman's broad categories do not allow one to investigate this critical range more closely.

In summary, the literature pertaining to the effect of school racial composition on academic achievement suggests that achievement gains Blacks experience under desegregation are greatest when there are over 50 per cent whites in the school or classroom.

Critical Covariates of Desegregation

Researchers have often failed to recognize in their designs that transferring students from a segregated school to an integrated one frequently is associated with changes in the student's educational milieu other than the obvious change in racial composition. Any one or all of these changes, e.g., IQ and social class composition of the school may account for some or all of the effect desegregation has

upon the student's academic achievement; consequently, in order to isolate the influence of racial composition per se on student academic achievement, all of the covariates of desegregation which have the potential to influence student academic achievement must be identified and controlled. A discussion of the critical covariates of desegregation and a consideration of the potential impact of these covariates on student academic achievement takes place in the following sections.

SES is Related to Academic Achievement Under Desegregation

Differences between the social classes concerning academic achievement have been demonstrated repeatedly. Middle-class groups show greater achievement than do lower-class groups. It is important, therefore, to recognize in assessing the effects of desegregation, that inherent in the process of desegregation is a redistribution of not only race but also socio-economic status (SES). Race and SES of the individual student are directly related to his level of academic achievement (Cooper, 1964; Feldman and Weiner, 1964; and Deutsch, 1960). A white school which has been desegregated, then, not only contains Blacks, but probably contains more lower-class students than it did before desegregation. This social class factor must be taken into account when assessing the impact of desegregation on academic achievement in the school, particularly when the mean academic achievement level of the school rather than individual

achievement levels are considered.

Not only does the SES of the individual student influence his academic achievement, but the SES milieu of the whole school affects the academic achievement of those students brought into the school. For example, the Coleman study found that the higher achievement of all racial and ethnic groups in desegregated schools with greater proportions of white students is largely attributed to the effect associated with the student body's educational background, aspirations, and other SES-related variables. Wilson (1967) also reported that allowing for individual differences in social class, the social composition in integrated schools made a substantial and significant difference in subsequent academic success for its Black students. SES milieu as well as individual SES, then, appear to be critical variables to consider when assessing the effect of desegregation on academic achievement.

IQ is Associated with Academic Achievement Under Desegregation

Another variable associated with race which also affects academic achievement is IQ. Scores on standardized individual and group intelligence tests have been known to vary according to race. Blacks typically have lower IQ's than do whites (Clarke and Clarke, 1953; Deutsch and Brown, 1964; Dreger and Miller, 1960; and Osborne, 1960). IQ test scores predict performance on achievement tests. In studying desegregation, then, (a process which by definition redistri-

butes racial groups) one is also studying redistribution of IQ. Since IQ influences achievement, IQ appears to be an important variable to control.

IQ also is related to SES--the higher SES having the higher IQ (Higgens and Sivers, 1958; and Montague, 1964). The SES milieu influences on academic achievement probably are confounded with IQ milieu influences. In other words, in addition to an individual's IQ influencing his academic achievement, the IQ milieu of a host school may influence the individual's academic achievement.

SES and IQ Interact to Influence Academic Achievement

In addition to being concerned with a student's IQ and social class, the desegregation researcher also must be conscious of the relationship between the contribution of an individual's IQ and social class to his academic achievement. McCandless (1967) discussed this issue as follows:

> From the intelligence test differences between social classes, we would expect differences in school progress, middle- and upper-class children being expected to do better school work than lower-class children. The actual differences in academic achievement between social classes are even more dramatic than the differences in intellectual level. On the whole, lower class children achieve less than their intelligence tests predict they will, whereas, middle-class and upper-class children approach their academic potential more closely (p. 317).

A further illustration of the complexity surrounding IQ and achievement in the desegregated situation is a study by Curry (1962) who found, in comparing the achievement of students with high IQ's with that of students with low IQ's, that there were SES-related differences in achievement among the students with low IQ's but not among those students who had high IQ's. High IQ, then, appeared to overcome the detrimental effect of lower SES. The Curry study demonstrated the interaction which exists between a student's IQ and his SES.

Though no definitive explanation of the influence of IQ and social class is likely to come out of the literature, the research done does point to the importance of controlling for IQ, for social class, and for the interaction between IQ and social class when attempting to isolate the effects of racial composition on achievement.

SES and Race Interact to Influence Achievement

Since race is so highly correlated with social class, any study of school desegregation must answer the question "is the positive effect on academic achievement observed among Blacks a result of their being with whites or is it due to their contact with higher social class students"? Coleman, et al (1966) found that as the proportion of whites in schools increases, the achievement of both Black students and white students increases. However, Coleman attributed this increase in achievement to the higher social class

that is usually found among whites rather than to racial composition per se. Using the student's report of the proportion of whites in his class, Coleman found that achievement increased in direct proportion to the proportion of white classmates. Using Coleman's data, however, it is impossible to isolate the effects of race from the effects of social class; consequently, no unambiguous results concerning the interrelation of social class and racial composition can be obtained from Coleman's data.

Wilson (1967), in a study designed to investigate the relative effects on achievement of racial and SES isolation in the schools, made several refinements on the Coleman, et al methodology which make his results more definitive than Coleman's. Among the more important of Wilson's refinements was his establishment of a quasi-longitudinal framework and his institution of a control for intelligence. Wilson concluded that when the effects of SES were controlled, the school's racial composition did not show any relationship to achievement for either Blacks or whites.

While the studies cited regarding the effects of social class and racial composition on the academic achievement of Blacks are ambiguous, they do illustrate the need to control for those two variables.

The Classroom is the Critical Unit for Analysis in Desegregation Research

McPartland and York (1967) in their reanalysis of the Coleman, et al (1966) data, reported that the classroom was the critical unit in desegregation research. In a subsequent analysis, McPartland (1967) designed a study specifically to determine whether Black achievement gains under desegregation were a result of integration at the *classroom* level or at the *school* level. McPartland used that part of the Coleman data obtained from 5,075 ninth grade students in integrated schools in the Northeastern United States. McPartland's results should be interpreted with the knowledge that: (1) there were no controls for IQ, (2) individual classroom and school racial and SES factors were not controlled simultaneously, and (3) there were no controls for individual school effects. The independent variables were family background, proportion of whites in the school, and proportion of whites in the classroom, while the dependent variable was verbal ability.

McPartland's analyses showed the classroom to be the critical unit. The academic achievement of Blacks in classrooms with a large proportion of whites was greater than that of Blacks in classrooms with small proportions of whites. Achievement was associated with the proportion of Blacks in the classroom rather than with the overall school racial composition. McPartland did note, however, a facilitating effect if the school were mostly white. In

other words, Black students in mostly white classes exhibited increased academic performance if they also attended mostly white schools. This finding suggests that there may be an interaction between classroom racial composition and the racial composition of the school as a whole.

School and Classroom Balance Are Critical Variables to be Considered When Studying Desegregation

Koslin, et al (1970) discussed classroom balance as an important intervening variable in understanding the effects of school integration. The Koslin study defined classroom balance as the evenness of racial composition across classes within a grade within a school. "The more the racial composition of each class mirrors the racial composition of the grade as a whole, the more balanced the classrooms. The more the racial composition of the classroom differs from the overall grades racial composition, the more 'unbalanced' the classrooms (p. 5)." Unbalanced classrooms within schools create a social environment in which race is a salient criterion for categorizing people. Balancing the classrooms removes race as a criterion. Koslin et al (1970) reported that classroom racial balance was strongly related to students' interracial attitudes.

The balance phenomenon has been reported elsewhere in the literature in relation to school integration. In a study which controlled for IQ and SES, Radin (1966) compared Blacks in an all-Black school with Blacks in a school which

was 45 per cent Black. Radin reported that the achievement gains of Blacks in the mixed school were greater than those of Blacks in the all-Black school. In this case,however, the differences between achievement gains were not significant. Weinberg (1970) in a review of Radin's research attributed the lack of significance to the imbalance of the mixed school--balance being the condition where the proportion of Blacks in the school approximates the proportion of Blacks in the surrounding community. In the Radin study, 21 per cent of the surrounding population was Black but 45 per cent of the sample school was Black.

In other research using Weinberg's definition of balance, Lockwood (1966), in a series of studies designed specifically to determine the effect of such balance on achievement, found that Blacks who had attended balanced schools achieved significantly higher than did those Blacks who attended unbalanced schools.

The balance phenomenon then has been shown to be operative at both the classroom and school levels. Since McPartland (1967) has suggested that the classroom is the appropriate unit for analysis, it follows that classroom balance would be relevant to desegregation research.

The Length of Time in a Desegregated School is an Important Variable in Desegregation Research

Because research in racially mixed schools began almost as soon as schools were integrated, the length of time a

student had been in his new school was an issue.[1] For instance, during the initial period of desegregation research, many studies were conducted in schools which had been desegregated for fewer than 24 months. These early investigators had the problem of not knowing whether or not the length of time the schools had been desegregated had an effect upon their results. A related problem was the failure of the researchers in designing their research, to discriminate between (a) stable desegregated schools and (b) those schools merely making the transition from white to Black reflecting neighborhood population shifts. How long must a student attend an integrated school before his achievement is affected? Are there antecedent conditions which precede achievement gains which are necessary for these gains to take place?

Anderson (1966) compared 75 Black sixth graders who had been in desegregated schools for up to six years with a comparable group of Blacks who had attended all-Black schools during the same period. The proportion of Blacks in the integrated schools ranged from 8 to 33 per cent. As expected, Anderson found that the academic achievement of Black students in the desegregated schools was significantly better than that of Blacks in the all-Black schools. There was, however, an exception to this overall academic superi-

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[1] Klineberg (1935) in a study done in New York found that Black children coming from the South systematically gained in IQ with increased time in northern schools.

ority demonstrated by the desegregated Blacks. Those Black students who had not been moved to the mixed schools until the fifth or sixth grade (a year before the study was done) actually scored lower on achievement tests that did Blacks in the all-Black schools.

Anderson's findings were supported by Coleman's,et al (1966) study which found that the average reading comprehension scores of Blacks who had first attended classes with whites in grades 1, 2, and 3 were higher than the scores of Blacks who had first attended classes with whites in the 7th, 8th or 9th grades (p.332). Coleman also found that those whites who had had the earliest exposure to non-whites in school (1st, 2nd or 3rd grade) were less likely to prefer an all-white class than were whites who had not had non-white classmates until the 7th, 8th or 9th grades.

Wilson (1967), studying the effects of social class composition on Black achievement, also supported Anderson's findings in recommending that elementary schools were the most effective points at which to initiate integration.

Fate Control is an Important Variable in Desegregation Research

Fate control or internal-external control was defined by Rotter (1966) as the concept in which a person perceives that his rewards are either contingent upon his own behavior or that they are controlled by forces outside of himself. Rotter's concept has been used to explain a variety of behaviors related to academic achievement, i.e., educational

aspirations, study habits, and academic performance. Of particular relevance to desegregation research are studies using Rotter's concept, i.e., Coleman,et al (1966), which suggest that Blacks when compared with whites appear not to possess internal control and that internal control is a correlate and possibly a determinant of academic achievement.

Fate control was reported by Coleman, et al (1966) to be an attitude factor which appeared to have a stronger relationship to achievement than did all the "school" factors taken together, and which for Blacks, was directly related to the proportion of whites in the schools. Coleman based his conclusions for sixth graders (the population closest to that used in this research) on their responses--"agree", "not sure", "disagree"--to the statement "people like me don't have much of a chance to be successful in life." The RIPS (1967) study also found desegregated classrooms to be associated with increases in the proportion of Blacks who disagree with the statement "good luck is more important than hard work for success." Perceived control over environment, then, appears to be an important mediating variable or at least a variable which is associated with groups of Blacks who demonstrate academic achievement gains under desegregation.

Social Science Concepts Can Be Applied To Help Explain the Desegregation Process

In addition to making many criticisms concerning the methodology used in desegregation research, recent reviewers of the desegregation research literature (Weinberg, 1970; and O'Reilly, 1970) pointed out the need to explore the dynamics of the interracial classroom. The effect being in an integrated classroom has upon the academic achievement of Black students probably *is not* the result of an osmotic process whereby Black students assume the characteristics of their higher-achieving white classmates. Rather, as O'Reilly (1970) suggested, the effect is probably due to "...a slow and cumulative process resulting most directly from complex social and cognitive interactions in the classroom setting" (p. 206). Expressing a viewpoint which supports O'Reilly's, Weinberg (1970) reported, based on his review of the desegregation literature, that social-psychological perspectives are growing in importance in education research.

It is reasonable to expect that in a middle-class white-oriented classroom, Black students could benefit academically from exchanging information with white students who typically demonstrate a higher level of academic achievement.[2]

[2] Of course, one might assume that whites also may benefit from the exchange with Blacks. However, we are interested in academic achievement and whites typically achieve at a higher level than do Blacks; hence, they are in a position to communicate to Blacks information which would enhance the academic achievement of Blacks in the classroom.

The information exchange is often very subtle and informal. In addition to exchanging specific factual information which could enhance academic achievement, Blacks and whites in an integrated classroom can exchange information concerning concepts such as achievement orientation, level of aspiration, anxiety level, self-regulation, or simply "how things are done" in the classroom.

In order for any viable communication to take place between Black students and white students in an integrated classroom, Blacks and whites must have a common frame of reference concerning the concepts being communicated. In other words, Blacks and whites must share meaning regarding school-related concepts.

Triandis (1960) tested the hypothesis that if two people have similar meanings for concepts, they should be able to communicate more effectively. Triandis' research was conducted in an industrial setting employing supervisors and their subordinates as subjects. A laboratory replica of this study also was reported (Triandis, 1960). Both studies found that a high degree of shared meaning between two people was associated with communication effectiveness. Logic and empirical findings, then, support our contention that shared meaning between Blacks and whites in an integrated classroom enhances communication between the two racial groups.

One could make the valid argument that both Black students and white students do learn the basic school-related

concepts and hence do have a common frame of reference. However, what occurs most commonly is that all students learn the *denotative*[3] meaning of concepts, i.e., they learn to verbalize what is expected. However, a school-related concept is perceived or described in terms of a set of attributes--denotation being only one. These attributes for the most part have linguistic equivalents which permit their communication. *Connotative* meaning is operationally defined to include many of those attributes which describe a concept (see Footnote 3).

Two students might agree concerning the denotative meaning of the concept TEST yet have differing responses to the concept. This difference in reaction could impede communication between the students concerning how much one should study, how attentive one should be when taking a test,

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[3] Osgood (1969) made the subtle distinction between connotative and denotative meaning: "The *connotative meaning* of a linguistic sign I define as the habitual symbolic process, $\hat{X}$, which occurs in a sign-user when: (1) a linguistic sign is produced (with reference to speaker); or (2) a linguistic sign is received (with reference to hearer)." (p. 132)

This connotative meaning is contrasted to denotative meaning which Osgood (1969) defined as follows:

"The *denotative meaning* of a linguistic sign I define as a conventional, habitual correlation between: (1) with reference to the speaker, a non-linguistic stimulus pattern, S, and a linguistic reaction, $\overline{/R/}$; or, (2) with reference to the hearer, a linguistic stimulus pattern, $\overline{/S/}$, and a non-linguistic stimulus pattern S (or a response, R, appropriate to this non-linguistic stimulus pattern). I use the symbols $\overline{/S/}$ and $\overline{/R/}$ to refer to *linguistic signs*, as received or produced respectively, the symbol S for the thing signified (significate or referent), and the symbol R for a non-linguistic response." (pp. 131-132)

etc. Therefore, even with denotative agreement among Blacks and whites in the classroom, an absence of connotative agreement would present an intangible but effective barrier to the critical Black-white exchange.

The connotative meaning of a concept is different from attitude toward or belief about that concept (see Appendix A). Attitudes generally refer to an affective tendency to evaluate concepts--thus the evaluation dimension is the simple defining dimension for attitudes. On the other hand, beliefs are considered to be non-evaluative opinions about concepts. Connotative meaning has *both* attitudinal and belief components.

A school-related concept has the same meaning for Blacks and whites if that concept is located in the same position of a semantic space which is common to both groups. Two groups have a common semantic space if for both groups the same relations exist between the attributes of the school-related concept under consideration. It is logical that without this equivalence of semantic space, the specific meaning (i.e., location of a concept in the semantic space) of school-related concepts could not be compared. If this common semantic space did not exist, communication between Blacks and whites regarding the meaning of school-related concepts would be seriously impeded.

We have argued and presented empirical studies to support the idea that shared meaning between Blacks and whites in an integrated classroom enhances communication between

the two groups of students. We have further posited that this exchange of information between Blacks and whites would result in a higher level of academic achievement among Blacks. If these two concepts are valid, what would be the relationship among (a) desegregation, (b) academic achievement of Blacks, and (c) Black-white shared meaning?

Our review of the literature identified the classroom as the appropriate unit to study. The literature review also revealed that only after the proportion of whites in a classroom exceeds 50 per cent does there appear to be a positive association between the proportion of whites in the classroom and the level of academic achievement for Black students. Viewed from the perspective of Blacks, the direct translation is that until the proportion of Blacks reaches 50 per cent, there is a positive association between the proportion of Blacks in the classroom and the level of academic achievement for Blacks. From 0 per cent to 50 per cent, then, appears to be the critical range to consider when looking at the effect of the proportion of Blacks in a classroom on the academic achievement of Black students.

What is the relationship between the proportion of Blacks in the classroom (within the range of 1 Black to 50 per cent Black) and Black-white shared meaning? Logic would argue that prerequisite to shared meaning among Blacks and whites in an integrated classroom would be communication between the racial groups. Both the quality and quantity of Black-white contact should help to determine the nature

of inter-group communication and hence the amount of Black-white shared meaning. Spontaneous, intimate Black-white contact in an integrated classroom should facilitate an increase in Black-white shared meaning.

Social psychological theory predicts the relationship between the nature of Black-white contact in an integrated classroom and the proportion of Blacks in that classroom. Asch's (1952) work on conformity and his theory of social pressure suggest that when Blacks are in low proportions, i.e., one or two Blacks in a classroom, they would experience feelings of isolation and anxiety. Interpreting Asch's theory in this manner assumes that Blacks realize that their frame of reference is different from that of their white classmates. It is this realization which causes the Blacks (who are in an extreme minority) to lose confidence in their judgment and gives rise to their stress and anxiety. As the proportion of Blacks in the classroom increases, according to social pressure theory, the anxiety experienced by the Blacks would be reduced. This reduction would lead to an increase in Black-white contact.

On a phenomenological level in secondary schools, the behavior of isolated Blacks supports the predictions of social pressure theory. For example, a study of desegregated high schools in the South by the Office of Civil Rights (1970), stated that Blacks reported considerable insecurity concerning their social activities. The OCR study also noted that Blacks were isolated in the classrooms. However,

where Blacks were in the majority or had large numbers, they report less insecurity. This phenomenon was reported to be operative for whites when they were a minority in formerly all-Black schools (Houten, 1965). Smith (1966) noted a similar "minority syndrome" following his visit to vocational high schools in Baltimore. He reported that when the proportion of Blacks was low, Blacks grouped together and maintained low interaction rates with whites. Interaction increased when the proportion of Blacks increased.

In addition to the social psychological principles operating in the classroom, the numbers of Blacks, per se, affect the nature of Black-white contact. In a classroom that is either predominantly white or predominantly Black, the choice and opportunity for members of the majority race to have spontaneous and intimate contact with a member of the minority race is severely limited. The maximum opportunity for high quality interracial contact occurs when the classroom is 50 per cent Black. The expectation, then, is that as the proportion of Blacks increases up to 50 per cent, the amount of Black-white shared meaning would increase.

Hypothesis 1: Within the range of 0-50% Black, as the proportion of Blacks in the classroom increases, the amount of Black-white shared meaning will increase.

How is Black-white shared meaning in an integrated classroom related to the academic achievement of Blacks? Earlier, we argued and presented empirical studies to support

the idea that shared meaning enhances communication. Assuming that Black-white shared meaning does enhance Black-white communication, shared meaning should be positively associated with the level of academic achievement among Blacks. Whites in a white-oriented school system typically achieve better academically than do Blacks. It is reasonable to expect, then, that in sharing meaning regarding school-related concepts, Blacks learn from whites many subtle and not so subtle ways to improve their academic achievement. This is not to suggest that Blacks become acculturated to whites. It simply says that in sharing meaning with whites, Blacks are in a position to receive information--information which could help them academically. Whites, on the other hand, also gain information but not necessarily information which would help them academically.

Hypothesis 2: As the amount of Black-white shared meaning increases, the academic achievement of Blacks will increase.

If Black-white shared meaning increases with the proportion of Blacks in the classroom and if the academic achievement of Blacks increases with an increase in shared meaning, then it would be reasonable to expect that the proportion of Blacks in the classroom would be positively associated with the academic achievement of Blacks.

Hypothesis 3: Within the range of 0-50% Black, as the proportion of Blacks in the classroom increases, the academic achievement of Blacks will increase.

Interracial attitudes obviously are a critical variable to be considered when investigating the consequences of mixing the races in a race-conscious society. Interracial acceptance in a desegregated situation is important as a short-range goal in itself, but also it is significant as a variable which may facilitate any positive effect desegregation has on the academic achievement of Blacks. The Coleman report, in discussing the relationship of integration to achievement, made the following observation:

> An education in integrated schools can be expected to have major effects on attitudes toward members of other racial groups. At best, it can develop attitudes appropriate to the integrated society these students will live in; at its worst, it can create hostile camps of Negroes and whites in the same school. Thus, there is more to "school integration" than merely putting Negroes and whites in the same building, and there may be more important consequences of integration than its effect on achievement (pp. 28-29).

Katz (1967), Pettigrew (1968), U.S. Commission on Civil Rights (1967), and others have suggested that desegregation *may* lead to positive interracial attitudes which, in turn, would promote academic achievement among Blacks. On the other hand, the integrated classroom per se as Pettigrew (1969) stated, relying on Katz (1964) and as Coleman implied, *may not* promote positive interracial attitudes:

> The commission report...makes a crucial distinction between a merely desegregated

> school and an integrated one...desegregation involves only a specification of the racial mix of students...it does not include any description of the *quality* of the interracial contact. Merely desegregated schools can be either effective or ineffective...(Pettigrew 1969, pp. 74-75).

Three survey studies were undertaken which investigated the relationship between racial isolation and interracial attitudes. Results from these studies were reported in the Appendix of the RIPS (1967) study. The first survey used a sample of over 1,500 Blacks living in the North. The second study was based on a national sample of over 1,300 whites, while the third study sampled over 1,400 Black students and white students in the 1965 graduating class who had attended Oakland schools continuously from the first grade.

One of the focuses of the three surveys was to compare people regarding their interracial attitudes. The comparison was made between those who had attended desegregated elementary schools and those who had attended segregated schools. A desegregated school was defined as one where the Black student population constituted between 0 and 50 per cent of the entire student body. Though there are many points at which the studies can be criticized (O'Reilly, 1970), the results can be summarized as having shown that Blacks and whites who attended desegregated schools, as opposed to those who attended segregated ones, were more likely to show less interracial distance.

The three survey studies mentioned above did not assess the relationship between different levels of desegregation and interracial attitudes. They simply considered the broad categories of "segregated" (more than 50 per cent Black) and "desegregated" (less than 50 per cent Black). In light of the review of literature which suggests that the range of 0-50 per cent Black is critical and that the classroom unit is the appropriate unit for study, the significant question is, "what is the relationship between various levels (within the 0-50 per cent Black range) of proportion Black in the classroom and interracial attitudes?"

