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To the Graduate Council:

I am submitting herewith a dissertation written by Wyman Loren Williams entitled "A Study of School Desegregation: Self-Prediction of Behavior and Correlates of Self-Prediction." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

J. M. Porter, Major Professor

We have read this dissertation and recommend its acceptance:

Raymond R. Shrader, Edward E. Cureton, W. O. Jenkins, Howard P. Emmerson, A. H. Kealley

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

December 12, 1955

To the Graduate Council:

I am submitting herewith a thesis written by Wyman Loren Williams, Jr., entitled, "A Study of School Desegregation: Self-Prediction of Behavior and Correlates of Self-Prediction." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

J. M. Porter Jr.
Major Professor

We have read this thesis and recommend its acceptance:

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Dean of the Graduate School

THE GRADUATE SCHOOL
THE UNIVERSITY OF TENNESSEE
KNOXVILLE

A STUDY OF SCHOOL DESEGREGATION:

SELF-PREDICTION OF BEHAVIOR

AND CORRELATES OF

SELF-PREDICTION

A THESIS

Submitted to
The Graduate Council
of
The University of Tennessee
in
Partial Fulfillment of the Requirements
for the degree of
Doctor of Philosophy

---

by

Wyman Loren Williams, Jr.

December 1955

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Wyman Loren Williams, Jr.

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CHAPTER I

INTRODUCTION

On January 11, 1955, the U. S. Atomic Energy Commission directed the school system at Oak Ridge, Tennessee to desegregate beginning with the school year of 1955-1956. Although in general the school system officials felt that the community as a whole would be receptive to this procedure, research oriented toward the anticipation of problems that might arise as a result of the desegregation process was inaugurated by the Philosophy and Psychology Department at the University of Tennessee. The research that developed from this request is reported herein.

The research problem was seen as a problem requiring the development and utilization of techniques that would permit the prediction of behavior that would be manifest when Negroes and white attended the same school. It also seemed desirable to investigate the relationships between predicted behaviors and other data commonly found in school records. Briefly stated, this approach was implemented by the development of Guttman scales (11). These scales consisted of items having behavioral referents.

The problem of behavior prediction, however, was seen as only the first phase of a more extensive study. The second phase, that of validation and the study of possible time effect changes in behavior is now under way and will be reported by Whitmore (31).

Before attempting a review of studies similar to this one, the orientation of this study with respect to two concepts, attitude and behavior, should be clarified. In general, the concept of attitude currently held is that of a set or tendency to react in a particular manner to a particular object or class of objects. Behavior refers to the overt activity of an individual which can be observed and recorded. Although this writer holds no brief against the study of attitudes *per se*, it would seem that the most crucial test of the attitude concept would lie in the prediction of behavior from attitudes. Williams (32, p. 114) in reviewing research in group relations, states that:

> One of the most pressing needs is for studies which will grasp and reveal relations between verbalizations and other social actions and will specify in considerable detail the agreement or lack of agreement between responses obtained through questionnaires or interviews and responses evoked by various types of "real" situations.

Although in 1952 Thurstone (29) disagreed with this position by stating in effect that an attitude of an individual toward an issue exists independently of what the individual says and does with respect to the issue and that there is no necessary relation between what is said and done, in 1931 (27, p. 263), shortly after his classical work on attitude scaling, he said:

> If we should find that what a man says has absolutely no relation to what he does, then such *inconsistency* would constitute a serious limitation on the *legitimacy of* the abstraction of attitude.

Perhaps the reason for this shift in Thurstone's view is related

to the fact that a remarkable dearth of studies demonstrating the relationship he hoped for in 1931. The studies of LaPiere (15) and Kutner, Wilkins and Yarrow (14) serve to emphasize this point. During the early thirties, LaPiere traveled extensively throughout the country accompanied by two Chinese students. He and the students visited 250 hotels and restaurants and were refused accommodations by only one. Several months after the tour had been completed, LaPiere wrote to the proprieters of all the establishments that had been visited and asked them if they would accept Chinese guests. Of the 118 establishments that replied, only ten stated that they would accept Chinese guests. Similar letters were written to a control group of establishments (in the same geographical areas as those visited) and replies were received from 118. Again, only ten replies indicated acceptance of Chinese guests. It seems quite clear that successful prediction of behavior was not apparent here.

The Kutner study was quite similar and more recent. In this study it was found that a group of eleven restaurants in the Northeastern section of the country served mixed white and Negro groups with no hesitation. Of this group, however, none responded to written requests for reservations for mixed groups. When reservations were telephoned for, none of the restaurants would accept them at first; however, three of the eleven later hesitantly agreed to accept. Control calls (no reference to Negroes) were made to the same group of restaurants, and

reservations were readily granted by ten and denied by one restaurant that did not follow the reservation policy.

These studies, together with the comments noted above, indicate that there can be serious inconsistencies between two different indices of behavior, attitudes as commonly measured and overt behavior. An effort has been made below to reformulate the attitude concept and to define the conditions which affect the validity of prediction of overt behavior made from elicited attitudes.

An attitude of individual A as elicited in situation T toward an object X is the prediction made by A in situation T of the behavior that he would manifest in situation R where X