Reporting the results of his review of the general body of research on social interaction in the classroom, O'Reilly (1970) stated that the effect of school integration on interracial acceptance may be either positive or negative depending upon a number of variables, one of which is the nature of peer group interaction in the classroom. O'Reilly noted that, based on the subjective reports of students, teachers, and principals, one of the major strengths of integration programs was an increase in interracial understanding.

We have predicted that there would be an increase in Black-white shared meaning as the proportion of Blacks in a classroom increases from 0-50 per cent. This increase in shared meaning, e.g., interracial understanding should be associated with a decrease in interracial social distance. The three major surveys discussed above suggest that desegregation in general is associated with positive interracial

attitudes. The general body of research on social interaction in the classroom suggests that if social conditions in the classrooms are correct, interracial acceptance will be enhanced. Assuming that Black-white shared meaning increases as does the proportion of Blacks in the classroom (up to 50 per cent), we predict that interracial attitudes would become more positive.

Hypothesis 4: Within the range of 0-50% Black, as the proportion of Blacks in the classroom increases, interracial attitudes will become more positive for both Blacks and whites.

Method

Scope of the Study

The education process generally has been investigated by considering cognitive gains without paying too much attention to education as a complex social process. However, concern with noncognitive variables has increased recently as education administrators attempt to assess the effects of massive school reorganizations, i.e., bussing and redistricting of students. Interracial attitudes and attitudes toward school are seen as valid educational outcomes as well as important variables mediating academic achievement in the cognitive realm.

Between 1966 and 1969, more than $7,000,000 was spent, supplemented by local district funds and Title I money, to encourage racial balance and integration programs in New York State's elementary and secondary schools. The New York State Education Department contracted with a New York City-based research institute (Riverside Research Institute) to assess the impact of these racial balance programs on the psychosocial development of students exposed to the programs. Specifically, the institute was to (a) formulate a strategy to evaluate the immediate and protracted effects of programs to correct racial imbalance and promote equal educational opportunity, and (b) to develop a battery of age-graded instruments (which could be used in the evaluation) to measure

noncognitive outcomes associated with racial isolation and integration.

Field research was initiated in the summer of 1969 in a large school district in New York State. Because the percentage of overall school funds allocated to integration was so small, it was anticipated that the impact of the integration effort would be small--hence difficult to measure. With this prewarning, the research institute designed a very sensitive sampling strategy. Over 4,000 students in the district were sampled and given a battery of instruments.

The research reported here represents a study completed using a sub-sample of the institute's larger sample. The study utilized raw data collected in connection with the institute's more comprehensive research program. The author participated in the data collection phase and became intimately aware of the procedures used in collecting data. He actively participated in the design and validation of the instruments used. Technically, however, this investigation originated as a discrete study with the development of the research design. The author was responsible for the research design and implementation. This responsibility included: (a) formulating the problem, (b) conceptualizing the theoretical approach to investigate the problem, (c) designing the study, (d) selecting the sub-sample of students, (e) screening and refining raw data, (f) designing and implementing specific statistical analyses, and (g) writing the study including the results and the discussion of the results.

Overview of the Design

This was an exploratory study designed to investigate the relationship between the proportion of Blacks in a classroom and academic achievement of Blacks. Social psychological theory suggests that the proportion of Blacks in a classroom may be a contributory condition of academic achievement under the contingent condition of Black-white shared meaning. Theory in the field of social psychology further suggests that the proportion of Blacks may be a contributory condition of Black-white shared meaning. Using a series of single factor and factorial designs, we investigated the association between classroom racial composition and academic achievement. Shared meaning was investigated as a tenable process variable mediating between the academic achievement of Blacks and the proportion of Blacks in the classroom.

Fifth-and sixth-grade Black students and white students served as subjects. Subjects were classified as belonging to one of four levels of racial heterogeneity depending upon the proportion of Blacks in their classroom. In investigating the association between the proportion of Blacks in the classrooms and achievement, we equated the classrooms for variables which could possibly correlate with the dependent variable (academic achievement). This matching had the effect of removing these variables from the group of causal influences affecting the results, thereby of narrowing the range of possible variables affecting academic achievement.

A series of analyses of variance was performed to determine if the levels differed regarding academic achievement.

The analyses investigating shared meaning as a mediating variable between classroom racial heterogeneity and achievement were exploratory and the data collected did not contain sufficient information to definitely establish shared meaning as a process variable. The intent was merely to establish the concept of Black-white shared meaning as a tenable concept leading to the critical prediction that the academic achievement of Black students would increase as the proportion of Blacks in the classroom increased. No attempt was made, then, to determine precisely how shared meaning interacts with classroom racial heterogeneity to influence academic achievement.

In investigating shared meaning as a likely process variable, two separate analyses were performed. The first analysis was designed to investigate the relationship between classroom racial heterogeneity and shared meaning; the second, shared meaning and academic achievement. In the first analysis, level of racial heterogeneity was the independent variable and Black-white shared meaning the dependent variable in a single factor design. Using the same matched sample of classrooms, the second analysis, classified individuals into high or low shared-meaning groups based upon the level of Black-white shared meaning in their classroom. A stepwise multiple discriminant analysis was performed to investigate the relationship between several

indices of academic achievement and the two shared-meaning groups.

Interracial attitudes were considered to be a possible concomitant of academic achievement. Using the matched sample discussed above in a single factor design, the relationship between interracial attitudes and classroom racial heterogeneity was investigated.

Sample Selection

Subjects were selected for inclusion in the study based upon criteria established to increase the sensitivity of the experimental design. Since classroom racial heterogeneity was a major independent variable, one obvious selection criterion was that subjects be a member of a stable classroom group. Length of time in a desegregated school was an additional criterion used in selecting subjects because previous studies had shown time in a desegregated school to be a factor affecting academic achievement. Another selection criterion was that all of the classrooms used be balanced, i.e., Black students were to be distributed evenly across classrooms within a grade within each school. A final selection criterion was that the subjects be selected such that four distinct levels of classroom racial heterogeneity be created. This selection criterion further dictated that the classrooms selected be matched regarding within-classroom SES variance, mean classroom SES for Blacks and for whites, mean classroom IQ for Blacks and for whites, and

mean classroom fate control for Blacks and for whites. A subject was included in the sample if he were a member of a classroom which met all of the criteria; consequently, classroom units rather than individual subjects were sampled.

To meet the criterion which stipulated that all subjects be a member of a stable classroom group, we sampled classes from among the elementary schools in the district. The classes in these schools (grades K through 6) function as a unit throughout the day, whereas junior high and senior high school classes break up into other units during the day. From within the elementary schools, we chose to sample the two highest grades (5 and 6) for two reasons: (1) to maximize the amount of time subjects had been in a desegregated school and (2) to assure that the subjects had the reading skills necessary to complete the instruments used in the research.

The length-of-time criterion was met when we selected fifth and sixth grades. Schools in the district had been desegregated for over six years; consequently, the fifth- and sixth-grade subjects we sampled had been in a desegregated school for either five or six years. Of course, any students transferring into the school system may not have been in a desegregated school as long as had those students who began their schooling in the district. However, there was nothing to suggest that the number of students transferring into the school system was different across any of the experimental groups.

Because district policy required that all elementary school classrooms be balanced, the classrooms we selected were likely to be balanced. Inspection of the racial proportions for all of the elementary schools revealed that, indeed, the classrooms were balanced, i.e., Black students were distributed evenly across classes within each grade in each school. In selecting fifth and sixth grades, then, we met the balance criterion.

The sample was further refined using data from the 75 fifth- and sixth-grade classrooms in the district. Criteria were related to the following variables: (a) classroom racial heterogeneity, (b) within-classroom SES variance, (c) mean within-classroom SES, (d) mean within-classroom IQ for Blacks, (e) mean within-classroom IQ for whites, (f) mean within-classroom fate control for Blacks, and (g) mean within classroom fate control for whites. Classrooms were selected so that four levels of classroom racial heterogeneity were constituted and so that the classrooms were matched regarding the SES, fate control, and IQ variables. In order to have been included in the sample, a classroom had to have met all of the matching criteria as well as the racial heterogeneity criterion.

An SES index based on property values was constructed for each individual. Each student was assigned an SES index score (from 1 to 8) which reflected the average value of the houses on his Black (see Appendix F). No attempt was made to make an absolute statement regarding SES. The intent was

to insure comparability of SES across classrooms.

IQ scores were acquired from school records. The "total IQ" score from the *Lorge Thorndike Intelligence Test* was used.

The fate control score for each student was obtained using the Student Outlook Test (see Appendix E). The items used were similar to Gurin's, et al (1969) items which tapped students' beliefs about the operation of personal and external forces involved in racial conflict in the United States. The items represented Gurin's "Control Ideology" and "Personal Control" factors. They assessed the student's sense of personal control as well as his general beliefs about the role of internal and external forces in determing success and failure in the culture at large.

The 10 items in the questionnaire used here were presented in a two-option, forced-choice format. The options were worded so that both alternatives were plausible responses and neither was obviously more socially desirable than the other. The vocabulary of the items was controlled so that the level of reading difficulty (Spache, 1962) was appropriate for third grade reading levels.

The scores on the Student Outlook Test were rearranged so that a "1" represented high fate control, and a "2" represented low fate control. Adding the 10 items (equally weighted) generated scores on this instrument ranging from 10 to 20, with 10 representing high fate control. A fate

control score was calculated for each subject.

To set up homogeneity criteria, data for each variable were grouped in the form of frequency distributions within class intervals. The class interval with the largest frequency was used as the homogeneity criterion. In other words, classrooms were matched on the modal value of each variable. Assignment of classrooms to levels was based upon the proportion of Blacks on the classroom roster sheet at the beginning of the school year in which testing was conducted. The levels were created using the following ranges: Level one, at least one Black to 16 per cent Black; Level two, 17 per cent to 29 per cent Black; Level three, 30 per cent to 42 per cent Black; and Level four, 43 per cent to 55 per cent Black.

As was stated earlier, the class interval in which most data points occurred for each variable was used as the homogeneity criterion. To be included in the sample a classroom had to have an SES variance between .40 and 2.50, a mean SES between 2.00 and 4.50 for Blacks and between 3.00 and 5.00 for whites, a mean IQ of between 93 and 97 for Blacks and between 104 and 108 for whites, and a mean fate control score of between 11 and 12 for both Blacks and whites. These class intervals were constituted by inspecting the distributions and determining the number of intervals to be used for each variable in light of the range and the distribution of individual observations. In each case, the class interval selected to be the criterion represented

that interval which contained the largest frequency.

After the classrooms that did not meet the above criteria were eliminated from the sample, 22 of the initial 75 remained. Table 1 shows the percentage Black in each classroom in each of the four levels along with the grade for each classroom. The racial composition of the schools also is shown in Table 1. Table 2 shows the mean frequency of Blacks and whites in the classrooms in each level.

TABLE 1

PERCENTAGE BLACK IN SCHOOL AND IN CLASSROOM BY GRADE AND LEVEL

School	Per cent Black in School	Grade	Per cent Black in Classroom	Level
A	13	6	04	I
		5	15	I
		5	12	I
		5	15	I
		6	07	I
B	10	6	13	I
		5	12	I
		5	19	II
		6	18	II
C	32	6	27	II
		5	32	III
		6	30	III
		5	31	III
D	31	6	21	II *
		5	39	III
		6	44	IV
		5	44	IV
E	51	6	39	III
		5	36	III
		5	55	IV
		6	50	IV
		5	43	IV

*Note.--Because of the multiple criteria used in selecting the sample, classrooms in grade 6, school D appear to be unbalanced. The 21% and the 44% represent the extremes of racial heterogeneity in grade 6, however, the classrooms overall were balanced.

TABLE 2

MEAN FREQUENCY OF BLACKS AND WHITES
IN CLASSROOM BY LEVEL

Student Race	Proportion Black in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
BLACK	3	5	8	10
WHITE	22	18	15	11
TOTAL	25	23	23	21

Matching classrooms regarding SES variance and mean SES assured that the classroom had a similar SES milieu. Tables 3 and 4 give the classroom SES variance and the mean classroom SES for Blacks and for whites.

TABLE 3

CLASSROOM SES VARIANCE ACROSS
PROPORTION BLACK IN CLASSROOM

Classroom	Proportion Black in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
1	2.23	.44	.62	.81
2	2.47	1.22	.62	2.09
3	1.48	1.32	.77	1.18
4	1.82	1.08	.69	.95
5	1.73		1.67	1.94
6	2.15		.56	
7	1.71			

TABLE 4

CLASSROOM MEANS--BLACK AND WHITE
SES ACROSS PROPORTION BLACK IN CLASSROOM

Classroom	Proportion Black in Classroom							
	LEVEL I 12%		LEVEL II 22%		LEVEL III 35%		LEVEL IV 48%	
	Black	White	Black	White	Black	White	Black	White
1	3.00	4.38	3.00	3.36	3.67	3.42	4.18	4.13
2	2.33	3.88	3.00	3.57	3.00	3.31	2.45	4.29
3	3.00	4.58	2.75	4.00	3.56	4.21	3.92	4.09
4	3.33	4.76	3.20	3.82	3.14	3.29	4.33	4.10
5	3.75	4.15			2.57	4.00	2.25	4.22
6	4.00	4.72			3.86	3.58		
7	3.50	3.57						
Mean	3.28	4.32	3.00	3.71	3.31	3.63	3.47	4.17

Note.--See Appendix F for method of calculating SES index.

Tables 5 and 6 show the mean IQ and fate control scores for Blacks and for whites across level.

TABLE 5

MEAN IQ FOR BLACKS AND FOR WHITES
ACROSS PROPORTION BLACK IN CLASSROOM

Student Race	Proportion Black in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
BLACK	96.20	93.57	96.97	95.74
WHITE	105.97	105.29	105.52	105.32

TABLE 6

MEAN BLACK AND WHITE STUDENT OUTLOOK SCORE ACROSS PROPORTION BLACK IN CLASSROOM

Student Race	Proportion Black in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
BLACK	11.59 (17)	11.71 (17)	11.84 (38)	11.71 (49)
WHITE	11.28 (14)	11.20 (59)	11.64 (73)	11.33 (49)

Note.--Number of subjects in parenthesis.

Each level contained classrooms from at least two different schools (see Table 1). This minimized the chance that a "levels" effect would be compounded with a "schools" effect.

Instruments

A battery of paper and pencil instruments was used to collect dependent data.

Achievement Data

Data were gathered using the "reading comprehension", the "arithmetic concepts", the "arithmetic problem solving", and the "vocabulary" sub-tests of the *Iowa Tests of Basic Skills*. Further achievement data were gathered using *STEP Reading Test* (form 4A). The *Iowa Tests* had been administered as part of the school's regular testing program. The *STEP Reading Test*, on the other hand, was administered along with the battery of instruments used in this research.

The Semantic Differential

The Osgood, et al (1957) semantic differential technique was used to measure the meaning school-related concepts have for students. The SD technique determines the meaning a concept has for a student based on the student's rating of that concept using pairs of bi-polar adjectives (see Appendix A for rationale).

A SD (see Appendix D for the SD instrument entitled "Test of the Special Meaning of Words") with 19 concepts and 11 scales was used. The concepts were selected with the expectation of obtaining meanings related to school, self-concept, fate control, and socio-economic class. School-related con-

cepts were: STUDENT, TEACHER, SCHOOL, SCHOOL RULES, LEARNING, TESTS, and CURIOSITY. The amount of Black-white shared meaning was based on the student's reaction to these school-related concepts. Concepts relevant to self were: I AM, MY TEACHERS THINK I AM, and MY CLASSMATES THINK I AM. Concepts related to socio-economic class and fate control, were: DAY DREAMING, NEXT YEAR, MONEY, MY NEIGHBORHOOD, JOB, SUCCESS, LUCK, FRIEND, and LIFE. Only the school-related and/or self-related concepts are relevant to this research. Socio-economic and fate control concepts were not used because SES and fate control were controlled in the design.

The test employed two sets of 11 scales--one set for animate concepts such as STUDENT and TEACHER and a different set for inanimate concepts such as LEARNING and TESTS (see Appendix D). Scales representing each of the standard "evaluative", "potency", and "activity" dimensions were included in the instrument. The scales used, however, were not restricted to those three dimensions. In order to minimize socially desirable responses, we excluded scales of obvious social desirability from the animate concepts and scales which were clearly descriptive were excluded from the inanimate concepts.

Several modifications of Osgood's original instrument were made so that the instrument could be completed by grade-school children. Following the Osgood, Suci, and Tannenbaum (1957) suggestion that grade-school children seem to work better with a five-step scale, five-step scales were used. All scale points were clearly labeled following the suggestion

of Maltz (1963) and McNeil and Phillips (1969).

Because grade-school children have reading constraints, the difficulty of the concepts and scales was controlled. Concepts and scales were A or AA words on the Thorndike-Lorge list (Thorndike-Lorge, 1944), or appear on the Dale-Chall (Dale-Chall, 1948) or Stone (1956) easy word lists. All words used in the instrument were at no higher than a third-grade reading level, hence, they should have been familiar to the fifth and sixth graders used in this study.

The People Test

In order to measure students' interracial attitudes, a proximity measure of social distance was used. This technique infers affective interpersonal distance from the manner in which students arrange drawings of people on a page. For example, if a student arranged two figures close together on a page, the inference would be made that the student sees the two people represented by the two figures as being affectively close (see Appendix C for rationale).

The People Test (see Appendix B) consisted of line sketches of Black boys, Black girls, white boys, and white girls. There were two forms each of sketches outlining Black boys, Black girls, white boys, and white girls. The forms differed in arm position, hair style, and clothing. The drawings represented children who were approximately the same age as were the students taking the test. A raceless and sexless stick figure was used to represent the "self" of the child

taking the test. The complete set of figures was organized so that each figure was paired with each other figure--two on a page in a 10-page booklet. Position of the stimulus figures on the page and the order of presentation were varied by using several forms of the booklet.

Students were required to paste a figure, taken from a pressure-sensitive label superficially fastened to the page, onto the page in proximity to a figure printed on the left side of that page. This arrangement was used to prevent subjects from combining the wrong figures. After being introduced to all of the figures, subjects were instructed to place the figures on the page using a line drawn horizontally across the page as an up-down anchor. They were to place the figures close together or far apart depending upon how much the figures were "alike" or "belong together".

The People Test had proven to be reliable in tests conducted with third-,fifth- and ninth-grade subjects (see Appendix D for reliability coefficients). Construct validity had been demonstrated with studies showing developmental changes being predicted and measured using the instruments (see Appendix D for studies).

Instrument Administration

All of the classes sampled were given a battery of instruments during regular class periods (see Appendix G). No student refused to complete the instruments even though they were given the option to refuse. The testers in all sampled classrooms were white females. Only those students present on the day of testing were given the instruments. No attempt was made to give a retest for those students who were absent during the initial testing period. Even though the term "test" was used in the instructions, the testers reported that students appeared to enjoy completing the instruments.

Results

Data from the *People Test*, the *Test of the Special Meaning of Words*, the *Student Outlook Test*, and the *STEP Test*, had been transferred to code sheets (see Appendix H). From the code sheets, the data were merged with *Iowa Test* results, SES indices, IQ data, and student identification numbers (sex, grade, and race coded within number) on magnetic tape.

Shared Meaning and Classroom Racial Heterogeneity

After reordering the semantic differential data and transferring them to magnetic tapes, we performed two major types of analyses. The analyses were designed to test an hypothesis that shared meaning between Blacks and whites would increase as the proportion of Blacks in the classroom increased.

To reorder the semantic differential data, each rating was assigned a number from 1 to 5 depending upon the position from left to right, checked on the subject's test (see Appendix H). This process resulted in a scale by concept by subject matrix of data. Figure 2 illustrates this matrix of data. In each cell of this cube was a number from 1 to 5 representing a particular subject's response to a particular scale.

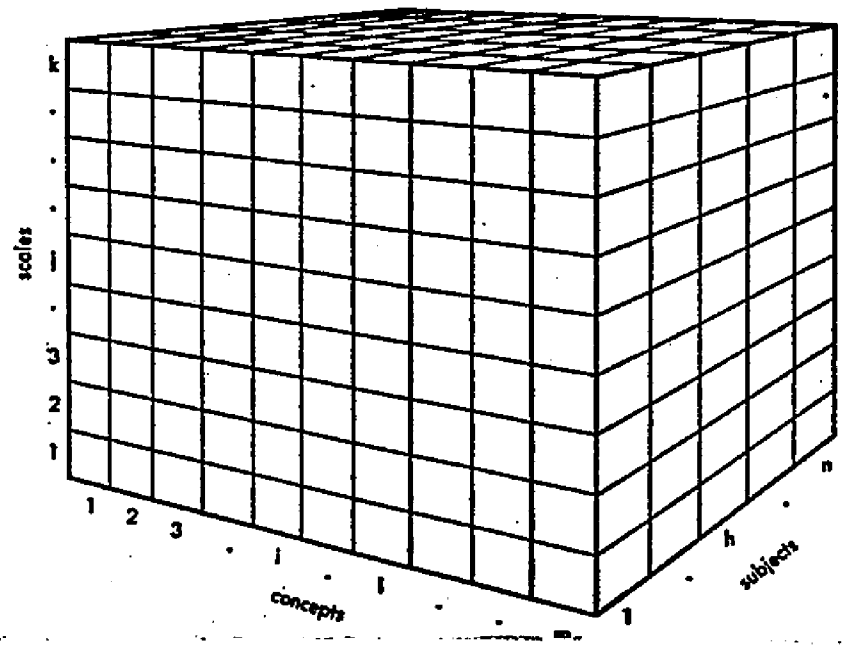

Fig. 2.--Rectangular solid of data generated by the semantic differential.

The first major type of analysis measured the degree to which Black students and white students in the four levels of racial heterogeneity shared meaning concerning school-related concepts. In order to share meaning, regarding particular concepts, two groups must share the basic dimensions along which their judgments vary with respect to these concepts. That is, they must agree with respect to how the various scales are used when judging the concepts. For example, do subjects agree regarding which scales are functionally equivalent? That is, if a scale such as GOOD-BAD correlates very highly with a scale such as FAIR-UNFAIR for one group of subjects, would the two scales also correlate very highly for another group of subjects? If so, this would indicate an evaluative type of dimension for both groups of subjects and the subjects would be considered to be in agreement concerning one basic dimension along which concepts could vary.

Operationally, frame of reference assessment lies in a comparison of factor structures obtained separately for each experimental group (Blacks in Level I, whites in Level I, Blacks in Level II, whites in Level II, etc.). A factor represents the degree to which various scales are functionally equivalent.

In deriving factors, subjects' judgments on the following inanimate concepts were used: SCHOOL, SCHOOL RULES, LEARNING, TESTS, and CURIOSITY. These five concepts have the property that (1) they are all school-related, and (2) they are all judged on the same scales. The *Special Meaning of Words*

Test is structured so that inanimate and animate concepts have different scales. It was necessary to use concepts with the same scales in this analysis. The school-related concepts which were not used by virtue of their being animate concepts were STUDENT and TEACHER. Since the purpose of this analysis was to determine the basic dimensions along which school-related concepts could be judged, it was felt that eliminating the two animate concepts would not have a great impact on the results. Appendix I shows means for each experimental group for each concept and each scale.

Each subject provided a complete set of 11 judgments (one judgment for each scale) on each of the five concepts. Since basic dimensions of judgment were of interest, a sum was taken over both concepts and subjects within each experimental group. This process resulted in a file of 11 responses for each experimental group. These responses represented a sum of all of the subjects' responses to the five school-related concepts. The responses to the 11 scales were then intercorrelated, generating an 11 by 11 intercorrelational matrix of every scale with every other scale. A similar 11 by 11 matrix was calculated for each experimental group.

A principal components factor analysis was performed on each intercorrelation matrix. This method of factor analysis was used because it yields an unique solution, i. e., there is only one possible set of factors for any given correlation matrix (Osgood, 1964, and Suci, 1960, used the principal components factor analysis technique). The unique factors generated by the analysis were rotated to simple structure using

a verimax rotation scheme. The first three factors accounted for over 80% of the common variance, so Factors I, II, and III were examined for each experimental group.

A display of factor loadings over .30 by factor and by experimental group indicates that there was general agreement among the groups regarding factor structure. Table 7 shows this general agreement. No attempt was made to name all three factors because the comparability of factor structures rather than their substance was at issue.

Inspection of Table 7 reveals that for each of the eight experimental groups, Factor I was clearly an evaluative factor, loading heavily on evaluative scales such as: DIRTY, CLEAN, UNFAIR-FAIR, and DANGEROUS-SAFE. Blacks in Level IV and whites in Level I included EMPTY-FULL in their evaluative factor. In the only other departure from congruence involving the first factor, whites in Level IV included HEAVY-LIGHT.

The second factor was not as easy to interpret as was the first factor, but scales loading heavily on Factor II were similar across groups. EASY-DIFFICULT, INTERESTING-DULL, HARD-SOFT, and QUIET-NOISY, were all loaded heavily on Factor II.

Factor III contained scales which were similar to those in Factor II. Inspection of Table 7 shows a general agreement across groups regarding the structure of this third factor.

There appeared, then, to be general agreement among the experimental groups with respect to the three factors which were obtained separately for each group. Establishing this

TABLE 7

FACTOR LOADINGS OVER .30 BY FACTORS AND RESPONDENT GROUP

FACTOR	EXPERIMENTAL GROUP							
	BLACK LEVEL I	WHITE LEVEL I	BLACK LEVEL II	WHITE LEVEL II	BLACK LEVEL III	WHITE LEVEL III	BLACK LEVEL IV	WHITE LEVEL IV
ONE	Dirty .50	Empty .49	Dirty .57	Dirty .74	Dirty .71	Dirty .70	Empty .40	Heavy .30
	Unfair .52	Dirty .51	Unfair .78	Unfair .58	Unfair .53	Unfair .35	Dirty .33	Dirty .40
	Dangerous .74	Unfair .68	Dangerous .48	Dangerous .57	Dangerous .48	Dangerous .42	Unfair .69	Unfair .68
	. . .	Dangerous .48	. . .	. . .	. . .	. . .	Dangerous .40	Dangerous .32
TWO	Interesting 60	Soft .68	Quiet .40	Interesting 33	Quiet .50	Interesting 51	Quiet .47	Quiet .66
	Soft .39	Easy .55	Near .58	Soft .73	Soft .60	Soft .64	. . .	. . .
	Easy .36	. . .	Soft .65	Easy .48	Easy .40	Easy .57	. . .	. . .
THREE	Quiet .36	Quiet .76	Interesting 45	Empty .51	Soft .31	Quiet .37	Soft .59	Empty .48
	Empty .36	. . .	Hot .72	Unfair .41	Near .68	Empty .44	Easy .34	Soft .35
	Near .42	. . .	. . .	. . .	. . .	. . .	. . .	. . .

factor similarity made a more detailed profile comparison among the groups feasible. In other words, both Blacks and whites agreed with respect to the frame of reference used when considering school-related concepts. Since both groups had this common frame of reference, it was possible to compare the groups with respect to the specific meaning of school-related concepts, i.e., to assess the amount of Black-white shared meaning.

The second analysis compared Blacks and whites across levels concerning their responses to specific school-related concepts, both animate and inanimate. Operationally, this type of analysis consisted of ascertaining the mean judgment on each concept within each of the experimental groups and then comparing group means. The following concepts were considered in this analysis: SCHOOL, SCHOOL RULES, TEACHER, STUDENT, TESTS, LEARNING, CURIOSITY, MY TEACHERS THINK I AM, and MY CLASSMATES THINK I AM. These concepts are either school-related or they relate the "self" to school.

The mean response for each experimental group to each of the 11 scales was calculated. This generated a file of 11 mean responses for each experimental group for each concept under consideration. Within each of the four levels of racial heterogeneity, the mean responses by Blacks to each of the nine concepts were compared to the mean responses by whites to respective concepts.

Meaning differences between groups on a single concept are best indexed by the generalized distance function (D).

Cronbach and Glazier (1953), Osgood, Suci, and Tannenbaum (1957), and Osgood and Suci (1952), presented detailed discussions of the D statistic. The D score was found by taking the difference between the mean scores of two groups on each scale of the concept, squaring this difference, summing these squares, and taking the square root of the sum.

Within each of the four levels of racial heterogeneity, a D score was calculated between the responses of Blacks and whites for each of the nine concepts. The result of this calculation was a four by nine (nine representing the nine school-related concepts) matrix of D scores. Table 8 shows the D scores which were calculated.

TABLE 8
BLACK-WHITE D SCORES BY LEVEL

CONCEPT	Proportion Black in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
SCHOOL	1.26 (4)	1.08 (3)	.50 (1)	.54 (2)
CURIOSITY	1.08 (4)	.84 (2)	.66 (1)	.88 (3)
LEARNING	.71 (3)	1.20 (4)	.52 (1)	.64 (2)
SCHOOL RULES	1.40 (4)	1.22 (3)	.65 (2)	.50 (1)
TESTS	1.31 (4)	.96 (3)	.85 (2)	.63 (1)
TEACHER	1.32 (4)	1.13 (2)	1.28 (3)	.51 (1)
STUDENT	.74 (2)	.88 (3)	.91 (4)	.68 (1)
MY TEACHERS THINK I AM	1.27 (3)	1.53 (4)	.71 (2)	.51 (1)
MY CLASSMATES THINK I AM	1.33 (3)	1.92 (4)	.87 (1)	.94 (2)
TOTAL RANKS	31	28	17	14

Note.--Rank across level in parenthesis.

To investigate the hypothesis that Black-white shared meaning would increase as the proportion of Blacks in the classroom increased, a Friedman two-way analysis of variance by ranks was used which tested the null hypothesis that the four levels of D scores had been drawn from the same population. The result of this test lead to a rejection of the null hypothesis that the four levels of racial heterogeneity did come from the same population (x^2=12.18, df=3, P $<$.01). Inspection of Table 8 reveals that in Level I,Blacks and whites are furthest apart with respect to meaning similarity. In Levels II, III, and IV as the proportion of Blacks in the classroom increases, Blacks and whites came progressively closer together concerning the meaning of school-related concepts. The data, then, support the hypothesis that shared meaning between Blacks and whites would increase as the proportion of Blacks in the classroom increased.

Shared Meaning and Academic Achievement

To test the hypothesis that academic achievement would increase with an increase in shared meaning, two shared-meaning groups were constructed. Individuals in the sample were assigned to either a low or high shared-meaning group based upon the amount of Black-white shared meaning in their classrooms. The amount of shared meaning in each classroom was determined using D scores. The same nine concepts that were used to investigate the relationship between level of racial heterogeneity and shared meaning were used to calculate the D scores in this analysis.[4]

D scores were calculated between the mean responses by Blacks in a particular classroom and the mean responses by whites in that same classroom. This procedure generated nine D scores (one for each concept) for each classroom. These nine D scores for a particular classroom represented the amount of Black-white shared meaning in that classroom.

The D scores for each concept were ranked across the 22 classrooms in the sample. Each concept for each classroom could have had a rank ranging from 1 to 22. These ranks, then, were summed within each classroom. Classrooms were assigned to extreme shared-meaning groups (either high or low) based on the sum of the nine ranks.

The shared-meaning groups were formed to maximize the

[4]Concepts used were SCHOOL, CURIOSITY, LEARNING, SCHOOL RULES, TESTS, TEACHER, STUDENT, MY TEACHERS THINK I AM, AND MY CLASSMATES THINK I AM.

distance between them, yet retain a sufficient number of subjects in each group for analysis. Of the 22 classrooms in the sample, 14 were retained for this analysis--nine in the low shared-meaning group and five in the high one (see Table 9).

TABLE 9
D Score Sum of Ranks Used to
Form Shared-Meaning Groups

GROUP	Sum of Ranks*								
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Low Shared-Meaning	36	37	38	63	66	76	76	81	88
Middle	101	103	108	109	116	120	126	137	-
High Shared-Meaning	150	151	167	168	169	-	-	-	-

*The sum of ranks could have varied from 9 to 198

Once the low and high shared-meaning groups were formed, we sought to determine if the two groups were **different** on the basis of five achievement scores. The scores used were "arithmetic concepts", "reading", "vocabulary", and "arithmetic problem-solving" raw scores from the *Iowa Tests of Basic Skills*. In addition, raw scores from the *STEP Test* were used. The proportion of Black students in the classroom was used as a sixth variable in the analysis. Since, in this analysis, we were investigating the relationship between shared meaning and achievement and since the proportion of Blacks in the classroom may have been related to both achievement and shared meaning, "proportion Black" was included as a variable

for control purposes. In the analysis, we assessed the effect of shared meaning on academic achievement independently of the effect of "proportion Black" on achievement. This was important because in the schools sampled, the level of shared meaning was confounded with the proportion of Blacks in the classrooms.

In investigating the association between shared meaning and academic achievement, we were interested in gaining as much information as possible regarding (a) the relationship among the five achievement scores, and (b) the relative power of the various scores in discriminating between the two shared-meaning groups. In other words, did the level of shared meaning affect all achievement variables equally? Were there interactions among achievement variables which were related to the level of shared meaning in the classroom? To answer these questions, we used a stepwise multiple discriminant analysis technique (Dixon, 1971). This analysis was designed to consider all of the variables at once, generating (a) group means and standard deviations, (b) univariate "F" values for each variable, (c) within-group correlation matrixes, (d) multivariate "F" values, and (e) information regarding the relative power of each variable in discriminating between the two shared-meaning groups.

Univariate "F" values calculated for each variable for black students revealed that only the "proportion Black" variable was significantly different across shared-meaning groups ($F=485.8$, $df=1,68$, $P < .001$). This finding simply repeated the

earlier finding--that the proportion of Blacks in the classroom was associated with shared meaning (see Table 8).

Inspection of a within-group correlation matrix containing all five achievement scores and the "proportion Black" variable suggested that classroom racial heterogeneity did not affect all achievement variables equally. For instance, Table 10 shows that "vocabulary","reading", and *STEP Test*

TABLE 10
WITHIN-GROUPS CORRELATION MATRIX--
ACHIEVEMENT SCORES AND PROPORTION BLACK

VARIABLE	1	2	3	4	5	6
1. Vocabulary	1.00					
2. Reading	.82	1.00				
3. Arithmetic Concepts	.45	.61	1.00			
4. Arithmetic Problem Solving	.30	.41	.69	1.00		
5. STEP	.63	.77	.52	.39	1.00	
6. Proportion Black	-.15	-.18	.16	.03	-.06	1.00

scores were negatively correlated with the proportion of Blacks in the classroom. On the other hand, "arithmetic concepts" and "arithmetic problem solving" scores were correlated positively with the proportion of Blacks in the classroom. Further inspection of Table 10 shows that the achievement scores were not correlated equally among themselves. Arithmetic scores tended to correlate highly among themselves and reading-related scores correlated highly among themselves. The concern, then, was to compare the low and high shared-meaning groups, taking into consideration the interrelationships among the six variables.

Computational procedures used in the discriminant analysis considered one variable at a time. Variables were considered in the order in which they discriminated between the two shared-meaning groups (see Dixon, 1971, pp. 214*g*-214*l* for the computational procedure). After the first variable was entered into the set of discriminating variables, the relationship between that variable and each of the remaining variables was tested. The second variable entered was that variable which when considered simultaneously with the first variable showed the best discrimination between the two shared-meaning groups. This procedure was followed until entering additional variables would not have added to the discriminating power of the set of variables already entered. The "F's" to enter at each step of the analysis were the "likelihood ratio tests of the equality over all g groups of the conditional distribution of variable j given the (remaining) entered variables (Dixon, 1971, p. 214*i*)".

The classroom racial composition variable was the first variable to be entered. Since it was the first variable, no multivariate "F" was calculated and the "F" to enter was identical to the univariate "F" mentioned above ($F=485.8$, $df=1,68$, $P<.001$).

Taking into consideration the relationship between "proportion Black" and each of the remaining variables, the procedure revealed "vocabulary" to be the variable which added most to our ability to discriminate between the two shared-

meaning groups. The "F" to enter for "vocabulary" was F=2.99, df=1,67, $P < .1$. A consideration of the relationship among "proportion Black","vocabulary" and each remaining variable pointed to "arithmetic concepts" as the best remaining discriminator. The "F" to enter for "arithmetic concepts" was F=3.41, df=1,66, $P < .1$. This statistic means that (given the proportion of Blacks in a student's classroom, given the "vocabulary" scores of the Blacks, and given the relationship among those two variables and "arithmetic concepts" scores) knowing the "arithmetic concepts" score added significantly ($P < .1$) to our ability to discriminate between high and low shared-meaning groups. In other words, there was a difference between the shared-meaning groups regarding "arithmetic concept" scores when the interrelation among all three variables was considered.

When the correlation among all three entered variables was taken into consideration, the two shared-meaning groups were more different regarding "vocabulary" scores than they were when only the first two variables ("proportion Black" and "vocabulary") were considered. Indicative of this increased difference is that the multivariate "F" for "vocabulary" changed from F=2.99 to F=5.80 (from $P < .1$ to $P < .05$).

After entering the "proportion Black","vocabulary", and "arithmetic concept" variables, none of the other variables added significantly to our ability to discriminate between the two shared-meaning groups.

In summary, then, given the nature of the interrelation-

ships among the six variables in this analysis, there was a significant difference between the two shared-meaning groups regarding "vocabulary" ($P < .05$) and "arithmetic concept" ($P < .1$) scores. Inspection of Table 11 shows that these differences were in the predicted direction.

TABLE 11
MEANS AND STANDARD DEVIATION FOR ACHIEVEMENT VARIABLES AND PROPORTION BLACK--BLACK STUDENTS

VARIABLE	LEVEL OF SHARED MEANING		GRAND MEAN
	LOW	HIGH	
Vocabulary	45.1 (15.9)*	50.9 (15.0)	48.5
Reading	47.1 (14.6)	48.1 (14.5)	47.7
Arithmetic Concepts	48.1 (11.1)	52.4 (15.7)	50.7
Arithmetic Problem Solving	45.9 (9.0)	45.4 (12.6)	45.6
STEP	33.3 (12.9)	34.0 (12.4)	33.7
Proportion Black	15.0	46.0	34.1

*Standard deviations in parenthesis

A multivariate discriminant analysis comparable to the one performed for Black students was completed for white students. As was expected, shared-meaning groups were significantly ($P < .001$) different with respect to the proportion of Blacks in the classroom. However, after "proportion Black" was entered as a discriminating variable, none of the achievement variables showed a significant ($P < .1$) "F" to enter. This indicates that for white students, achievement did not vary with the level of Black-white shared meaning in the classroom.

Academic Achievement and Classroom Racial Heterogeneity

Data from the *Iowa Tests* and the *STEP Test* were analyzed in a 2 x 4 factorial design with two levels of grade (fifth and sixth) and four levels of classroom racial heterogeneity. The "reading comprehension", "arithmetic concepts", and "arithmetic problem solving" sections of the *Iowa Tests* were combined (equally weighted) to give a "general achievement" raw score for each subject. The "vocabulary" section of the *Iowa Test* was analyzed as a separate dependent variable--a variable which was not as skilled-related as was reading comprehension. Raw scores from the two *STEP Test* sections were combined (equally weighted) to form one *STEP Test* reading achievement score for each student.

To investigate the relationship between achievement and racial heterogeneity in the classroom, we performed several analyses of variance (one for each achievement score) with grade and classroom racial composition, the independent variables and achievement scores, the dependent variables. These analyses were done separately for Black subjects and white subjects, since the primary objective was to determine if there were a difference in the academic achievement of Black students across different levels of classroom racial heterogeneity.

Table 12 presents the summary of an analysis of variance of *Iowa Test* achievement scores for fifth- and sixth-grade Black students by level.

TABLE 12
ANALYSIS OF VARIANCE OF IOWA TEST ACHIEVEMENT
FOR 5TH- AND 6TH-GRADE BLACK STUDENTS BY LEVEL

Source	df	MS	F
Grade (A)	1	4251.11	3.59
Level (B)	3	274.60	--
AB	3	486.52	--
WITHIN	101	1182.85	

MEANS

Grade	Proportion Black			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
Fifth and Sixth	141.7	137.7	135.3	141.0

Inspection of Table 12 reveals that for Black students, *Iowa Tests* achievement index scores did not vary across levels of racial heterogeneity.

Table 13 shows similar results for white students.

TABLE 13
ANALYSIS OF VARIANCE OF IOWA TEST ACHIEVEMENT
FOR WHITE 5TH- AND 6TH-GRADE STUDENTS BY LEVEL

Source	df	MS	F
Grade (A)	1	56422.45	39.12*
Level (B)	3	1139.65	--
AB	3	1501.97	1.04
WITHIN	308	1442.31	

*$P < .001$

MEANS

Grade	Proportion Black			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
Fifth and Sixth	160.4	160.0	148.0	160.8

Scores on the vocabulary section of the *Iowa Tests* showed a pattern similar to that of the achievement index

scores. Paralleling the results of the achievement index analyses, a one-way analysis of variance for the vocabulary scores of Blacks showed no significant "main effect" for racial heterogeneity. Table 14 presents a summary of this analysis of variance.

TABLE 14
ANALYSIS OF VARIANCE OF IOWA TEST VOCABULARY
FOR BLACK 5TH- AND 6TH-GRADE STUDENTS BY LEVEL

Source	df	MS	F
Grade (A)	1	789.27	3.31
Level (B)	3	505.91	2.12
AB	3	504.04	2.11
WITHIN	101	238.73	2.11

MEANS

Grade	Proportion Black			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
Fifth and Sixth	44.0	44.7	50.0	47.0

Table 15 illustrates that the vocabulary scores of whites also showed no significant "main effect" for level of racial heterogeneity.

TABLE 15
ANALYSIS OF VARIANCE OF IOWA TEST VOCABULARY
FOR WHITE 5TH- AND 6TH-GRADE STUDENTS BY LEVEL

Source	df	MS	F
Grade (A)	1	6616.65	29.04*
Level (B)	3	482.33	2.12
AB	3	267.11	1.17
WITHIN	308	227.86	

*$P < .01$

MEANS

Grade	Proportion Black			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
Fifth and Sixth	57.3	55.7	51.4	58.6

These results indicate that for neither Blacks nor whites was there a significant effect on vocabulary scores associated with classroom racial heterogeneity.

An entirely different test of educational achievement, the *STEP Test*, showed results which were similar to those obtained using the several sections of the *Iowa Test*. Table 16 presents a summary of the analysis of variance for Blacks. Once again, there were no significant differences regarding

TABLE 16
ANALYSIS OF VARIANCE OF STEP TEST SCORES FOR BLACK 5TH- AND 6TH-GRADE STUDENTS BY LEVEL

Source	df	MS	F
Grade (A)	1	156.24	--
Level (B)	3	46.66	--
AB	3	217.78	1.32
WITHIN	120	165.24	

MEANS

	Proportion Blacks			
Grade	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
Fifth and Sixth	34.7	34.2	31.4	30.1

achievement scores across level of racial heterogeneity for Blacks. Table 17 shows similar results for whites concerning achievement on the *STEP Test*.

TABLE 17
ANALYSIS OF VARIANCE OF STEP TEST SCORES FOR WHITE 5TH- AND 6TH-GRADE STUDENTS BY LEVEL

Source	df	MS	F
Grade (A)	1	3195.90	16.75*
Level (B)	3	272.56	1.43
AB	3	193.29	1.01
WITHIN	324	190.80	

*$P < .001$

MEANS

Grade	Proportion Black			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
Fifth and Sixth	41.5	39.8	36.5	38.9

In summary, achievement scores were not different across level of racial heterogeneity for either Blacks or whites. The hypothesis that Blacks in classrooms with a greater proportion of Blacks would show higher academic achievement than do blacks in classrooms with lower proportions of Blacks was not supported by these data.

Black-white Affective Racial Distance

The first step in this analysis was the calculation of a score representing *personal social distance*. To do this, the interval (in centimeters) between the self figure on the People Test and the same-sex opposite-race figure was used (see Appendix H). The personal social distance score represented the subjects' estimate of the social distance between themselves and those people of the same sex but of opposite

race.

The second step in the People Test analysis was to compute a *normative racial distance* score for each subject. This was done by measuring the distance (in centimeters) between same-sex and opposite-race target figures (see Appendix H). For example, if a Black male student were completing the instrument, his critical datum was the distance he placed between the Black boy figure and the white boy figure. The critical distance for a white female completing the instrument was the space measured in centimeters between the white girl figure and the Black girl figure. The score formed here represented the subjects' estimate of the accepted socially shared distance attributed to racial differences.

A critical third step in this analysis consisted of an unweighted-means analysis of covariance designed to statistically remove the effect of the normative distance from the personal distance. Both the self-target (personal) distances and the target-target (normative) distances are made up of two components--an affective component and a normative component. In other words, the social distance a person places between himself and a person of the opposite race is determined partially by his affective reaction to the other-race person and partially by his perception of the standardized socially accepted distance between the races. The assumption is made that the normative distance influences a person when he is making the self-target comparison. A further assumption is made that the affective component of the self-target compari-

son is larger than the comparable affective component of the target-target comparison.

Statistically controlling for the effect of the target-target comparison (normative distance) on the self-target distance (personal distance) generates a score of *affective racial distance*. The logic here is that the affective racial distance remaining after the normative distance has been controlled represents the personal affective distance. This affective distance is a conservative estimate, however, being underestimated by the amount of affect represented in the normative distances.

In other words, in controlling for the effect of the normative distance on the personal distances, one also eliminates that affect associated with normative distance.

An analysis of covariance (race by level) with the effect of the normative distances statistically controlled was performed to determine if racial heterogeneity in a classroom influences affective racial distance. The adjusted means represented the racial distances. Table 18 is a summary of this analysis.

Inspection of Table 18 reveals that there was no levels (racial heterogeneity) "main effect" for affective distance. This indicates that students' affective racial distance was not influenced by the racial composition of the classroom. The hypothesis that the proportion of Blacks in a classroom is positively associated with racial closeness was not supported by the data.

TABLE 18
ANALYSIS OF COVARIANCE OF AFFECTIVE DISTANCE
BY RACE AND LEVEL

Source	df	MS'	F
Race (A)	1	72.93	2.38
Level (B)	3	50.32	1.64
AB	3	55.04	1.79
WITHIN	448	30.67	

MEANS (UNWEIGHTED)

	Proportion Black			
Race	12%	22%	35%	48%
Black	14.3	11.7	13.5	13.4
White	12.6	8.6	10.5	13.8

Discussion

The effect of school desegregation on academic achievement has been a critical issue since the Supreme Court decided that de jure racial segregation in public schools is unconstitutional. Research undertaken in the fifties, immediately after the Court's decision confirmed that, indeed, whites in all-white schools were achieving at a higher level than were Blacks in their oftentimes deficient all-Black schools. Post-desegregation research comparing the academic achievements of Blacks in all-Black schools with the achievements of Blacks in desegregated schools revealed that Blacks in desegregated schools showed somewhat higher levels of academic achievement. Faced with these encouraging findings, proponents of school desegregation attempted to uncover the principal factors associated with the rise in academic achievement observed among Black students in desegregated schools.

Typically, the increases in level of academic achievement usually observed among desegregated Black students have been attributed to two factors: (a) the superior educational facilities of most host schools and (b) the academically superior student body found in desegregated schools.

Plaintiffs in the *Brown* case contended that segregated public schools are inherently unequal and cannot be made equal. The unsettled question, then, is: "Were the plaintiffs in the *Brown* case correct?" Even if public schools

were to be made equal regarding physical facilities and other tangible factors, does segregation of children solely on the basis of race deprive Black children of equal education opportunities?

The Court in *Sweatt v. Painter* answered, "yes" to this question. They found that a segregated law school for Blacks could not provide Black students with equal educational opportunities. In making this decision, the Court cited "...those qualities which are incapable of *objective measurement* but which make for greatness in a law school" (emphasis mine). Again, in *McLaurin v. Oklahoma State Regents* the Court resorted to a consideration of *intangibles*, "...his ability to study to engage in discussions and exchange views with other students...", in ruling that a Black be admitted to a white graduate school.

The unvoiced question becomes, then, what is the nature of the *intangible* and *nonobjective* qualities referred to by the Courts as being present in desegregated schools but not in segregated ones. From the Courts' rulings we know only that they are intangible, nonobjective, and critical to the success of Black students in school, and that they are linked to Black-white communication.

Now, if we were able to *measure* and *analyze* some of those intangible and nonobjective qualities that Blacks are supposed to have the benefit of under the Fourteenth Amendment, then we would be in a position to:

(a) convince education policy makers that, indeed, separate educational facilities are inherently unequal and do deprive segregated Black students of something which is essential to their educational success.

(b) provide a means by which Courts can gain objectivity and reliability in their assessment of what constitutes these intangibles so necessary for Blacks to achieve in school.

(c) define the precise nature of the restitutions due Black students who are locked into segregated schools and cannot gain access to whatever it is Blacks gain from going to school with whites.[5]

(d) make recommendations regarding the ideal racial mix in areas where desegregation is possible.

This study was successful in isolating the most essential of those intangible qualities associated with desegregated schools which the Courts have decided are so vital to the academic success of Black students. This quality was shown, using carefully collected and analyzed data, to be extremely sensitive to the racial composition of a desegregated classroom. Integrated[6] classrooms appear to engender more of this quality than do segregated[7] classrooms. But

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[5] Desegregation is practically impossible in the "Harlems" across the country.

[6] For the purpose of discussion we will define classrooms with between 35 and 50 per cent of its students Black as integrated classrooms.

[7] For the purpose of discussion we will define classrooms with between 1 and 34 per cent of its students Black as segregated classrooms.

before getting to a discussion of the intangible quality we found to be associated with racial composition, let us review the state of present knowledge, both popular and empirical, regarding the relationship between racial composition and academic achievement.

The most pervasive popular misconception held about desegregation is that no Black school can adequately teach Black students unless whites are brought into the school in great numbers. Regardless of the quality of the teachers, the size of the classes, or the efficiency of school procedures, a predominantly Black school is viewed, by both Blacks and whites, to be academically inferior to a predominantly white school. Of course, this view is not accurate. It both insults Blacks and attributes to whites inherent qualities which they do not have.

Opponents of school integration are wont to quote standardized test scores in arguing that desegregation lowers the level of academic achievement among whites. There is also the latent fear among many people that "too many" Blacks in a desegregated school will lead to interracial hostility.

Generally, empirical desegregation research has supported popular opinion in establishing a positive correlation between the level of academic achievement found among Black students and the proportion of whites in the Black students' desegregated classrooms and contrary to popular opinion, empirical research has shown the achievement level

of white students to remain stable regardless of the number of Blacks in their classrooms.

The most celebrated desegregation study, the Coleman Report and re-analyses of the Coleman data, indicates that a desegregated school must be at least 50 per cent white before any gains in academic achievement are begun to be made by integrated Blacks. Furthermore, Coleman's data suggest that the more integrated a white school becomes, the less Black students gain academically from being in a desegregated school (see Table 1).

One overall implication of both popular opinion and empirical research is that desegregation does have some benefits for the integrated Black student, but that the number of Blacks in desegregated schools should be kept at a minimum.

Considering the Courts' suggestions and the empirical findings together, we realize that the present operational theory of how desegregation works assumes that not only are there intangible benefits which accrue to desegregated Blacks but that these benefits are dependent upon the *degree* of integration in the host school.

This study was designed to determine:

(1) if, in fact, desegregation or school racial composition per se has any influence on the academic success of Black students.

(2) the process by which school racial composition affects Black students' levels of academic achievement.

Finding the classroom to be the critical unit to investigate, we set about to determine the effect of classroom racial composition, in and of itself, on academic achievement. We did this by looking at the achievement levels of students from classrooms with different levels of integration. We asked, for example, if Blacks in a classroom which was 12 per cent Black achieved at a different level than did Blacks in a classroom which was 48 per cent Black.[8] We asked the same question about whites.

Our method in ferreting out the critical intangible quality inherent in desegregation involved investigating possible causes of the differences in level of academic achievement observed among Blacks in classrooms with differ-

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[8] We chose this range because it was the range in which Coleman and others had found Black students to make the most academic achievement gains. Since we were interested in exploring the process by which racial composition affects the level of academic achievement among desegregated Blacks, it is only natural that we would choose the range of racial composition within which previous research had shown achievement gains among Blacks to occur. Our selecting the range of 0 to 50 per cent Black should not be construed to mean, however, that we thought achievement gains could not occur among Blacks in predominantly Black classrooms. We simply selected those classrooms which, according to previous research would be most likely to show academic achievement gains among its Black students. Also, based on previous research, we gathered that the more integrated the classroom, within our 0 to 50 per cent range, the less likely we were to find academic achievement gains among Black students. Within this range, then, we were able to determine whether different degrees of racial heterogeneity have a differential effect upon the achievement of students. Furthermore, our selecting this range assured that achievement gains among Blacks would take place, thereby allowing us to investigate the process.

ent levels of racial heterogeneity. To isolate the influences on the academic achievement of Black students which were attributable to desegregation alone, we had to make certain that the racial composition and not some other aspect of the classroom was causing observed differences in level of achievement.

By controlling extraneous variables, we maximized the probability that any differences found among the achievement levels of Black students in classrooms with different racial compositions were indeed produced by classroom racial composition. The critical extraneous variables we controlled were those which were likely to vary with classroom racial composition and which, themselves, would be expected to affect academic achievement. Classroom social class milieu (mean classroom SES and classroom SES variance), mean classroom IQ, and mean classroom fate control were controlled by matching classrooms with regard to the variables across four different levels of racial composition.

We posited, following the Courts' suggestion, that any gains in academic achievement made by Black students as a result of their being in classrooms with whites were probably associated with some facet of Black-white communication. We further posited that this communication could not have taken place unless Blacks and whites concurred to some degree regarding the connotative meanings of school-related concepts. *This Black-white shared meaning and the ensuing Black-white communication we predicted would be associated*

with an increase in the level of academic achievement among desegregated Blacks.

By introducing the concept of shared connotative meaning into our study of academic achievement in a desegregated classroom, we took advantage of a long and successful history of the concept's use in investigations of human communications systems (Appendix A details our rationale for using the shared meaning concept). The shared meaning concept proved to be different from the academic achievement indices in which we were interested; yet, in being an index of Black-white communication effectiveness, it had potential utility in explicating the differences in level of academic achievement associated with Black-white communication. The point being made here is that the shared connotative meaning concept we employed in this study is not a new concept. It has had a history of successful use in other communication-related research and seemed to be applicable to our study of Black-white communication in desegregated classrooms.

Black-white shared meaning regarding school-related concepts as a prerequisite to Black-white communication was hypothesized as being the most important of those intangibles referred to by the Courts. It was seen to be an important intangible because whatever gains Blacks make as a result of being in a desegregated school, they most likely are mediated by some form of Black-white communication. Black-white shared meaning, therefore, is definitely a central factor in the whole desegregation process. If it

is not there, the chance of any tangible or intangible information being communicated is severely reduced.

Once we had developed an hypothesis regarding the *process* by which desegregation affects the academic achievement of Blacks, we turned our attention to formulating hypotheses concerning how, in fact, different levels of classroom racial composition do affect the level of academic achievement among both Blacks and whites.

Based on social psychological theory (social pressure principles), we made a prediction that *Blacks and whites in integrated classrooms would demonstrate more shared meaning than would Blacks and whites in segregated ones.* Following from the shared meaning-communication association posited above, we made a third prediction. This prediction concerning the relationship between classroom integration and academic achievement was defiantly contrary to both popular opinion and previous research findings. *We hypothesized that Black students in integrated classrooms would achieve better academically than would Blacks in segregated ones.* Our interpretation of the social psychological theory relevant to communication in desegregated classrooms led us to make the novel prediction that the more integrated the desegregated classroom, the more Black students would benefit academically from being in that classroom.

We made a fourth prediction which was concerned with Black-white racial distance in desegregated classrooms. We considered racial distance to be an important intangible

variable in itself but we also considered it to be important because it is a possible mediator of academic achievement in a desegregated classroom. Following from our prediction that Blacks and whites would share meaning regarding school-related concepts in integrated classrooms, we hypothesized that they would also be closer with regard to affective racial distance in integrated classrooms. The fourth prediction, then, was that *there would be less Black-white racial distance in integrated classrooms than there would be in segregated ones.*

To summarize to this point, we have proposed to isolate racial composition as an influence on the level of academic achievement among students both Black and white. We also have indicated that the study hypothesized that shared meaning and attitudes are two important intangible qualities associated with desegregation which can possibly mediate Black student achievement gains.

What did we find?

The data supported our prediction that integrated classrooms would generate a higher level of Black-white shared meaning than would segregated ones. Furthermore, the more integrated the classroom, the more Black-white shared meaning we found in that classroom.

Also as we had predicted, Black students in classrooms with a higher level of Black-white shared meaning did achieve better academically than did Blacks in classrooms with a lower level of Black-white shared meaning. On four

out of five achievement measures, Blacks in the high shared-meaning classrooms scored higher than did Blacks in low shared-meaning ones (see Table 11).

By looking at the six variables included in the shared meaning analysis simultaneously ("proportion Black", "vocabulary", "reading", "arithmetic concepts", "arithmetic problem solving", and the STEP), we were able to get a clearer understanding of the nature of the achievement differences. Since we had already demonstrated that shared meaning was greater in the integrated classrooms, we were not surprised to find that the "proportion Black" variable proved to be the best discriminator between high and low shared-meaning groups. However, Black students' scores on both the "vocabulary" and the "arithmetic concepts" sections of the *Iowa Tests* added significantly ($P < .05$ and $< .1$, respectively) to the discriminating power of the "proportion Black" variable. This means that given the "vocabulary" score and the "arithmetic concepts" score of a student, we could have accurately placed him in either a high or a low shared-meaning group. Of all the achievement variables, "vocabulary" and "arithmetic concepts" scores explained practically all of the differences in achievement observed between the high and low shared-meaning groups of Black students.

Of most importance to the central thesis of this discussion, however, is that as we had predicted, Blacks in classrooms with a great deal of shared meaning do achieve at a higher level than do Blacks in classrooms with low

shared meaning.

Now that we have demonstrated that the proportion of Blacks in a desegregated classroom is associated with Black-white shared meaning and that this shared meaning enhances the academic achievement of Black students, what about the achievement of *white* students? Does Black-white shared meaning in any way harm white students?

What happened to the academic achievement of white students in our sample as Black-white shared meaning increased?

The D scores we used in the shared-meaning analysis were not designed to determine which racial group moved to share meaning with the other. Nevertheless, inspection of the means in Appendix I reveals that as classrooms became more integrated, *Black students moved toward whites* regarding the meaning of school-related concepts. White students did not change their connotative meaning for these concepts.

Since, as we had reasoned, white students showed no change in their connotative meaning for school-related concepts, we expected no change in their level of academic achievement. The data supported our expectation. We found no significant differences between the achievement scores of white students in the high and low shared-meaning groups.

Black-white shared meaning, then, appears to benefit Black students while it does no harm to the whites. Clearly, Black-white shared meaning is a critical intangible benefit which Black students accrue under desegregation.

Our findings to this point have indicated that as classrooms become more integrated, Black-white shared meaning increases. We also know that this increased amount of shared meaning is associated with a significant increase in the level of academic achievement among Blacks.

Given these findings, we would expect Black students in integrated classrooms where they share meaning with whites to achieve at a higher level than do Blacks in segregated classrooms where they do not share meaning with whites.

Surprisingly, our reasonable expectation is not supported by the data. Blacks in the integrated classrooms did not achieve significantly higher than did Blacks in the segregated ones.

What does this mean? We had shown that Black-white shared meaning was critical to the academic success of desegregated Blacks. And we demonstrated that the more integrated classrooms fostered more Black-white shared meaning. As logic dictates, we hypothesized that integrated classrooms would have a positive effect on the academic achievement level of Blacks. However, we found that Black students in integrated classrooms did not achieve at a higher level than did Blacks in segregated ones.

We reasoned that possibly popular opinion is right and as classrooms become more integrated, Black-white racial distance, indeed, does increase causing academic achievement to suffer.

What did our data reveal? Did they support our reasoning?

No, the popular-opinion hypothesis of more racial distance in integrated classrooms was not supported by our data. Our hopes of explaining, by looking at racial distance, why Black students in integrated classrooms did not show achievement gains were not fulfilled. Neither Black students nor white students showed any change in affective racial distance as classrooms became integrated. The position which argues that Blacks in integrated classrooms do not show an increase in level of achievement because of the increased racial distance associated with integrated classrooms was not supported by our data.

However, our finding the apparent independence between classroom racial composition and affective racial distance led us to "serendipitously" question our implicit hypothesis regarding the relationship between shared meaning and affective racial distance. That Blacks and whites did not show affective racial closeness in integrated classrooms even though they did have a greater amount of shared meaning with whites in these classrooms suggests an independence between shared meaning and affective racial distance. This suggestion led us to suspect that a more probable interdependence for us to have proposed would have been one between Black-white shared meaning regarding school-related concepts and the *psychological relatedness of Blacks to school.*

In other words, we should have hypothesized that as Blacks begin to share meaning with whites and start to learn connotative meanings for school-related concepts

which are similar to the meanings whites hold, these Black students would become psychologically related to school in general. This supposition would have been based largely on the assumption that basically the schools are white-oriented and in moving closer to the white students' connotative reactions to school, Black students automatically would be psychologically more related to school.

Our implicit hypothesis, then, should have indicated a possible relationship between shared meaning and psychological relatedness rather than between shared meaning and affective racial distance. Such an hypothesis would state that since Black students in integrated classrooms have more shared meaning with whites, they should be (a) more psychologically related to school than are Blacks in segregated classrooms, and (b) closer to whites regarding psychological relatedness to school than are Blacks in segregated classrooms.

The only problem with this hypothesis is that if it proves to be true, then we have reason to expect even more strongly, that Blacks in integrated classrooms will achieve at a higher level than Blacks in segregated ones. On the other hand, we reasoned that if our hypothesis were wrong and Blacks in integrated classrooms prove to be *less* psychologically related to school, this would help to explain why integrated Blacks show no gains in academic achievement.

Since Blacks and whites in integrated classrooms do share meaning regarding school-related concepts, it certain-

ly would have been unlikely for us to have found that these Blacks did not also relate psychologically to school. However, on the chance that our data would have surprised us again and shown integrated Blacks not to be psychologically related to school, we performed several retrospective analyses.

We used Osgood's semantic differential to assess the psychological relatedness of Black students to school in general. Concepts related to either "school" or "self" were used in the analyses. The similarity between a student's meaning for a "self-concept" and a "school-related concept" was used as a measure of the student's psychological relatedness to school. The similarity between the following pairs of animate concepts was considered in the analyses: (a) I AM - STUDENT, (b) I AM - TEACHER, (c) I AM - MY TEACHERS THINK I AM, (d) STUDENT - MY TEACHERS THINK I AM.

The I AM - STUDENT pair gives an indication of the degree to which a student identifies with the concept "STUDENT". To the extent that a student feels that he is a student, he is psychologically related to school.

The I AM - TEACHER pair represents the degree to which a student identifies with the teacher. A high similarity here also represents a high degree of psychological relatedness to school.

The I AM - MY TEACHERS THINK I AM pair represents the extent to which a student perceives he is being accurately

appraised by his teacher. If the distance between these two concepts is small, it is an indication that the student is a part of the school group. A small distance here would mean that the student perceives that the teacher accurately predicts the student's self-concept. For a student to attribute this ability to the teacher, he must feel that he is a part of the school group.

The last pair, STUDENT - MY TEACHERS THINK I AM, gives an indication of the extent to which a student perceives the teacher including him in the school reference group. A high degree of similarity here would mean that the student sees the teacher thinking of him as a student.

To assess the similarity between the concepts used in this analysis, the mean judgments (of each of the 11 scales) for each concept for Blacks and for whites within each level of racial heterogeneity were calculated. A D score was then calculated between the mean judgments of each of the concept pairs for Blacks within each level of racial heterogeneity. Similar D scores were calculated for whites within each level of racial heterogeneity. The result of these calculations was two four by four matrices (four levels of racial heterogeneity and four concept pairs) of D scores. One matrix was derived for Blacks and another matrix for whites. Tables 19 and 20 illustrate the two matrices of D scores calculated--one for Blacks and one for whites.

TABLE 19

REFERENCE GROUP CONCEPTS:
D SCORES BY LEVEL FOR BLACKS

Concept Pair	Proportion Blacks in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
I AM - TCH	1.65 (3)	1.44 (2)	2.40 (4)	.69 (1)
I AM - STD	.78 (3)	.90 (4)	.77 (2)	.51 (1)
I AM - MYTCH	1.50 (4)	1.29 (2)	1.30 (3)	.73 (1)
STD - MYTCH	1.25 (3)	1.70 (4)	1.20 (2)	.48 (1)
TOTAL RANKS	13	12	11	4

Note.--Rank across level in parenthesis.

A Friedman two-way analysis of variance was performed on the matrix of D scores for Blacks and on the matrix for whites to test the null hypothesis that the four levels of racial heterogeneity came from the same population. The results for Blacks showed that the four levels of racial heterogeneity did not come from the same population ($X^2_r = 7.5$, df=3, $P < .052$). Table 19 shows that in Level I (12% Black), Blacks showed the least amount of psychological relatedness to school. In Levels II, III, and IV, the Black students' psychological relatedness to school increased.

TABLE 20

REFERENCE GROUP CONCEPTS:
D SCORES BY LEVEL FOR WHITES

Concept Pair	Proportion Blacks in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
I AM - TCH	1.18 (3)	1.17 (2)	1.29 (4)	1.08 (1)
I AM - STD	.40 (1)	.57 (3)	.55 (2)	.86 (4)
I AM - MYTCH	.65 (1)	.91 (4)	.99 (4)	.84 (2)
STD - MYTCH	.66 (2)	.90 (3)	.62 (1)	.92 (4)
TOATL RANKS	7	11	11	11

Note.--Rank across level in parenthesis.

Whites showed no difference across level with respect to psychological relatedness to school ($X^2_r = 1.8$, df=3, $P > .667$). Table 20 illustrates this.

The first part of this hypothesis, then, was supported by the data--as the proportion of Blacks in classrooms increases and classrooms become integrated, Black students do indeed become more psychologically related to school.

To investigate the difference between Blacks and whites regarding psychological relatedness to school, the difference between the D scores of Blacks and whites within each level was calculated. If Blacks and whites in integrated classrooms come closer together concerning their position with regard to the school as a reference group, then the difference between their D scores would be smaller as the proportion of Blacks in the classroom increases. In other words,

Blacks and whites would share reference group belongingness as the difference between Black D scores and white D scores decreases. Table 21 presents the difference between the D scores of Blacks and whites for each concept pair for each level of racial heterogeneity.

TABLE 21

DIFFERENCES BETWEEN BLACK AND WHITE D SCORES

Black-white D Score Differences	Proportion Blacks in Classroom			
	LEVEL I 12%	LEVEL II 22%	LEVEL III 35%	LEVEL IV 48%
I AM - TCH	.47 (3)	.27 (1)	1.10 (4)	.38 (2)
I AM - STD	.37 (4)	.33 (2)	.22 (1)	.36 (3)
I AM - MYTCH	.86 (4)	.39 (3)	.32 (2)	.11 (1)
STD - MYTCH	.59 (3)	.81 (4)	.50 (2)	.44 (1)
TOTAL RANKS	14	10	9	7

Note.--Rank across level in parenthesis.

A Friedman two-way analysis of variance performed on the D scores revealed that there were no differences among the four levels regarding differences between Black D scores and white D scores ($X^2_r = 3.00$, df=3, $P > .432$). As can be seen in Table 21, there were no significant differences among the four levels.

A Friedman two-way analysis done between Level I and Level IV, however, revealed that there was a significant decrease in the difference between Black D scores and white D scores as the proportion of Blacks in the classroom

increased (X^2_r = 4, df=1, P $<$.05). When considering extremely segregated and extremely integrated classrooms, then, we found that Blacks and whites in the integrated classrooms were closer together with regard to the degree to which they were psychologically related to school.

The second part of the hypothesis was supported by the data--as classrooms become integrated, Blacks and whites become closer to each other regarding their psychologically relatedness to school.

Where does confirming our hypothesis leave us with regard to our explaining why Black students in integrated classrooms do not show the expected academic achievement gains? We know that Blacks in integrated classrooms share meaning with whites. We also know that this shared meaning is associated with higher levels of academic achievement among Blacks. Furthermore, we presented empirical evidence to indicate that Black-white affective racial distance has no bearing on Blacks in more integrated classrooms not showing achievement gains. Confirming the retrospective hypothesis, then, that in integrated classrooms Black students are more psychologically related to school and also that they are closer to whites in their psychological relatedness to school does not help us to explain why Blacks in integrated classrooms do not achieve at a higher level. In fact, confirming the hypothesis makes it even more difficult for us to explain why integrated Black students do not show the expected achievement gains.

We analyzed more closely the relationship between shared meaning and achievement in anticipation of clearing up the dilemma. Shared meaning seemed logically to be the best place to look, particularly since it was Black-white shared meaning that prompted us initially to predict an increase in the level of achievement among Blacks in integrated classrooms.

Inspection of the within-groups intercorrelation matrix between achievement scores and "proportion Black" revealed that, *within shared-meaning groups, there was a negative relationship between reading-related achievement scores and the proportion of Blacks in the classroom* (see Table 10). It is true that the correlations were not very strong, but they were consistent. All three of the reading-related scores of Blacks ("vocabulary", "reading", and the "STEP") were negatively correlated to the proportion of Blacks in the classroom, whereas neither of the two arithmetic-related scores ("arithmetic concepts" and "arithmetic problem solving") were negatively related.

Our data strongly suggest, then, that if it were not for the shared meaning found among Blacks in integrated classrooms, we as did others, would have found Black students in segregated classrooms to achieve at a higher level than do Blacks in integrated ones. Controlling for shared meaning, we found small but consistent negative relationships between the proportion of Blacks in a desegregated classroom and the level of Black students' reading-related

academic achievement. When we did not control for shared meaning, we found that there were no significant differences in academic achievement across the four levels of classroom racial composition. Shared meaning apparently neutralizes the negative effects on the academic achievement of Black students resulting from their being in integrated classrooms.

How does Black-white shared meaning neutralize the negative effects of Blacks being in classrooms with many other Blacks? Earlier in the discussion when we considered the relationship between shared meaning and the academic achievement of Blacks, we saw that when the best three disciminators between high and low shared-meaning groups ("proportion Black", "vocabulary", and "arithmetic concepts") were considered together, "vocabulary" was by far the better achievement-related discriminator. Vocabulary skill, then, appears to be the important coexistent factor of shared meaning which possibly could synergize the effect shared meaning has in neutralizing the negative effect of integrated classrooms on Black students' level of achievement.

Whether Blacks' having vocabulary skills leads to more Black-white shared meaning or whether Black-white shared meaning causes an increase in the vocabulary skills of Blacks is a question for future empirical research. Nonetheless, we do know that whenever there is an increase in Black-white shared meaning, there is a concomitant increase in vocabulary skills among Black students.

The important point is that vocabulary skills appear

to be a critical concomitant of academic achievement among Black students in desegregated classrooms and that the presence of these skills is associated with a high level of Black-white shared meaning.

What is the answer, then, to our question, "Why, despite having a large degree of Black-white shared meaning, do Black students in integrated classrooms not show a high level of academic achievement?"

Our analyses indicate that, when shared meaning is controlled, the level of reading-related academic achievement among Black students tends to decrease as the proportion of Blacks in the classroom increases. Apparently, the level of Black-white shared meaning in integrated classrooms is sufficient to offset the negative effects of the large proportion of Blacks--the net result being no significant differences regarding level of academic achievement among Black students in classrooms with different racial compositions.

Now that we have accounted to our unanticipated finding and supported our initial contention that Black-white shared meaning is central to the process by which desegregation affects academic achievement, the blunt question becomes: "Why despite our rigorous controls for Black students' SES, IQ, fate control, and level of shared meaning do we still find the achievement level of Black students to be negatively related to the proportion of Blacks in a classroom?" Why does the level of academic achievement

among Blacks tend to decrease as classrooms become integrated?

One readily apparent explanation is the amount of time spent in a desegregated school. Students in this study had been in a desegregated setting for less than six years. It is quite possible that six years simply is not enough time for Blacks to learn the whites' connotative meaning of school-related concepts sufficiently well to cause a difference in the Blacks' level of academic achievement. It is reasonable to suspect, therefore, that while Blacks in integrated classrooms learn the white students' connotative meanings faster than do Blacks in segregated classrooms, the integrated Blacks learn only enough in six years to offset the negative effects of their being in highly integrated classrooms but not enough to actually increase their level of academic achievement.

Further research could investigate the precise relationship between time in a desegregated school and Black-white shared meaning. If time were found to be an important variable, then efforts could be made to teach Black-white shared meaning directly. Of course, this would mean that racial differences regarding the connotative meaning of school-related concepts would have to be made explicit in the classroom.

Conspicuously absent from the discussion thus far has been mention of the role of the teacher in affecting the level of achievement among Black students in desegregated classrooms. If, as we have determined, the classroom is

the critical unit to study, then the classroom teacher is certainly the critical actor. As classrooms become more integrated, is the teacher able to provide the "special help" Blacks need to overcome their starting with a different set of connotative reactions to school-related concepts? Do teachers' expectations and behavior regarding Blacks change as classrooms become integrated? A clear task for future research is to determine how a teacher's sensitivity to racial differences in connotative meanings affects his or her ability to raise the academic achievement level of Black students.

To summarize, we found in conducting this study, that Black-white shared meaning does mediate achievement gains made by Blacks integrated classrooms. However, we also discovered that the facilitating effect of the shared meaning we observed to be present in integrated classrooms is only strong enough to neutralize the negative effect on Blacks' academic achievement associated with having a large proportion of Blacks in a desegregated classroom. Black-white shared meaning not only neutralizes the negative influence integrated classrooms have on Blacks' level of achievement, but it also helps Blacks in integrated classrooms to become psychologically related to school. Regardless of whether desegregated classrooms are integrated or segregated, our findings indicate that Black-white affective racial distance remains constant.

This research has limitations which should be dis-

cussed before considering policy implications. The limitations of this study primarily are due to (a) practical matters such as time, and access to student populations, (b) the rigorous controls used in isolating influences due to racial composition per se, (c) the metric properties of instruments developed to measure some of the new concepts introduced, and finally (d) the exploratory nature of much of the research. Following is a discussion of the major limitations.

First, the rigorous controls we used to assure homogeneity of IQ, SES, and fate control made our final sample unrepresentative of student populations in general. While we did use modal values of control variables, the students not included in the sample had different values for these variables. For example, the SES level of Blacks in our sample was higher than is the average SES of Black students. Our findings, then, may not hold for Black students with very low SES's. This reasoning also holds for the other variables controlled in this study.

Our using modal values for SES, IQ, and fate control did not insure that our findings would be applicable to most classrooms. Using this technique, we simply maximized the number of classrooms we could include in the sample. Many classrooms, however, did not meet the criterion of being composed of Blacks and whites who had modal values on all control variables. Of the 75 classrooms in the population of fifth- and sixth-grade classrooms, we included 22 in our

sample.

To which students and classrooms are our results generalizable? We included over a quarter of the fifth- and sixth-grade classrooms in our sample; consequently, our findings certainly apply to a quarter of the fifth- and sixth-grade classrooms in the district. However, the relationships and processes isolated in this study, probably are applicable to a wider range of classrooms. Technically, we cannot make that applicability claim, given our sampling technique. Nonetheless, our results do demonstrate the *existence* of the several phenomena we reported. Future research would make a technical determination regarding the pervasiveness of such phenomena. But in the absence of this research, there are many instances when the education of Black students hangs in the balance and when we are justified in taking action based on research with technically limited generalizability. This is particularly true when the research is concerned with processes, as is this study, and when there is no reason to suspect that the processes observed in the sample are not operable in the population at large.

Second, this study considered only predominantly white classrooms. This was done because it is in these classrooms that other researchers had found academic achievement gains among Black students to occur. This study was designed to see if racial composition affects academic achievement, but in considering only predominantly white classrooms, we in-

vestigated only half of the phenomenon.

What happens to academic achievement in predominantly Black classrooms? It is unlikely that being a minority in a classroom affects white students in the same manner as does being a minority affects Black students. However, since our main interest was in assessing reasons for *improvements* in the level of academic achievement among Black students, we felt justified in sampling from predominantly white classrooms where most achievement gains among Blacks had been found to occur.

Third, many of the concepts used in this study are new and frequently the techniques used to study them were necessarily exploratory. This means that we were able to describe most relationships only in general terms. For example, we discovered that Black students in classrooms with a great deal of Black-white shared meaning had higher vocabulary scores than did Blacks in classrooms with low shared meaning. We were not able to specify, however, the precise functional relationship between shared meaning and level of academic achievement among Blacks.

Finally, a replication of this study outside of New York State would be instrumental in determining whether or not the strong positive relationship we observed between the proportion of Blacks in the classroom and Black-white shared meaning holds for districts outside of New York. In other words, there is some question about the validity in other parts of the country of processes observed to work in

New York.

With the limitations of this study clearly in mind, we now consider implications of this research for policy. While there are still more questions than answers concerning the effect of racial composition on academic achievement, this study has generated some very significant findings which have practical implications for education policy.

Merely the fact of our studying connotative meaning as it relates to the academic achievement of Blacks is significant. The significance lies in our emphasizing that students come to schools with diverse backgrounds. This emphasis leads to our first policy implication:

> *Looking at student diversity via connotative reaction to school-related concepts is a step in the direction of transferring the study of learning problems out of political and power arenas and into the arenas of rational scientific inquiry.*

This study demonstrated that the learning problems of individuals or groups can be solved or at least approached by considering an individual's connotative meaning rather than his ethnic identity.

Using denotative meaning in concert with the use of connotative meaning would make the techniques introduced in this study applicable to specific subject matter areas. The idea of group differences in denotative meaning has already been introduced in the form of "Black English". If techniques could be developed to assess individual and group denotative meanings regarding school-related concepts and if the techniques for tapping connotative meaning presented

in this study could be refined, then we would have made a significant step toward seeing exceedingly complex education problems transformed into more manageable communications problems.

A second implication of this study is:

> *Using connotative meaning, we are able to document the adaptability of Black students--most of whom have traditionally been labeled uneducable.*

That the Black students in our sample differed from whites regarding their connotative reaction to school-related concepts is a clear demonstration of the Black students' ability to learn--to adjust to their everyday environment. An additional demonstration of these students' ability to learn is their ability to change their connotative meanings for school-related concepts as the racial compositions of their classrooms change. Faced with the data from this study, no rational thinking educator can say, in clear conscience, that Black students are uneducable.

In considering the complex social and cognitive interactions which take place between Blacks and whites in desegregated classrooms, we generated a third policy implication in emphasizing that:

> *The classroom is the critical unit in a desegregated school.*

We found that classroom integration and the relationship of classroom integration to school integration proved to be critical in any consideration of student academic achievement.

Even though we were not able to study teachers in this study, the teacher emerged as a central figure. The failure of Black students in integrated classrooms to show achievement gains raised questions concerning the ability of teachers to teach large numbers of Blacks. Questions also were raised regarding possible low expectations held by teachers in integrated classrooms.

A fourth policy implication supported by the results of this study is:

> *In pointing out that Black students may have a legitimate connotative reaction to school-related concepts which may be different from that of white students, this study should promote among teachers a more positive image of their Black students.*

With insight gained from accepting the reality of Black-white connotative meaning differences, teachers should be less inclined to lower academic standards for Black students. Instead, they should be more inclined to teach Black students starting with a knowledge of the students' connotative reaction to school-related concepts, i.e., to give more value to what Black students learn outside of school.

Vocabulary skills emerged in this study as an important area of academic achievement for Black students. This finding leads to a fifth policy implication:

> *The presence of vocabulary skills among integrated Black students appears to help negate the negative effects their being in an integrated classroom has on their overall level of academic achievement.*

In the integrated classrooms where Black-white shared meaning was high, the vocabulary scores of Black students also were high. Whether the shared meaning caused the

vocabulary scores to be high or vice versa is a matter for empirical investigation. With a lack of empirical evidence, however, to teach Black students vocabulary could certainly do no harm and possibly could promote Black-white shared meaning and Black student psychological relatedness to school.

It is of significance that the data from this study point out and reiterate in a sixth policy implication that:

> *Classroom desegregation is not a process in which every Black student gain is associated with a white student loss.*

The racial composition of a desegregated classroom does not appear to exert any influence (negative or positive) upon the academic achievement of whites. Just as important, within the range of classroom integration studied, the psychological relatedness of white students to school and Black-white affective racial distance are not affected (negatively or positively) by the proportion of Blacks in a desegregated classroom.

There is a suggestion in the data presented of an independence between interracial *friendship* and interracial *understanding*. Blacks and whites tend to converge regarding meaning for school-related concepts as the proportion of Blacks in the classroom increases; yet, they do not show a concomitant convergence in interracial affective distance. Our data strongly support a seventh policy implication that:

> *Interracial concurrence concerning school-related concepts (shared meaning) and not interracial friendship (affective racial distance) appears to be the most important condition in the development of a facilitative educational climate for desegre-*

gated Black students.

While interracial closeness may be, and possibly should be, a goal in itself, the effectiveness of school desegregation appears not to be dependent upon interracial closeness. The data strongly suggest, then, that interracial acceptance is not a necessary condition for an academically sound desegregated environment.

That Blacks and whites in desegregated classrooms can differ regarding the meaning of school-related concepts and, yet, not show a concomitant interracial affective distance is evidence that diversity per se in a desegregated situation is not detrimental to affective racial closeness. Our conclusions indicate that Black-white homogeneity regarding school-related concepts is essential only insofar as Blacks and whites must communicate regarding school-related concepts. Communication regarding these concepts is necessary to assure the academic success of Black students in white-oriented classrooms. Our findings indicate that interracial diversity and differences can be assets and certainly are not deficits in desegregated classrooms, provided that a mechanism for Black-white communication regarding school-related concepts is assured.

Our overall findings suggest that the positive effects on academic achievement which accrue to the desegregated Black student are a result of complex social and cognitive interactions in the desegregated classroom. These findings lead to our eighth policy implication that:

Classroom racial composition is firmly established as an educationally germane dimension having substantial potential influence on the academic achievement of desegregated Black students.

The proportion of Blacks in a desegregated classroom was found to have ramifying consequences for Black students' psychological relatedness to school and for Black-white shared meaning regarding school-related concepts.

As a result of this study, any Court or education policy-making body in a position to make restitutions to segregated Black students would be justified in providing at a minimum: (a) mechanisms by which Black students can become psychologically related to the concept of school, and (b) training so that Black students can understand school-related concepts well enough to gain maximum benefit from their schooling.

Finally, this study introduces the concept of Black-white shared meaning, a heretofore intangible unmeasurable variable, as a concept central to the process by which desegregation purportedly enhances the achievement level of desegregated Blacks. The ninth policy implication of this study is:

Black-white shared meaning is the most essential of those intangible qualities found in desegregated schools--qualities which the Courts have decided are so important to the academic success of desegregated Black students.

Our data indicated that Black-white shared meaning is associated with academic achievement gains among Blacks. There was the additional implication in the data that Black-white shared meaning facilitates the increased level

of psychological relatedness to school that we observed among Blacks in integrated classrooms.

APPENDIX A:

SEMANTIC DIFFERENTIAL RATIONALE

The Semantic Differential

The semantic differential (SD) developed by Osgood, Suci, and Tannenbaum (1957) is widely used to measure the connotative meaning of concepts. The developers postulate a semantic space which is of unknown dimensionality and Euclidian in character. "Each semantic scale defined by a pair of polar (opposite-in-meaning) adjectives, is assumed to represent a straight line function that passes through the origin of this space, and a sample of such scales then represents a multidimensional space." (Osgood, et al, 1957, p. 63). The minimum number of orthogonal dimensions or axes which exhausts the dimensionality of the semantic space is differentiated by successively allocating a concept to a point in the multidimensional semantic space by selecting from among a set of given scaled alternatives. Factor analysis is then used to isolate the dimensions. An example of the instrument used to dimension the semantic space is as follows:

TESTS

Active	___	x	___	___	___	___	___ Passive
Hard	___	___	___	___	x	___	___ Soft
Good	___	x	___	___	___	___	___ Bad

The x's represent the direction and intensity of a subject's judgment on a particular concept (TESTS). Active-passive,

hard-soft, and good-bad are examples of the scaled alternatives.

SD data are generally analyzed in several major ways: (a) factor analysis (for single concepts and subjects or across concepts and subjects), (b) profile (pattern of responses on bi-polar adjectives) similarity between scales within subjects and (c) profile similarity between scales between subjects. Factor analysis generates basic dimensions of meanings while profile analysis gives a more detailed description of concept meaning. For example, similarity of factor structure between two groups would suggest that these groups have a common frame of reference. A dissimilar factor structure would suggest that the groups do not have a common frame of reference; hence, groups with dissimilar factor structures are not psychologically related to each other. When groups are found to overlap semantically, one can then perform a more detailed comparison between them using profile analyses.

One group of students for instance, may find the concepts TESTS and LEARNING to be close to one another in meaning while another group may find these concepts to be far apart in meaning. Additionally, groups of students may vary with respect to their "absolute" meanings for TESTS or LEARNING.

Generality of the Semantic Differential

Many studies have shown three affective meaning dimensions--E, P, A (Evaluation, Potency, Activity) to be pervasive intraculturally as well as cross-culturally (Osgood, 1962, 1964; Osgood, Suci, and Tannenbaum, 1957; Triandis and Osgood, 1958). Within the American culture, Bopp (1955), Osgood and Luria (1954), and Ware (1959), reported that the three dimensions hold across IQ, sex, and personality variables. The generality of the SD supports its use in studies involving the various levels of class, intelligence, and race found in schools.

In order to make meaningful responses to the standard SD instrument, a subject must have some language skills. There exists the possibility, then, that the nature of a subject's response to the instrument may be a function of his language skill rather than the meaning a particular concept has for him. If SD data were a function of language skills, the data would be a measure of reading achievement and not of psychological meaning.

What evidence, if any, is there that the SD data are not simply a function of reading achievement? The argument is twofold: (a) basic dimensions (E,P,A) of semantic meaning space are not primarily a function of language development and (b) the meaning of a concept involves a psychological process which is separate from word association pro-

cesses, hence, separate from reading skills.

Maltz (1963) in a study of ontogenetic change in the meaning of concepts, found that the meaning of concepts becomes consistent before the fourth grade level is attained in school. Further schooling does not lead to an increase in concept meaning consistency, suggesting that concept meaning consistency is not related to reading ability. Further evidence that age (reading ability) does not affect SD performance was presented by DiVesta (1966) who found that the dimensions of a child's semantic space correspond closely to those of the adolescent and adult. DiVesta's findings also suggest that the child's mode of experiencing and encoding the environment with regard to connotative meaning is securely fashioned by the time the child is in the second grade. The evidence suggests, then, that the student's mode of responding to the SD instrument does not vary with his reading ability.

Osgood et al, (1957) asserted that the connotative meaning of a concept is a psychological process independent of verbal associates to that concept. Staats and Staats (1959) presented arguments and data to support the Osgood contention that the meaning of a word and the verbal associates to that word are distinct phenomena. These findings add further support to the idea that performance on the SD is not dependent upon verbal skills beyond a specific minimum level. Consequently, in constructing the instrument to be

used in this research, we controlled the vocabulary difficulty.

Individual Differences

Considering the large amount of support for the generality of the E,P,A dimensions, how can one expect to obtain the individual differences necessary to discriminate among Black and white students in classes with various racial compositions? Inspection of the data showing generality of dimensions reveals that group averages have been used extensively. One is then faced with the question of whether or not the average semantic structure is the best representation of the individual semantic structure. Individual differences in meaning have been documented (Krieger, 1964; Suci, 1960; Tanka and Osgood, 1965; and Tanka et al, 1963). Wiggins and Fishbein (1967) reported that "...although an analysis of the group average space provided results that are essentially identical to the findings of Osgood and his associates, sub-groups of individuals did perceive semantic space differently even when those individuals were drawn from a relatively homogenous population (p. 190)."

Several investigators (Levine, 1965; Litt, 1966; and Snyder, 1967) have retained the original concept by scale by subject data matrix and performed a three mode factor analysis. These analyses generated more than one subject factor. There is some evidence that the number of subject factors

may be a function of the concept, with the more abstract concepts generating more subject factors. When the effects of averaging across concepts, scales, or subjects are controlled, individual differences are found. This supports our using the SD technique and expecting individual differences.

APPENDIX B:

PEOPLE TEST

*The People Test**

In this booklet there will be pictures of people, and your task will be to decide how alike these people are. On page A are pictures of all the people you are going to be asked to think about in this booklet. They are all students who are about the same age as you. There is one more person you will have to think about in this booklet. That person is yourself. On page B there is a stick figure that will be used as a drawing of you. Whenever you see it, it means that you are being asked to think about yourself.

On every page in this booklet there will be pictures of two people. You will be asked to decide how alike these two people are. One picture (the one up in the corner) can be peeled off and pasted somewhere along the line that is printed across the page. The more alike you think the two people on the page are, the closer together you should put their pictures. The less alike you think the two people are, the further apart you should put their pictures.

On some pages the people are more alike than on other pages. When they are very much alike, put them very close together. When they are less alike, put them a little fur-

*Facsimiles of test materials reproduced with permission from Riverside Research Institute.

ther apart. When they are hardly alike at all, put them very far apart. This means that the people that are most alike should be closest together and those that are least alike should be furthest apart.

Whether you put the two people close together or far apart, always paste the picture on the line.

Remember what the distances mean:

A. P [P] This means that the two people are very much alike.

B. P [P] This means that the two people are less alike than the people in A.

C. P [P] This means that the two people are less alike than the people in A or B.

D. P [P] This means that the two people are hardly alike at all. They are less alike than the people in A or B or C.

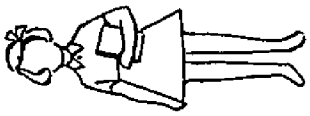
How to work:

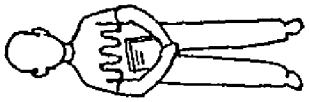
1. Work carefully but quickly. Do not spend too much time on any page.
2. Do not move any picture from one page to another. On each page you should peel off the picture that is in the upper corner and paste it on to that same page.
3. Paste one picture on each page.
4. Do not leave out any pages.

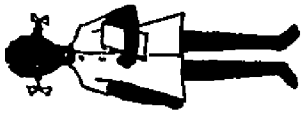
Before you begin, take a moment to look through the booklet to see which pair of people you will be asked to judge. We'll do the first two pages together, and then you can do the rest of the pages by yourselves.

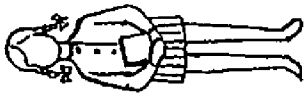
A

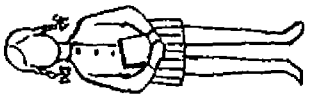
(M)

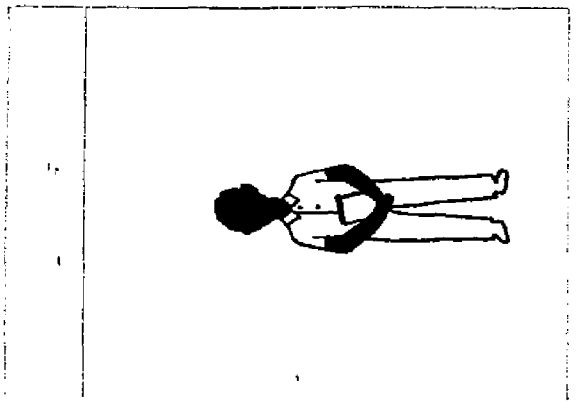


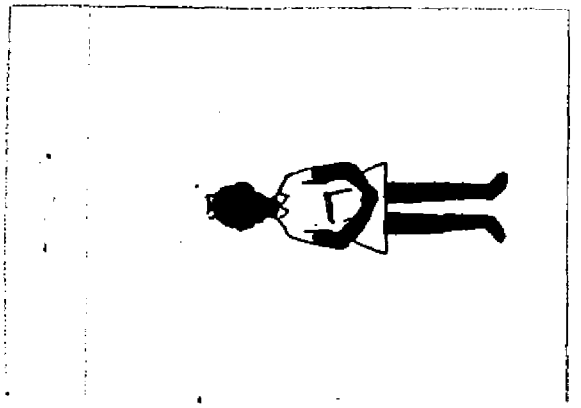


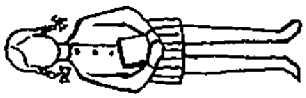


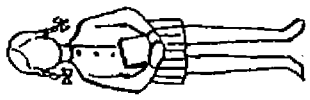


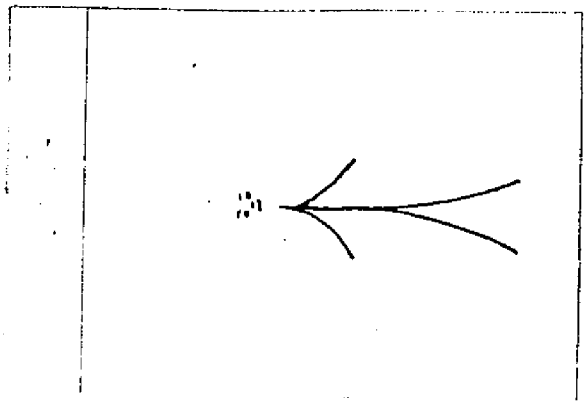


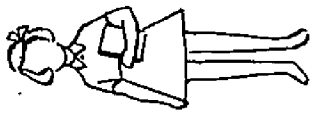


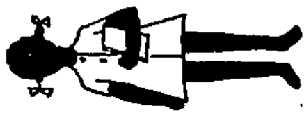


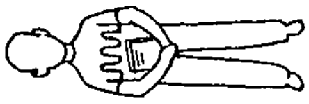


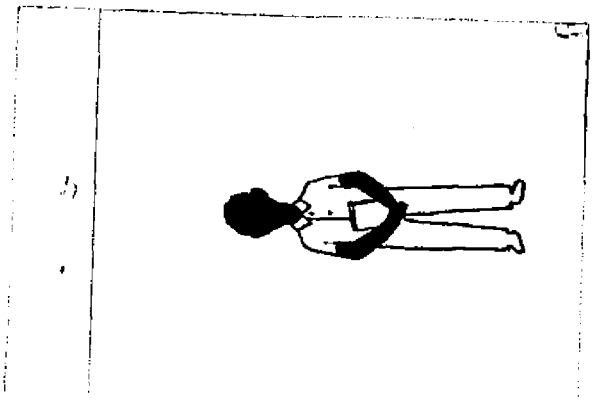


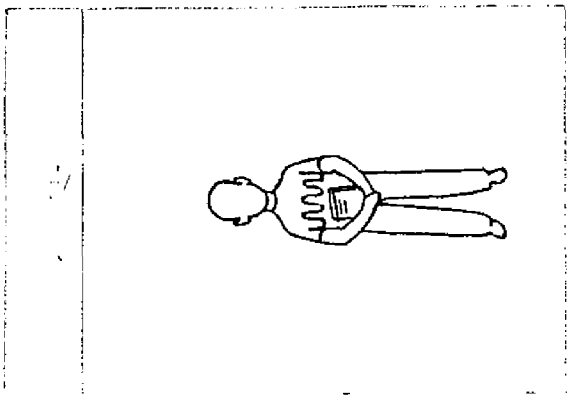


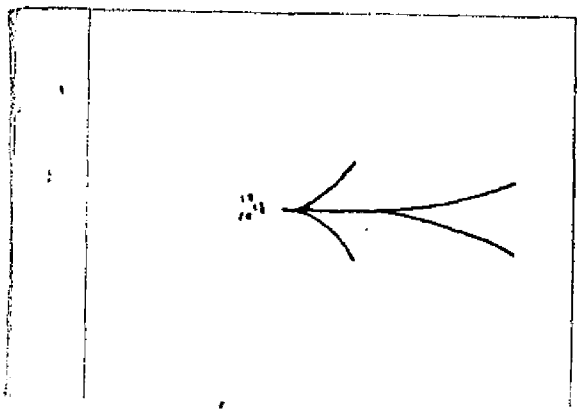


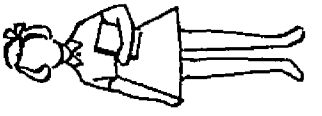












APPENDIX C:

PEOPLE TEST RATIONALE

*The People Test**

Theoretical Rationale

This technique infers the cognitive-affective distinctions a student makes between people from the student's clustering of drawings of these people. The theoretical base employed here has its foundation in Torgerson's (1958) judgment theory which extends the logic of Bogardus' (1925, 1933) concept of social distance. That there are characteristic ways of perceiving different interpersonal relationships and that these relationships can be translated into spatial terms is a concept common to this technique as well as to social schemata work (Kuethe, 1962; Kuethe, 1964; Keuthe and Stricker, 1963; and Little, 1965). Brown (1965) added a note of universality to the idea of familiar-formal distinctions (social distance) in his discussion of interpersonal relationships based upon role and status as well as upon affect.

Method

People Test instructions asked students to place pictures of people on a page in a manner which represented the degree of similarity between the people depicted by the

*Many of the ideas presented here were taken from working papers developed at Riverside Research Institute.

pictures. A number of social judgment researchers showed that affect in interpersonal relationships influenced the translation of the relationships into spatial terms even when subjects were given a straight-forward scaling task (Sellitz, Edrich, and Cook, 1965; Sherif and Hovland, 1961; Upshaw, 1969; Zavolloni and Cook; 1965). A measure of social distance, then, can be expected from subjects who respond to the People Test even though only cognitive judgments are elicited. In not being required to ask affect-laden questions, the People Test has a built-in quasi-disquised component.

Because the instructions in the People Test do not mention attitudes or preference, the likelihood that a student knows that his attitude is being measured is minimized. Any student who did try to fake his responses would generate so many inconsistencies that his judgments would not reflect the sex and race dimensions built into the instrument.

Students are asked to make two sets of judgments--proximity judgments between himself and others and proximity judgments among others. The self-other judgment is made using a figure which represents the self and figures which represent others. Students are asked to make proximity judgments between the self-figure and each of the other figures in a pair-comparison format (the self and one other figure). To make distinctions among others, the student

makes proximity judgments using representations of other people, taken two at a time.

Research has shown that when subjects are asked to arrange a variety of objects in proximity to one another, they group the figures in the direction of social stereotypes (Black boy-Black girl, man-woman, woman-child, dog-man, etc.). Kuethe and Stricker (1963), Fischer (1968), and others found that human pairs (male-female) were placed closer together than were pairs of animals or a pair composed of an animal and a human. Subjects, then, reflect the social distinctions which are made in our culture. These social distinctions are referred to as socially standardized or *normative social distance*.

The extent to which people are categorized and the nature of the categories varies among groups and cultures (Sherif, 1936; Brown, 1965). However, after a given age, all groups draw distinctions between people based on certain universal dimensions, i.e., age, sex, etc. Stimuli could be selected so that the same set of differentiations are elicited from all groups. For example, people of the same race are judged to be similar, people of the same sex, of the same age, etc. Though different groups generate similar dimensions, the distances within these dimensions may vary. For example, the race dimension may be more important to Blacks than it is to whites.

Self-other distances are similar to Bogardus' meaning of social distance. They represent an index of *personal social distance.*

Empirical evidence demonstrated that children use normative as well as personal distance when making proximity judgments. For example, elementary school white boys were asked to make proximity judgments with a set of figures which included the self-figure, figures of a Black boy, Black girl, white boy, and white girl, some of the white boys placed themselves (the self-figure) closer to the Black boy figure than they placed the white boy figure to the Black boy figure. These white boys also placed themselves further from white girl figures and Black girl figures than they placed white boy figures or the Black boy figures from either Black girl figures or white girl figures. The discrepancy between the manner in which the white boys placed the self-figure and the white boy figure suggested that the white boys' personal distance was smaller than the normative white boy-Black boy distance. In other words, the white boys were closer to Black boys than was their perception of the socially standardized distance.

Follow-up questioning revealed that this group of boys disliked girls very much and that they had Black boys among their best friends. Their responses, then, indicated that they knew the standardized social distances, but that their personal distance did not agree with the normative one.

Analyses

A procedure was designed to determine if the instruments were being completed properly. Failure by a student to vary his proximity judgments across different comparisons was used as an indication that the student either did not understand the task or he was unwilling to respond to the instrument. Response perseverators are found with about equal frequency in various groups of students--Blacks, whites, boys, girls, etc. Perseverator's data, therefore, were deleted from further analyses.

Proximity judgments allowed us to recover socially standardized dimensions. This was done averaging the distances between all pairs of figures (excluding the self-figure) for each group of students (i.e., for a given school, grade, sex, and race). Kruskal (1964) type multidimensional scaling analyses were performed on the judgments for each group. These analyses used ordinal information to determine if the race and sex dimensions built into the instrument were reflected in the group judgments. The results revealed that there are two dimensions in the data indicating that subjects know and respond to the socially standardized distinctions built into the instrument.

Torgerson's (1958) technique for comparing multidimensional scaling (MDS) solutions allows us to assess the differences among groups regarding their normative social distances.

Subjects place the self-figure in the proper nor-

mative distance framework. For example, a Black boy's data would locate his self-figure in the male and Black quadrant of the normative distance space. The axes of the normative distance space may be rotated and self placed at the origin. Students then could be compared across school manipulations.

Analysis of variance of the distance between any pair of stimuli was used to determine if there were differences among various groups. The data generally have shown high within-group inter-subject agreement.

Reliability

Test-retest reliability studies were performed using approximately 600 students in grades 3,5, and 9. Personal distance judgments had a test-retest correlation ranging from .50 to .69 in grade 9, .65 to .75 in grade 5, and .47 to .68 in grade 3. Normative distance judgments had a correlation of .42 to .68 in grade 9, .32 to .50 in grade 5, and .14 to .35 in grade 3.

Validity

Data concerning the development of normative and personal social distance were used to provide support for the construct validity of the People Test. The assumption was made that as children mature, they learn the normative race and sex social distinctions made in our culture. Personal social distances were assumed to vary in a manner which is different from the manner in which normative distances vary.

According to the assumption, there should be stronger agreement across sub-groups concerning normative distances as the students get older. Personal distances across groups should not show convergence as students get older.

The normative and personal distances of 4,167 students in grades 1-12 were used as dependent data in a race by sex by grade by comparison analysis of variance. There was stronger agreement concerning normative distances as age increased ($F=8.94$, $P<.01$). Normative distances were largest where the stimulus figures differed in both race and sex. Girls placed the female self-figure closer to female figures, while boys placed the male self-figure closer to the male figure ($F=349.53$, $P<.001$). Blacks placed the self-figure closer to Black stimuli and whites placed their's closer to white figures ($F=246.75$, $P<.001$). As subjects became older, self-opposite sex differences decreased.

Race comparisons for personal distance data reflected the identity problems suffered by young Blacks (e.g., Clark and Clark, 1958; Greenwald and Oppenheim, 1968). Up until grade five, Black girls placed the self-figure further from the Black girl figure than from the white girl figure. For Black boys, self-figure distances were equal for the Black figure and the white figure. In the fourth grade, self-Black boy figure distances were larger than self-white boy figure distances.

APPENDIX D:

SPECIAL MEANING OF WORDS

*Test Of The Special Meaning Of Words**

This is a test about words, but it is not like any other word test you have ever taken. This test will not find out how many words you know, because all the words are very easy, and you will probably know every word in the test. The reason for this test is to find out what kinds of feelings you have about some of the words you use every day.

This is a test where there are no right answers and no wrong answers, because we know that everybody has his own feelings about these words. So, this is really a very easy test to take. You don't have to remember anything or solve any problems. You just have to decide *how a word feels to you.*

Let's take an example, for our example, let's think about summer. Everybody knows what summer is. But suppose you are asked if summer is soft or hard. Some of you think that summer is soft or even very soft. Some of you think summer is hard or even very hard. Some of you may think it's not soft and not hard, but somewhere in-between.

Some of the feelings you will be asked about may be hard for you to decide at first. Do you think summer is friendly or unfriendly? Is it weak or strong? Is is clean or dirty? These are the kinds of things you will have to think about in this test. Here's the way one test question

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will look.

SUMMER

very easy	easy	not easy and not hard	hard	very hard

Your job is to think about SUMMER and put a check mark on the line that tells how you feel.

For example, if you think SUMMER is very easy, you would put a check mark over very easy, like this:

✓ very easy	easy	not easy and not hard	hard	very hard

If you think SUMMER is easy, you would put a check mark over easy, like this:

very easy	✓ easy	not easy and not hard	hard	very hard

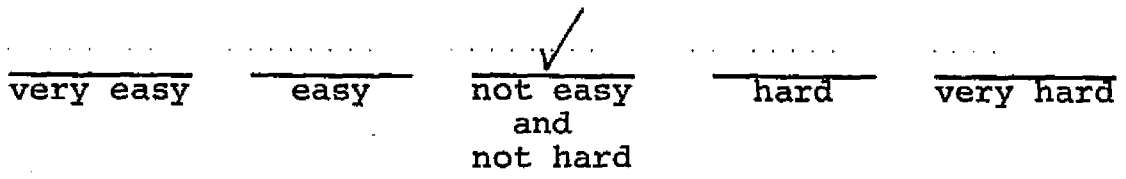
If you think SUMMER is hard, you would put a check mark over hard, like this:

very easy	easy	not easy and not hard	✓ hard	very hard

If you think that SUMMER is very hard, you would put a check mark over very hard, like this:

very easy	easy	not easy and not hard	hard	✓ very hard

Finally, if you think that SUMMER is not easy and not hard, you should put your check mark on the middle line like this:



You should try *not* to put your check mark on the middle lines unless you *really* can't decide which other line to use. We have found that most people *are* able to decide which line they want to check, and don't need to use the middle line very often.

How you should work:

1. Work as fast as you can.
2. Don't think about any word too long. What we want are your *first feelings* when you think about the word.
3. *Don't leave any out.* Even if the question seems strange to you at first, try to decide how you feel about it. You don't need to be sure--just put down how you think you feel.

Every page in this test will have one word at the top and many rows of feelings listed below it. On *every* row you need to make *one* check mark.

Here is an example which some student might have filled in:

SUMMER

✓ very hot	hot	not hot and not cold	cold	very cold
very clean	clean	not clean and not dirty	✓ dirty	very dirty
very friendly	✓ friendly	not friendly and not unfriendly	unfriendly	very unfriendly
very long	long	not long and not short	✓ short	very short
very old	✓ old	not old and not young	young	very young
very noisy	noisy	not noisy and not quiet	quiet	✓ very quiet
very happy	happy	not happy and not sad	✓ sad	very sad

Don't be surprised when you are asked to describe a word in ways that you probably never thought of before. That's what this test is all about. Just ask yourself: How does that *really feel* to me? Then mark the line that is closest to telling how you feel.

Remember: Work quickly.

Mark every row only once.

Do not leave out any rows, even if you are not sure.

very quiet	quiet	not quiet and not noisy	noisy	very noisy
very empty	empty	not empty and not full	full	very full
very heavy	heavy	not heavy and not light	light	very light
very dirty	dirty	not dirty and not clean	clean	very clean
very interesting	interesting	not interesting and not dull	dull	very dull
very soft	soft	not soft and not hard	hard	very hard
very hot	hot	not hot and not cold	cold	very cold
very near	near	not near and not far	far	very far
very UNfair	UNfair	not UNfair and not fair	fair	very fair
very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

very quiet	quiet	not quiet and not noisy	noisy	very noisy
very empty	empty	not empty and not full	full	very full
very heavy	heavy	not heavy and not light	light	very light
very dirty	dirty	not dirty and not clean	clean	very clean
very interesting	interesting	not interesting and not dull	dull	very dull
very soft	soft	not soft and not hard	hard	very hard
very hot	hot	not hot and not cold	cold	very cold
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very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

very quiet	quiet	not quiet and not noisy	noisy	very noisy
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very dirty	dirty	not dirty and not clean	clean	very clean
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very near	near	not near and not far	far	very far
very UNfair	UNfair	not UNfair and not fair	fair	very fair
very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

very lively	lively	not lively and not quiet	quiet	very quiet
very cool	cool	not cool and not warm	warm	very warm
very lucky	lucky	not lucky and not UNlucky	UNlucky	very UNlucky
very dull	dull	not dull and not sharp	sharp	very sharp
very excited	excited	not excited and not calm	calm	very calm
very rough	rough	not rough and not smooth	smooth	very smooth
very strong	strong	not strong and not weak	weak	very weak
very slow	slow	not slow and not quick	quick	very quick
very open	open	not open and not closed	closed	very closed
very low	low	not low and not high	high	very high
very important	important	not important and not UNimportant	UNimportant	very UNimportant

MY NEIGHBORHOOD

very quiet	quiet	not quiet and not noisy	noisy	very noisy
very empty	empty	not empty and not full	full	very full
very heavy	heavy	not heavy and not light	light	very light
very dirty	dirty	not dirty and not clean	clean	very clean
very interesting	interesting	not interesting and not dull	dull	very dull
very soft	soft	not soft and not hard	hard	very hard
very hot	hot	not hot and not cold	cold	very cold
very near	near	not near and not far	far	very far
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very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

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very dull	dull	not dull and not sharp	sharp	very sharp
very excited	excited	not excited and not calm	calm	very calm
very rough	rough	not rough and not smooth	smooth	very smooth
very strong	strong	not strong and not weak	weak	very weak
very slow	slow	not slow and not quick	quick	very quick
very open	open	not open and not closed	closed	very closed
very low	low	not low and not high	high	very high
very important	important	not important and not UNimportant	UNimportant	very UNimportant

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very soft	soft	not soft and not hard	hard	very hard
very hot	hot	not hot and not cold	cold	very cold
very near	near	not near and not far	far	very far
very UNfair	UNfair	not UNfair and not fair	fair	very fair
very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

MY TEACHERS THINK I AM

very lively	lively	not lively and not quiet	quiet	very quiet
very cool	cool	not cool and not warm	warm	very warm
very lucky	lucky	not lucky and not UNlucky	UNlucky	very UNlucky
very dull	dull	not dull and not sharp	sharp	very sharp
very excited	excited	not excited and not calm	calm	very calm
very rough	rough	not rough and not smooth	smooth	very smooth
very strong	strong	not strong and not weak	weak	very weak
very slow	slow	not slow and not quick	quick	very quick
very open	open	not open and not closed	closed	very closed
very low	low	not low and not high	high	very high
very important	important	not important and not UNimportant	UNimportant	very UNimportant

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very soft	soft	not soft and not hard	hard	very hard
very hot	hot	not hot and not cold	cold	very cold
very near	near	not near and not far	far	very far
very UNfair	UNfair	not UNfair and not fair	fair	very fair
very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

MY CLASSMATES THINK I AM

very lively	lively	not lively and not quiet	quiet	very quiet
very cool	cool	not cool and not warm	warm	very warm
very lucky	lucky	not lucky and not UNlucky	UNlucky	very UNlucky
very dull	dull	not dull and not sharp	sharp	very sharp
very excited	excited	not excited and not calm	calm	very calm
very rough	rough	not rough and not smooth	smooth	very smooth
very strong	strong	not strong and not weak	weak	very weak
very slow	slow	not slow and not quick	quick	very quick
very open	open	not open and not closed	closed	very closed
very low	low	not low and not high	high	very high
very important	important	not important and not UNimportant	UNimportant	very UNimportant

very quiet	quiet	not quiet and not noisy	noisy	very noisy
very empty	empty	not empty and not full	full	very full
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very near	near	not near and not far	far	very far
very UNfair	UNfair	not UNfair and not fair	fair	very fair
very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

very quiet	quiet	not quiet and not noisy	noisy	very noisy
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very UNfair	UNfair	not UNfair and not fair	fair	very fair
very easy	easy	not easy and not difficult	difficult	very difficult
very dangerous	dangerous	not dangerous and not safe	safe	very safe

very lively	lively	not lively and not quiet	quiet	very quiet
very cool	cool	not cool and not warm	warm	very warm
very lucky	lucky	not lucky and not UNlucky	UNlucky	very UNlucky
very dull	dull	not dull and not sharp	sharp	very sharp
very excited	excited	not excited and not calm	calm	very calm
very rough	rough	not rough and not smooth	smooth	very smooth
very strong	strong	not strong and not weak	weak	very weak
very slow	slow	not slow and not quick	quick	very quick
very open	open	not open and not closed	closed	very closed
very low	low	not low and not high	high	very high
very important	important	not important and not UNimportant	UNimportant	very UNimportant

APPENDIX E:

STUDENT OUTLOOK TEST

*The Student Outlook Test**

This test asks for your opinion on ten (10) questions. Each question is made up of two (2) sentences, A and B. On each question you have to decide whether you agree with A or with B. This is a matter of each student's opinion. There are no right or wrong answers.

Read both sentences in each question. If you agree with sentence A, put a circle around the A. If you agree with sentence B, put a circle around the B. If you don't agree completely with A or with B, pick the one that is *closest* to how you feel.

1) A. If a person does not succeed, it is usually *his own fault.*

   B. If a person does not succeed, it is usually *not his fault.*

2) A. When I try to get ahead, *something or somebody usually stops me.*

   B. When I try to get ahead, *most of the time I can do it.*

3) A. It is *pretty easy* for someone like me to be successful in this world.

   B. It is *very hard* for someone like me to be successful in this world.

4) A. If teachers taught more slowly, my marks would probably *be much better.*

*Facsimiles of test materials reproduced with permission from Riverside Research Institute.

B. If teachers taught more slowly, my marks would probably *be about the same.*

5) A. *People pay attention* and listen when I have something to say.

B. When I have something to say, *people do not pay attention* or listen.

6) A. I have *usually been given* a fair chance to succeed in school.

B. I have *never really been given* a fair chance to succeed in school.

7) A. Usually, *other people pick me* to be their friend.

B. Usually, I *pick other people* to be my friends.

8) A. Even though I try, sometimes I just *can't seem to learn.*

B. As long as I try, *I know I can learn.*

9) A. As long as I have a good education, it will be *easy for me* to get a good job.

B. Even if I have a good education, it will still be *hard for me* to get a good job.

10) A. The way a person becomes successful is by *working hard for it* most of the time.

B. The way a person becomes successful is by *having some good luck* at the right time.

APPENDIX F:

DETERMINATION OF STUDENTS' SOCIO-ECONOMIC STATUS

The Determination of Students' Socio-economic Status

Socio-economic status (SES) was based upon property values. The following procedures were the initial steps employed in obtaining the SES of each student in the sample:

a) A map (first map) of the town furnished by the U.S. Census Bureau was obtained. This map indicated census tract code numbers and block code numbers within those tracts.

b) A large street map (second map) indicating named streets within the district was obtained. The tract and block code numbers were taken from the U.S. Census Bureau's map of the town and placed upon the larger more legible street map.

c) A map which indicated the range of house numbers for all sides of each city block was obtained (third map). Each block on this map was labeled with its appropriate tract and block number taken from the second map.

d) The average housing value for each city block was located in a *Table of Characteristics of Housing Units By Blocks;* this is available through the U.S. Census Office.

For some blocks, the average house value was not indicated in the table. For these blocks, a local real estate agent estimated from her records the average house values in the year that the census data was garnered. Local tax assessment records were used to validate the real estate

agent's estimates. Another validation procedure involved asking the real estate agent to make estimates for blocks for which census data were also available.

Based upon the average house value for the blocks, SES values were assigned to them. The assigned SES values were placed upon the third map. The relationship between the SES index and average house value in indicated in the following table.

TABLE A

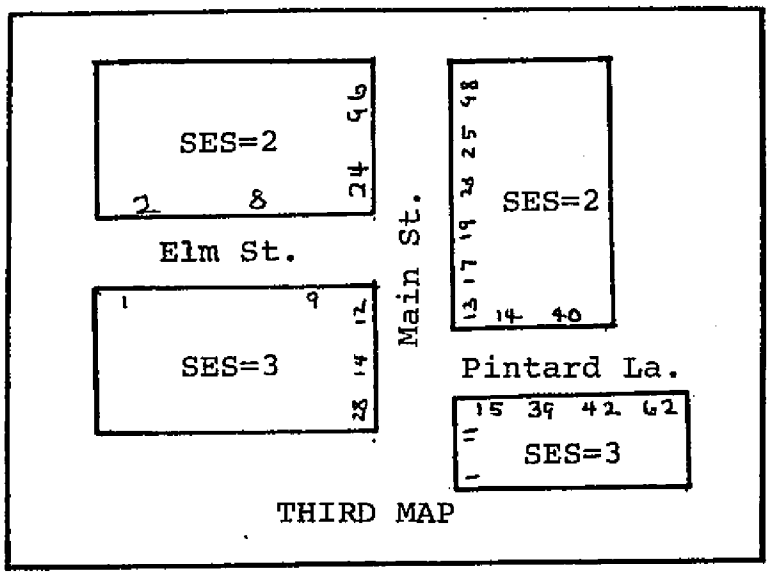
THE RELATIONSHIP BETWEEN THE ASSIGNED SES INDEX AND AVERAGE HOUSE VALUE FOR BLOCKS

Average House Value for Block	SES Index
$ 0 - $ 5,999	1
$ 6,000 - $11,999	2
$12,000 - $17,999	3
$18,000 - $23,999	4
$24,000 - $29,999	5
$30,000 - $35,999	6
$36,000 - $41,999	7
$42,000 and over	8

SES information by block contained in the third map was then used to obtain SES data for the entire length of streets, avenues, etc., in the following manner. An alphabetical list of street names was used. Each street was found on the third map. On the basis of the information in the third map, each street was divided into some finite

number of house number ranges. Each range had an SES code. For example, numbers 20-80 on Main Street could have the same SES code, numbers 81-100 could have another, etc. It was also possible that the houses on one side of the street could have a different SES code than the houses on the other side of the street, since each side of the street is within a different block. Both of these possibilities are illustrated in Figure A. The SES indices for each street were compiled in a street atlas (see Figure A).

Each student's street address was obtained from the school district. The street name was found in the street atlas. The SES index for the street number range within which the student's street number fell was located. This index was then assigned to that student.



STREET ATLAS

Elm Street
  even=2
  odd=3

Main Street
1 - 11
  odd=2
12 - 17
  odd=2
  even=3
19 - 96
  odd & even=2

Pintard Lane
14 - 40
  odd=3
  even=2
42 - 62
  all even=3

Figure A Relationship of (Map) city block information to the street information compiled in the Street Atlas.

Note.--To insure clarity, tract and city block codes have been deleted from "The Third Map" in the above illustration. The data presented are fictitious.

APPENDIX G:

TEST ADMINISTRATION

*Test Administration**

INTRODUCTION TO STUDENTS

THE [NAME OF DISTRICT] DISTRICT IS LOOKING INTO THE QUALITY OF ITS SCHOOL SYSTEM. IT IS CONDUCTING A LARGE STUDY FOR THE PURPOSE OF IMPROVING ITS PROGRAMS. YOUR CLASS HAS BEEN SELECTED TO PARTICIPATE IN THIS STUDY.

SINCE THE PURPOSE OF THESE TESTS IS TO HELP [NAME OF DISTRICT] EXAMINE THE QUALITY OF ITS SCHOOLS, YOU WILL PROBABLY FIND THAT MOST OF THE TESTS ARE UNUSUAL, AND DIFFERENT FROM ANY TESTS YOU HAVE EVER TAKEN BEFORE. WE HOPE THAT YOU WILL ALSO FIND THEM INTERESTING.

THE RESULTS OF THESE TESTS WILL NOT AFFECT YOUR SCHOOL MARKS (GRADES) IN ANY WAY. YOUR TEACHERS WILL NOT SEE YOUR TEST PAPERS.

*Facsimiles of actual instructions to testers reproduced with permission from Riverside Research Institute.

DISTRIBUTION OF TEST BOOKLETS

1. Distribute tests by student's name. Write "absent" or "transferred" on envelopes of missing students.
2. If a student is present for whom no test envelope has been prepared, give that student one of the blank test assemblies that will be in your carton. On the envelope, ask the student to write:
    A. His name
    B. His school
    C. His teacher's name

    Also ask the student to write his name on the first page of the sub-tests (A & B) which are inside the envelope, and on the 2 answer sheets associated with the STEP test.
3. If a student is present who objects to the test or refuses to cooperate, ask the teacher to relocate the student outside the testing room. He is to be excused from the entire testing session.

PREPARATION FOR TESTING

TIME OF ARRIVAL. You should arrive at the principal's office at least 20 minutes before the testing is scheduled to begin.

1. You will be assigned a room number, and will be given the test carton for that room. Inside the carton there will be a test envelope for each child in the class, with the child's name already on it.
2. As soon as you have received your materials, proceed to your room.
3. The teacher will be expecting you. You should introduce yourself to the teacher and ask her to remain in the room during the testing to maintain order, and to handle possible emergencies.
4. Before distributing booklets, ask students to separate desks to maximum possible distance, if room is equipped with movable furniture.
5. Ask each student to take out a pencil and put the pencil onto the desk. Desks should be cleared of all other materials.
6. On the door, post a sign (there will be one in each test carton) saying "Testing. Please do not disturb."

YOU ARE NOW READY TO BEGIN THE TESTING SESSION

TEST ADMINISTRATION

(All testers should have a watch or small clock available)

Tell students to remove all tests from their envelopes. Then say:

FIND TEST "A", THE PEOPLE TEST. PUT THE OTHER TESTS BACK INTO THE ENVELOPE; AND KEEP TEST A ON YOUR DESK.

Check to see that all students have only The People Test on their desks. Then say:

I WILL READ THE DIRECTIONS FOR THE PEOPLE TEST ALOUD WHILE YOU READ THEM TO YOURSELVES SILENTLY.

Read directions for The People Test aloud, then say:

LOOK AT PAGE A AGAIN, AND LOOK AT PAGE B AGAIN. NOW TURN TO THE FIRST PAGE AFTER PAGE B. THERE IS ONE PERSON ON THE SIDE AND ANOTHER ONE UP ON THE TAB. BEND BACK THE CORNER OF THE TAB NEAR THE STAPLE (DEMONSTRATE) AND YOU SHOULD BE ABLE TO PEEL OFF THE TAB WITHOUT ANY TROUBLE. PUT THE TAB WHERE YOU THINK IT SHOULD GO, SOMEWHERE ALONG THE LINE.

REMEMBER THE DIRECTIONS. THE MORE ALIKE THEY ARE, THE CLOSER TOGETHER YOU SHOULD PUT THEM. DON'T SPEND TOO MUCH TIME DECIDING.

NOW TURN TO THE NEXT PAGE. THERE IS A PERSON'S PICTURE ON THIS PAGE AND THERE IS THE FIGURE THAT MEANS YOU ARE SUPPOSED TO THINK ABOUT YOURSELF. PEEL THE TAB AND PUT IT ON THE LINE. PUT IT CLOSE IF YOU AND THIS PERSON ARE ALIKE AND PUT IT FAR AWAY IF YOU AND THIS PERSON ARE NOT ALIKE.

NOW THAT YOU HAVE THE IDEA, GO AHEAD AND COMPLETE THE REST OF THE PAGES IN THE BOOKLET. DON'T LEAVE ANY PAGES OUT. WORK QUICKLY, BUT BE SURE TO THINK ABOUT THE TWO PEOPLE ON EACH PAGE.

WHEN YOU FINISH, BE SURE TO DOUBLE CHECK TO BE SURE THAT YOU DID NOT LEAVE ANY PAGES OUT.

Wait until all students have finished, then say:

NOW PUT TEST A INTO THE ENVELOPE AND TAKE OUT TEST B. THIS TEST IS CALLED "TEST OF THE SPECIAL MEANING OF WORDS." I WILL READ THE DIRECTIONS ALOUD TO YOU WHILE YOU READ THEM SILENTLY TO YOURSELVES.

Read directions aloud, then say:

DO THE FIRST SIX PAGES. WHEN YOU FINISH THE PAGE WITH THE WORD "TEACHER" (at this point, tester should write the word "teacher" on the chalkboard), STOP AND WAIT FOR FURTHER INSTRUCTIONS. PLEASE WORK QUICKLY. YOU WILL HAVE TEN MINUTES FOR THESE SIX PAGES.

Allow ten minutes to elapse. Then say:

NOW TURN TO THE NEXT PAGE. IT IS A NEW TEST CALLED THE STUDENT OUTLOOK TEST. I WILL READ THE DIRECTIONS ALOUD WHILE YOU READ THEM TO YOURSELVES.

Read directions to students. Then add:

CIRCLE ONLY A OR B. YOU SHOULD ONLY GIVE <u>ONE</u> ANSWER FOR EACH QUESTION.

Read each question with options A and B. Read the item slowly. Pause briefly between items to allow students time to make their choices. Tester may read item aloud again if a student re-

quests it or if some students are having reading problems with the item.

After Item 10, say:

TURN TO THE NEXT PAGE. ON THIS PAGE WE BEGIN THE SECOND PART OF THE TEST OF THE SPECIAL MEANING OF WORDS. THE DIRECTIONS ARE THE SAME AS THEY WERE FOR THE FIRST PART. IF YOU DO NOT REMEMBER WHAT TO DO, YOU MAY LOOK BACK TO THE FIRST PART AND REVIEW THE DIRECTIONS.

IN THIS PART YOU SHOULD DO SIX PAGES, AND STOP WHEN YOU HAVE FINISHED THE PAGE WITH THE WORD "LEARNING" (at this point, tester should write the word "learning" on the chalkboard) ON TOP OF THE PAGE. YOU WILL HAVE TEN MINUTES TO DO THESE SIX PAGES.

Allow ten minutes to pass, then say:

TURN TO THE NEXT PAGE.

Tester reads directions aloud. Students complete first page of social choices. Then say:

TURN TO THE NEXT PAGE.

Tester reads directions aloud. Students complete second page of social choices. Then say:

Turn to the next page. On this page, we BEGIN THE LAST PART OF THE TEST OF THE SPECIAL MEANING OF WORDS. THE DIRECTIONS ARE THE SAME AS THEY WERE FOR THE FIRST AND THE SECOND PARTS. IF YOU DON'T REMEMBER WHAT TO DO, LOOK BACK TO THE DIRECTIONS AT THE BEGINNING OF THE BOOKLET. IN THIS PART YOU HAVE SEVEN PAGES TO DO. YOU WILL HAVE TWELVE MINUTES TO DO THESE SEVEN PAGES.

WHEN YOU HAVE FINISHED, CLOSE YOUR BOOKLET, AND PUT IT

INTO YOUR ENVELOPE.

Allow 12 minutes to pass, then stop students who are still working and tell them to close booklets and put them into their envelope.

November 18 - Announce a ten-minute break, and turn class over to the teacher.

November 19 - Testing ends here for the day. Collect booklets as indicated on "COLLECTION" sheet.

STEP ADMINISTRATION

November 18 - Students should return to their seats and be ready to resume working at the end of the ten minute break.

OR

November 20 - After envelopes are distributed, say:

TAKE THE RED AND WHITE BOOKLET OUT OF YOUR ENVELOPE. THERE ARE TWO SHEETS ALONG WITH IT. ONE IS RED, WHITE, AND BLUE, AND THE OTHER IS ONLY WHITE WITH BLACK LETTERS. TAKE THE SHEET WHICH IS WHITE WITH THE BLACK LETTERS. IT SHOULD SAY "READING TEST: INTRODUCTION" ON TOP. I'LL READ IT ALOUD WHILE YOU READ IT SILENTLY.

Read "Introduction" sheet and allow students 1 minute to look through Part One and 1 minute to look through Part Two. Then say:

NOW PUT THIS SHEET INTO YOUR ENVELOPE. YOU SHOULD NOT REMOVE IT OR CHANGE ANYTHING THAT YOU HAVE WRITTEN ON IT.

Then proceed with administration of STEP, according to directions on manual of instructions (STEP--Directions for Administering).

Allow a three minute break between Part One and Part Two of the STEP test. Students may talk, but should not leave their seats.

When time is called at the end of Part Two of STEP, say:

PUT THE TEST BOOKLET AND RED, WHITE, AND BLUE ANSWER SHEET INTO THE MANILA ENVELOPES. CLOSE THE ENVELOPE AND LOCK IT. I WILL COME AROUND TO YOUR SEAT TO COLLECT THE ENVELOPE.

APPENDIX H:

ROSTER SHEETS--CODING SHEETS

*Roster Sheets - Coding Sheets**

These roster sheets are set up so that marking of the tests can be done easily and with the minimum amount of confusion.

The [Name of District] Student # is located on the top right hand corner of the test booklet and also on the top line of the envelope. Place this number, exactly as it appears, in the 5 boxes labelled [Name of District] Student # on the roster sheets. The [Name of District] Student # is always 5 digits, never more or less. All the boxes should be filled in. If there is any difficulty finding it, please ask.

After the [Name of District] Student # on the roster sheets, there is a line labelled "RRI #". If you are scoring a *junior high school class*, the RRI # can be found on the third line down from the top on the envelope. If you are scoring any other classes, you can locate this number on the class lists. Place this 6-digit number in the appropriate boxes.

On the roster sheet, there is a line labelled "TEACHER". We are going to place 3 numbers in these boxes. The number for the teacher whose class you are scoring can be located on the list of teachers you will be given.

*Facsimiles of actual roster and coding sheets reproduced with permission from Riverside Research Institute.

This list is in alphabetical order. Find the teacher's name and the number next to it. Copy that number on your roster sheet.

PEOPLE TEST

Turn to the "PEOPLE TEST". This is the test that has pictures of 8 figures on the first page ("A") and a stick figure on the next page ("B"). Scoring will begin on the following page.

The roster sheet has a line for the "PEOPLE TEST". After every two boxes the line is extended. This indicates where one page ends and the next begins. There are 24 boxes in all - 12 pairs of 2 boxes with demarcations between each pair.

Before you begin scoring, note the Form number of the test you are scoring. This number is located on the top right hand corner of the first page of this booklet. Write this Form number in the single box labelled "FORM" on the roster sheet. Turn to the last page of the "PEOPLE TEST". Check the two figures on this page with the poster in front of the room which is labelled "PEOPLE TEST". On the poster find the form number which corresponds to the form number on which you are working. Check to see that your page contains the same pictures as the poster does. Please ask for directions if pictures do not match.

Turn to the first page being scored. To score this test we need to measure the distance between the two figures on the page. Always measure from center of head to center of head using the following procedure. Place ruler so that BOTTOM edge lies on the line (see poster) and '0' mark is in line with the middle of the head of the figure on the

left. (TARGET FIGURE) Holding ruler steady, note to the nearest centimeter the distance between the '0' and figure on the right (TAB). Be sure to measure to the middle of head of this figure as you did on the other.

Record this measurement in the two (2) spaces provided. If measurement is less than 10 centimeters ALWAYS place a zero (0) before number so that both spaces are occupied. For example, five centimeters is recorded as 05, eight centimeters as 08, twelve centimeters as 12, etc.

Continue this procedure until all twelve (12) pages are completed. If you find any "tabs" that are missing, any arrows, or anything out of the ordinary, please ask for directions.

TEST OF SPECIAL MEANINGS OF WORDS

SPECIAL MEANINGS OF WORDS

Turn to test booklet page with word "MONEY" on top. Notice there are 11 items (lines) listed down the page. Each item (line) consists of five possible choices. The students were asked to place a check mark above one of the five to indicate their choice.

Now turn to your roster sheet. Notice that there are 11 boxes preceding the word "MONEY". Each of these 11 boxes is for one of the 11 lines on the page.

Now hold the piece of cardboard that is provided which has the numbers 1, 2, 3, 4, and 5 written on top of it. Place it underneath the five choices for the first line (see poster). You will notice that each number corresponds to one of the five choices. For example, when the cardboard is properly placed, the number 1 is below "very quiet", 2 is below "quiet", 3 is below "not quiet and not noisy", 4 is below "noisy" and 5 is below "very noisy".

Observe the placement of the check mark. The number appearing on the cardboard below the check mark should be written in the first box of the line marked "MONEY". Continue this procedure down the page making sure not to skip any items or do any twice. When finished, the "MONEY" line of the roster sheet should be filled in completely.

If an item is not checked at all, skip the corresponding box on the roster sheet. A blank item must have an empty box.

If an item has two or more checks, please ask for directions.

Now go on to the following page, which is "SCHOOL". The line on the roster sheet is also "SCHOOL". Continue till end of booklet, the final page being "TEACHER".

TEST OF SPECIAL MEANINGS OF WORDS

SUCCESS

Turn to test booklet page with word "SUCCESS" on top. Notice there are 11 items (lines) listed down the page. Each item (line) consists of five possible choices. The students were asked to place a check mark above one of the five to indicate their choice.

Now turn to your roster sheet. Notice that there are 11 boxes preceding the word "SUCCESS". Each of these 11 boxes is for one of the 11 lines on the page.

Now hold the piece of cardboard that is provided which has the numbers 1, 2, 3, 4, and 5 written on top of it. Place it underneath the five choices for the first line (see poster). You will notice that each number corresponds to one of the five choices. For example, when the cardboard is properly placed, the number 1 is below "very quiet", 2 is below "quiet", 3 is below "not quiet and not noisy", 4 is below "noisy" and 5 is below "very noisy".

Observe the placement of the check mark. The number appearing on the cardboard below the check mark should be written in the first box on the line marked "SUCCESS". Continue this procedure down the page making sure not to skip any items or do any twice. When finished, the "SUCCESS" line of the roster sheet should be filled in completely.

If an item is not checked at all, skip the corresponding box on the roster sheet. A blank item must have an empty box.

If an item has two or more checks, please ask for directions.

Now go on to the following page, which is "STUDENT". The line on the roster sheet is also "STUDENT". Continue till end of blooklet, the final page being "LEARNING".

TEST OF SPECIAL MEANINGS OF WORDS

LIFE

Turn to test booklet page with word "LIFE" on top. Notice there are 11 items (lines) listed down the page. Each item (line) consists of five possible choices. The students were asked to place a check mark above one of the five to indicate their choice.

Now turn to your roster sheet. Notice that there are 11 boxes preceding the word "LIFE". Each of these 11 boxes is for one of the 11 lines on the page.

Now hold the piece of cardboard that is provided which has the numbers 1, 2, 3, 4, and 5 written on top of it. Place it underneath the five choices for the first line (see poster). You will notice that each number corresponds to one of the five choices. For example, when the cardboard is properly placed, the number 1 is below "very quiet", 2 is below "quiet", 3 is below "not quiet and not noisy", 4 is below "noisy" and 5 is below "very noisy".

Observe the placement of the check mark. The number appearing on the cardboard below the check mark should be written in the first box of the line marked "LIFE". Continue this procedure down the page making sure not to skip any items or do any twice. When finished, the "LIFE" line of the roster sheet should be filled in completely.

If an item is not checked at all, skip the corresponding box on the roster sheet. A blank item must have an empty box. If an item has two or more checks, please ask for direc-

tions.

Now go on to the following page, which is "SCHOOL RULES". The line on the roster sheet is also "SCHOOL RULES". Continue till end of booklet, the final page being "FRIEND".

The roster sheet for the "LIFE" set, only goes up to the page entitled "TEST". The following page "FRIEND" is located on another roster sheet labelled "LIFE (Page 2 of 2)". Score "FRIEND" on this sheet.

STUDENT OUTLOOK

This test has a total of 10 questions with "A" and "B" choices. In marking,

A is scored 1

B is scored 2

Ten boxes are provided for scoring. The answer for question 1 goes in box 1 and continues through question 10 and box 10. If a question is not answered leave that box empty, and proceed to the next question and box. After finishing all ten questions, look over the answers. If all answers are 1, place a 1 in box marked "All 1's or all 2's". If all answers are 2's place a 2 in box marked "All 1's or all 2's". If the answers include both 1's and 2's don't write anything in the "all 1's or all 2's" box--leave it blank. If there are any questions, please ask.

STEP TEST

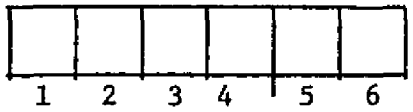
There are 3 different grade level forms for this test. FORM 2A for grades 10-12, FORM 3A for grades 7-9, and FORM 4A for grades 5-6. An answer template is provided for each form. The template contains 70 circular holes. These are the correct answers. Before placing this template over the answer sheet, check the answer sheet. If 2 answers are given for any one question, place a red line across that number line. If student used pen and one answer is scribbled out, no red mark is made.

Now place template over answer sheet. If blackened spot shows through hole that answer is correct. Place no red mark there. If blackened mark does not show through hole, place a red mark across hole. Continue marking until complete sheet is marked.

Remove template from answer sheet. Check PART I. Count the number of red marks that you made. Subtract this number from 35 and place it in the first two boxes on the roster sheet for the STEP TEST. Check PART II. Count the number of red marks that you made. Subtract this number from 35 and place it in the last two boxes on the roster sheet for the STEP TEST.

GRADES 5-9

STUDENT #

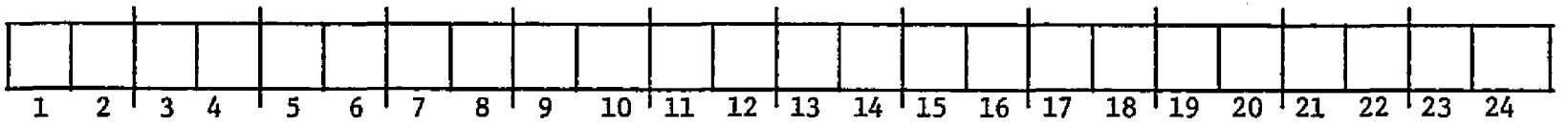


RRI #

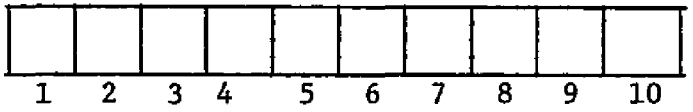
CARD SEQUENCE #

TEACHER

FORM

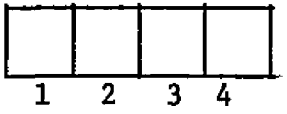


PEOPLE TEST

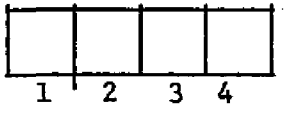


STUDENT OUTLOOK

ALL 1's OR ALL 2's



READING TEST: INTRODUCTION

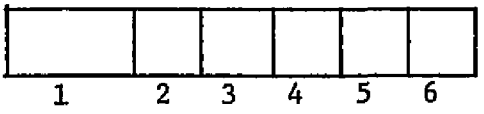


STEP TEST

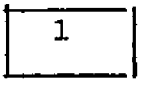
TEST OF THE SPECIAL MEANING OF WORDS - MONEY GRADES 5-12

SPECIAL MEANINGS OF WORDS

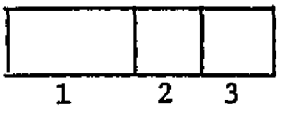
STUDENT #



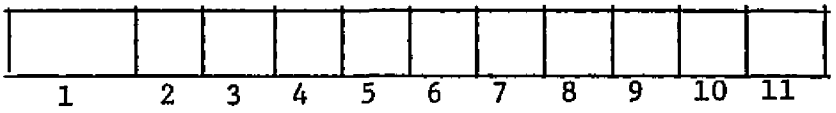
RRI #



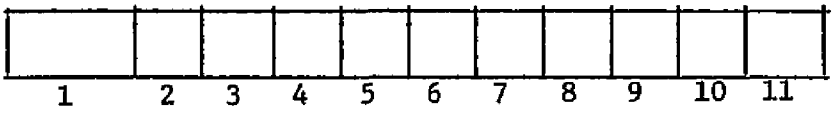
CARD SEQUENCE #



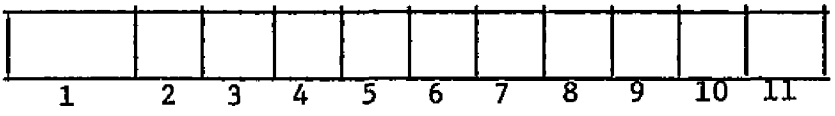
TEACHER



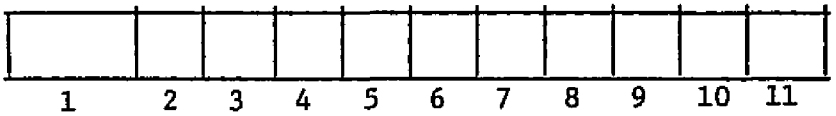
MONEY



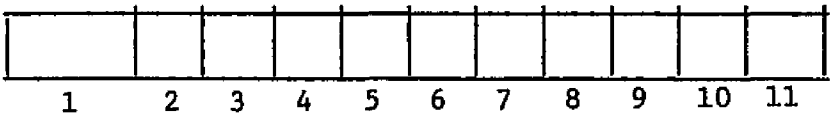
SCHOOL



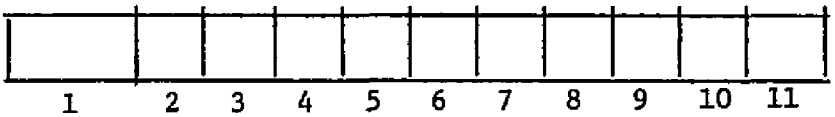
CURIOSITY



I AM



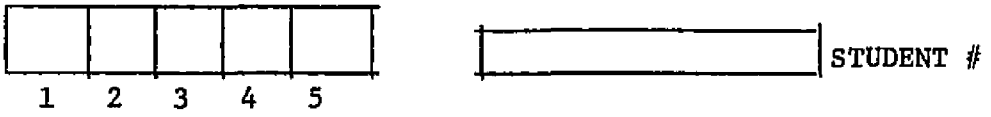
MY NEIGHBORHOOD

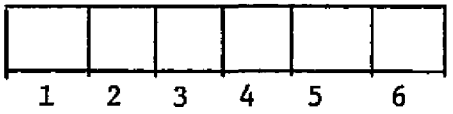


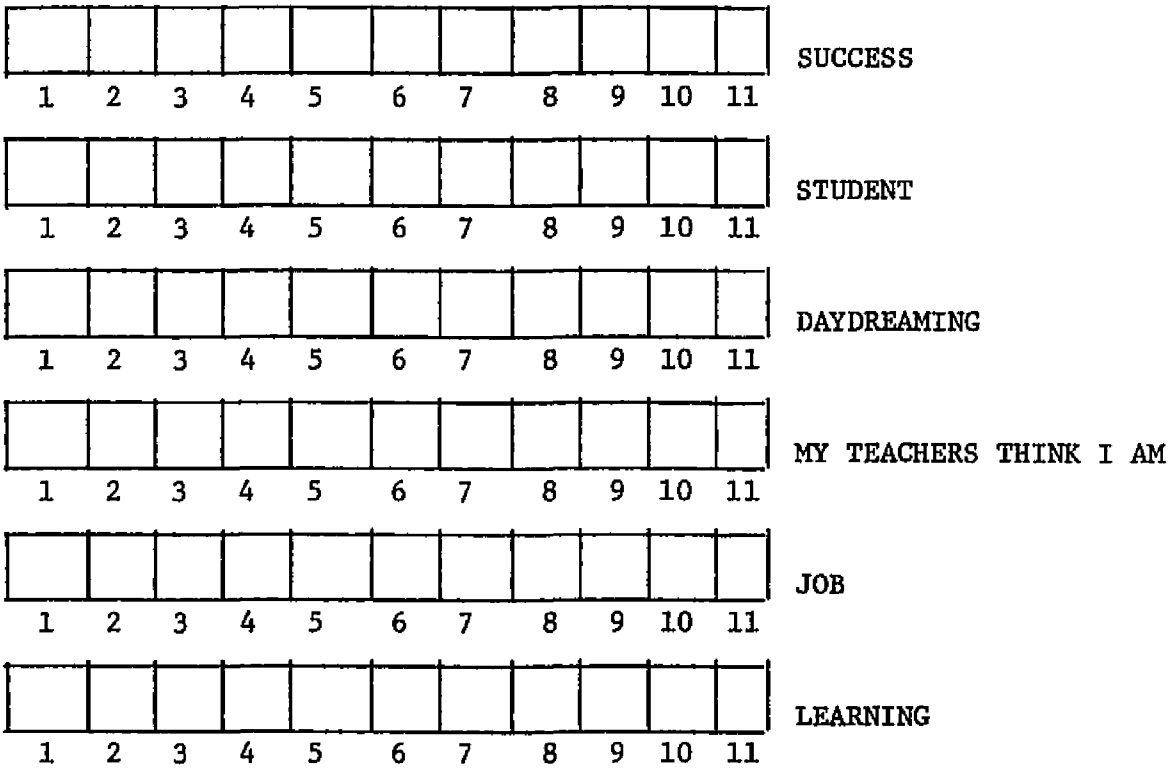
TEACHER

TEST OF THE SPECIAL MEANING OF WORDS GRADES 5-12

SUCCESS

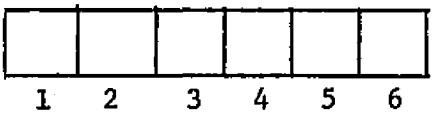


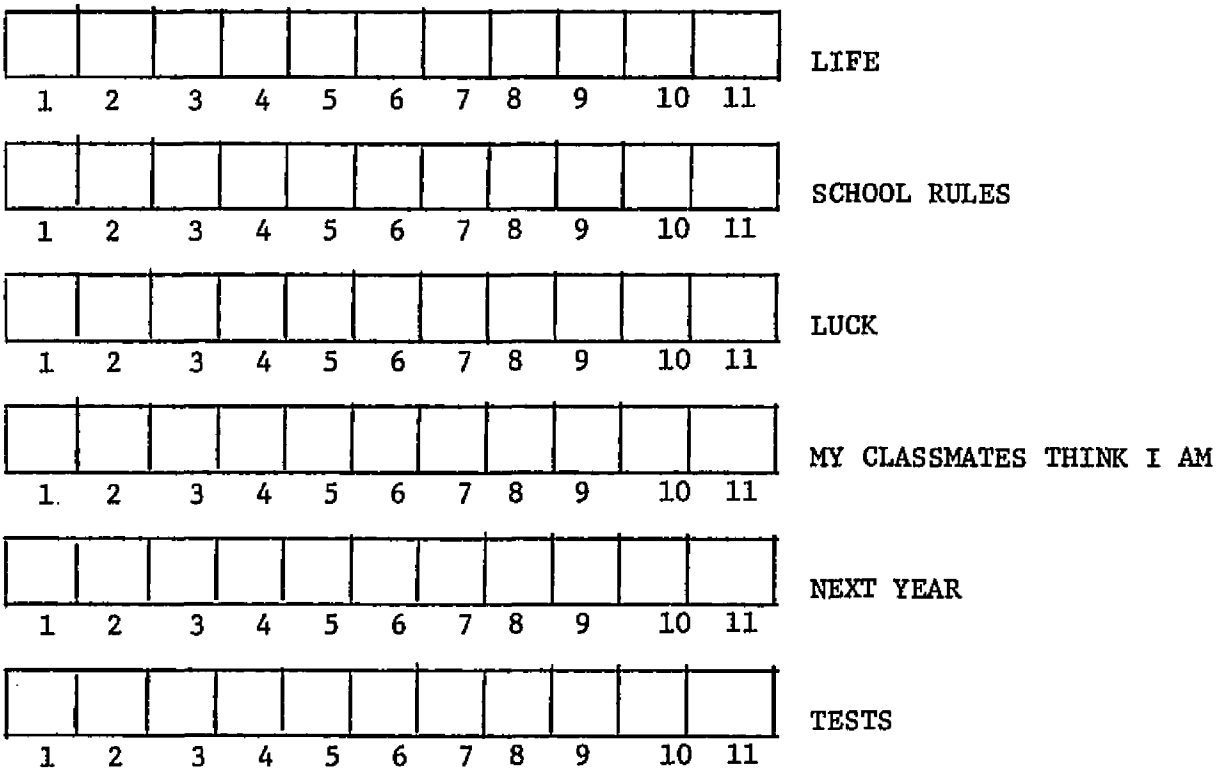




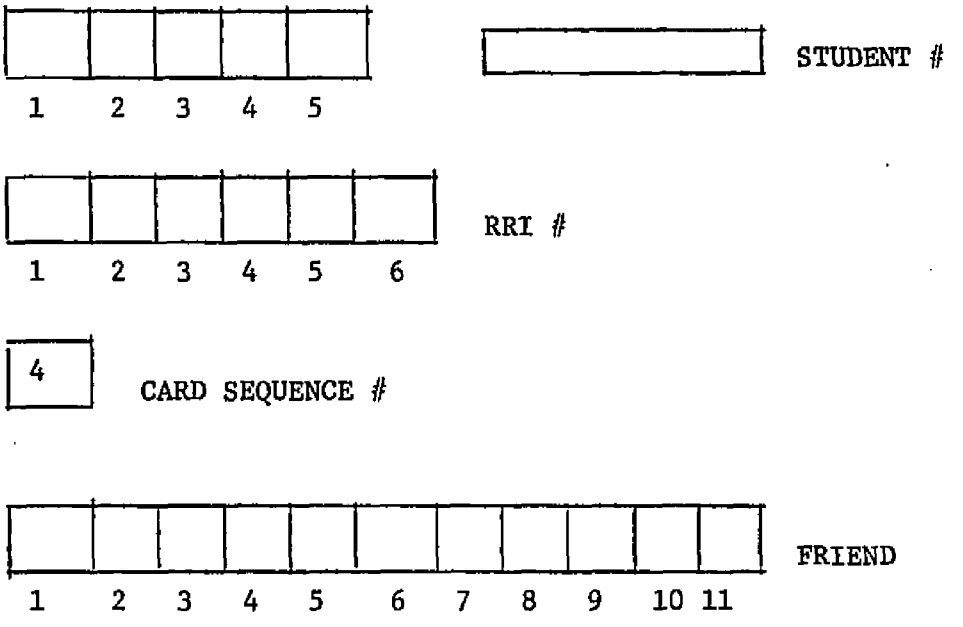
TEST OF THE SPECIAL MEANING OF WORDS GRADES 5-12

LIFE (FIRST PAGE OF TWO)





LIFE (SECOND PAGE OF TWO)



APPENDIX I

SEMANTIC DIFFERENTIAL CONCEPT AND SCALE MEANS

MATRIX OF CONCEPT MEANS

The following computer output show means for each experimental group. LVLIBL represents scores for Blacks in level 1 (12% Black). The next seven columns give the means for levels 2 - 4 Black and levels 1 - 4 white. SCHOOL01 represents "quiet", the first scale on the school concept (see Appendix D). SCHOOL02 - SCHOOL11 represents the remaining scales. Each concept has eleven scales.

SEMANTIC ANALYSIS OF CONCEPTS/MATRIX OF MEANS

LEFT/RIGHT MERGE OF: LVL3BLWH AND LVL4WH ***PAGE 1 OF FILE CONMEANS

POSITION		1	2	3	4	5	6	7	8
	LABEL	LVL1BL	LVL2BL	LVL3BL	LVL4BL	LVL1WH	LVL2WH	LVL3WH	LVL4WH
1	SCHOOL01	3.925	3.316	3.656	3.549	3.551	3.338	3.735	3.434
2	SCHOOL02	4.250	4.342	4.220	4.296	4.154	4.128	4.374	4.250
3	SCHOOL03	1.909	1.921	2.022	2.071	1.997	2.155	1.701	2.059
4	SCHOOL04	3.400	3.474	3.396	3.229	3.420	3.568	3.439	3.151
5	SCHOOL05	2.475	2.199	2.385	2.317	2.341	2.961	2.516	2.384
6	SCHOOL06	3.800	3.757	3.759	3.739	3.676	3.510	3.770	3.651
7	SCHOOL07	2.800	2.737	2.900	2.683	2.734	2.769	2.656	2.572
8	SCHOOL08	3.775	3.553	2.685	2.496	2.429	2.588	2.542	2.536
9	SCHOOL09	3.675	3.737	3.473	3.500	3.558	3.660	3.552	3.587
10	SCHOOL10	3.150	3.105	3.309	3.007	2.952	2.959	3.032	2.934
11	SCHOOL11	3.875	3.895	3.879	3.779	3.788	3.784	3.729	3.867
12	CURICS01	2.795	2.395	2.681	2.457	2.616	2.619	2.510	2.632
13	CURICS02	3.684	3.316	3.433	3.460	3.697	3.660	3.706	3.658
14	CURICS03	3.333	3.432	3.100	3.266	3.149	3.272	3.250	3.026
15	CURICS04	3.513	3.658	3.571	3.667	3.503	3.527	3.737	3.559
16	CURICS05	2.129	2.000	2.099	2.210	1.935	1.878	1.711	1.770
17	CURICS06	3.868	2.895	2.876	2.950	2.716	2.669	2.693	2.908
18	CURICS07	2.923	2.868	2.921	2.948	2.897	2.900	2.803	2.934
19	CURICS08	2.949	2.632	2.888	2.547	2.479	2.630	2.539	2.560
20	CURICS09	3.410	3.263	3.517	3.559	3.625	3.589	3.719	3.651
21	CURICS10	3.000	3.139	2.841	2.941	2.677	2.738	2.660	2.780
22	CURICS11	2.974	3.263	3.157	3.721	2.904	3.048	3.098	3.033
23	LEARN01	2.475	2.324	2.242	2.343	2.397	2.393	2.304	2.570
24	LEARN02	3.650	4.000	3.783	3.735	3.987	3.807	3.872	3.777
25	LEARN03	2.949	2.765	3.202	2.948	2.734	2.893	2.926	2.858
26	LEARN04	3.900	3.941	3.951	3.816	4.036	3.950	4.014	3.892
27	LEARN05	1.923	2.000	1.940	2.074	1.968	1.856	1.959	1.966
28	LEARN06	2.975	3.182	2.988	3.147	3.023	3.152	2.919	3.007
29	LEARN07	3.000	3.097	2.805	2.962	2.743	2.650	2.777	2.717
30	LEARN08	2.475	2.500	2.366	2.319	2.149	2.191	2.150	2.151
31	LEARN09	3.975	3.938	4.098	3.913	4.023	3.956	4.020	3.952
32	LEARN10	3.128	3.063	2.831	2.828	2.914	2.957	2.730	2.747
33	LEARN11	4.051	3.944	4.159	3.919	4.148	4.007	4.155	4.096
34	SCHOOL01	2.368	2.692	2.511	2.741	2.950	2.719	2.641	2.668
35	SCHOOL02	3.132	3.538	3.433	3.475	3.559	3.493	3.553	3.414
36	SCHOOL03	2.923	2.395	2.780	2.607	2.421	2.490	2.605	2.614
37	SCHOOL04	3.692	3.282	3.467	3.489	3.574	3.534	3.634	3.750
38	SCHOOL05	2.845	2.744	2.722	3.085	3.454	3.267	3.132	3.184
39	SCHOOL06	3.282	3.436	3.220	3.338	3.459	3.342	3.464	3.138
40	SCHOOL07	3.154	3.231	2.910	2.929	3.036	3.007	3.039	2.816
41	SCHOOL08	2.659	2.538	2.922	2.775	2.852	2.555	2.667	2.605
42	SCHOOL09	2.684	3.156	3.202	3.121	2.909	3.144	3.157	3.118
43	SCHOOL10	3.051	3.179	3.011	3.179	2.907	2.856	2.875	2.770
44	SCHOOL11	3.718	3.590	3.681	3.455	3.976	3.970	3.824	3.776
45	TEST01	1.919	1.974	2.216	2.103	2.174	1.996	1.973	1.914
46	TEST02	3.324	3.462	3.466	3.553	3.592	3.563	3.473	3.632
47	TEST03	2.965	3.051	3.035	2.759	2.674	2.611	2.770	2.993
48	TEST04	4.083	3.492	3.862	3.688	3.825	3.818	3.939	3.908
49	TEST05	2.600	2.333	2.250	2.410	2.719	2.734	2.765	2.454
50	TEST06	3.297	3.205	3.046	3.104	3.312	3.326	3.366	3.152

SEMANTIC ANALYSIS OF CONCEPTS/MATRIX OF MEANS

LEFT/RIGHT MERGE OF: LVL3BLWH AND LVL4WH ***PAGE 2 OF FILE CONMEANS

POSITION		1	2	3	4	5	6	7	8
	LABEL	LVL1BL	LVL2BL	LVL3BL	LVL4BL	LVL1WH	LVL2WH	LVL3WH	LVL4WH
51	TEST07	3.109	3.179	2.767	2.712	2.792	3.021	2.764	2.745
52	TEST08	2.703	2.474	2.862	2.604	2.487	2.629	2.459	2.430
53	TEST09	3.676	3.795	3.632	3.529	3.587	3.608	3.544	3.647
54	TEST10	2.973	3.179	3.326	3.036	3.224	3.203	3.073	2.993
55	TEST11	4.135	3.637	3.724	3.806	3.831	3.741	3.840	3.740
56	IAM01	2.132	2.526	2.472	2.193	2.051	1.986	2.191	2.133
57	IAM02	3.158	3.211	3.056	3.007	2.826	2.740	2.993	3.101
58	IAM03	2.421	2.526	2.330	2.300	2.277	2.306	2.145	2.235
59	IAM04	3.947	3.514	3.862	3.971	3.942	3.750	3.901	3.967
60	IAM05	2.942	2.649	2.753	2.702	2.694	2.782	2.822	2.693
61	IAM06	3.263	3.216	3.118	3.036	3.174	3.338	3.219	3.349
62	IAM07	2.105	2.229	1.999	2.028	2.310	2.245	2.289	2.267
63	IAM08	3.842	3.629	4.024	4.050	3.971	3.848	3.788	3.772
64	IAM09	2.351	2.176	2.440	2.343	2.294	2.255	2.360	2.176
65	IAM10	3.659	3.412	3.828	3.786	3.571	3.497	3.709	3.619
66	IAM11	2.079	2.219	2.221	2.370	2.390	2.399	2.257	2.364
67	TEACH01	2.027	2.286	2.329	2.211	2.209	2.121	2.195	2.192
68	TEACH02	3.189	3.179	3.165	3.205	2.994	2.716	2.913	3.027
69	TEACH03	2.139	2.357	2.459	2.470	2.436	2.486	2.405	2.483
70	TEACH04	3.486	3.704	3.639	3.641	3.648	3.906	3.480	3.745
71	TEACH05	2.541	2.815	3.205	2.960	3.050	3.321	3.196	3.210
72	TEACH06	3.417	3.222	3.000	2.954	3.251	3.043	2.953	2.957
73	TEACH07	2.972	2.722	2.702	2.554	2.613	2.391	2.497	2.294
74	TEACH08	3.611	3.889	3.494	3.639	3.440	3.580	3.349	3.829
75	TEACH09	2.222	2.446	2.643	2.496	2.328	2.384	2.517	2.296
76	TEACH10	3.722	3.926	3.702	3.740	3.639	3.609	3.477	3.739
77	TEACH11	2.135	2.148	2.232	2.151	1.947	1.889	2.111	1.978
78	STUDNT01	2.308	2.256	2.511	2.280	2.141	2.215	2.258	2.139
79	STUDNT02	3.231	2.949	2.775	2.746	2.914	2.651	2.742	2.848
80	STUDNT03	2.205	2.211	2.090	2.254	2.315	2.349	2.355	2.279
81	STUDNT04	3.667	3.789	3.831	3.974	3.991	3.679	3.768	3.907
82	STUDNT05	3.051	2.972	2.719	2.495	2.638	2.738	2.838	2.589
83	STUDNT06	3.128	3.359	2.944	3.232	3.109	3.161	3.219	3.238
84	STUDNT07	2.211	2.333	2.205	2.063	2.174	2.309	2.168	2.166
85	STUDNT08	3.897	3.492	3.921	3.887	3.994	3.723	3.729	3.893
86	STUDNT09	2.243	2.436	2.291	2.254	2.280	2.396	2.394	2.298
87	STUDNT10	3.590	3.718	3.722	3.776	3.548	3.483	3.671	3.742
88	STUDNT11	2.027	2.342	2.236	2.191	2.187	2.292	2.216	2.197
89	MYTCH01	2.350	2.216	2.533	2.362	2.416	2.359	2.616	2.573
90	MYTCH02	3.375	3.127	2.856	2.771	2.906	2.916	2.974	2.987
91	MYTCH03	2.125	2.486	2.433	2.400	2.455	2.437	2.457	2.324
92	MYTCH04	3.538	3.297	3.600	3.600	3.719	3.587	3.617	3.711
93	MYTCH05	3.200	3.139	2.667	2.553	2.728	2.817	2.818	2.760
94	MYTCH06	2.725	3.324	2.820	2.993	3.287	3.444	3.196	3.353
95	MYTCH07	2.231	2.422	2.182	2.135	2.513	2.503	2.383	2.360
96	MYTCH08	3.300	3.139	3.594	3.546	3.906	3.500	3.732	3.638
97	MYTCH09	2.441	2.703	2.682	2.596	2.206	2.530	2.405	2.351
98	MYTCH10	3.300	3.111	3.437	3.418	3.537	3.408	3.455	3.517
99	MYTCH11	2.421	2.457	2.437	2.401	2.399	2.468	2.438	2.303
100	CLASNT01	2.289	2.500	2.562	2.314	2.377	2.382	2.458	2.461

SEMANTIC ANALYSIS OF CONCEPTS/MATRIX OF MEANS

LEFT/RIGHT MERGE OF -LVL3BLWH AND LVL4WH ***PAGE 3 OF FILE CONMEANS

POSITION		1	2	3	4	5	6	7	8
	LABEL	LVL1BL	LVL2BL	LVL3BL	LVL4BL	LVL1WH	LVL2WH	LVL3WH	LVL4WH
101	CLASMT02	3.199	2.658	2.747	2.469	2.682	2.743	2.703	2.748
102	CLASMT03	2.969	2.684	2.230	2.357	2.452	2.424	2.432	2.497
103	CLASMT04	3.737	3.105	3.805	3.739	3.576	3.729	3.613	3.664
104	CLASMT05	2.711	2.604	2.605	2.924	2.893	2.750	2.813	2.730
105	CLASMT06	3.024	3.079	2.770	2.978	3.165	3.104	3.176	3.237
106	CLASMT07	2.079	2.421	2.264	2.079	2.599	2.500	2.519	2.566
107	CLASMT08	3.789	3.421	3.767	3.834	3.730	3.625	3.699	3.686
108	CLASMT09	2.109	2.942	2.459	2.345	2.394	2.431	2.506	2.375
109	CLASMT10	3.649	3.189	3.581	3.642	3.467	3.354	3.545	3.457
110	CLASMT11	2.270	2.989	2.292	2.321	2.605	2.521	2.567	2.514
111	FRIENDO1	2.447	2.132	2.024	2.122	1.910	1.892	2.113	2.034
112	FRIENDO2	3.289	2.737	2.687	2.584	2.775	2.439	2.616	2.784
113	FRIENDO3	2.132	2.027	1.939	1.971	2.053	2.029	2.000	2.081
114	FRIENDO4	3.916	3.869	4.069	3.949	4.097	4.021	3.980	3.986
115	FRIENDO5	2.658	2.474	2.720	2.529	2.433	2.343	2.727	2.372
116	FRIENDO6	3.316	3.263	3.072	3.059	3.180	3.101	3.133	3.145
117	FRIENDO7	2.447	2.342	2.145	1.993	2.269	2.179	2.315	2.289
118	FRIENDO8	4.026	3.895	3.744	3.978	3.840	3.893	3.912	3.838
119	FRIENDO9	2.263	2.405	2.284	2.229	2.126	2.271	2.302	2.122
120	FRIENDIO	3.484	3.447	3.759	3.909	3.700	3.664	3.633	3.741
121	FRIENDII	2.108	2.089	2.094	2.137	1.970	2.081	2.143	2.055

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RETAIN=CONMEANS$

XHEAD=(CONCEPT MEAN DIFFERENCES SQUARED)$

TRANSPOS,
   I*=CONMEANS(SETX L1B,L1W TO LVL1BL - LVL1WH)
        (SETX L1B,L2B TO LVL1BL - LVL2BL)
        (SETX L2B,L2W TO LVL2BL - LVL2WH)
        (SETX L2B,L3W TO LVL2BL - LVL3BL)
        (SETX L3B,L3W TO LVL3BL - LVL3WH)
        (SETX L3B,L4B TO LVL3BL - LVL4BL)
        (SETX L4B,L4W TO LVL4BL - LVL4WH)
        (FOR (L1B,L1W - L4B,L4W) SET .X. TO .X. **2)
        (C L1B,L1W - L4B,L4W),
   OUT=CONDSOS$

SAVE=CONDSOS$

........,* FILE CONDSOS,      7 ROWS BY   121 COLUMNS, HAS BEEN SAVED ON THE PDT AT POSITION    10.

PRINT=3/CONDSOS$
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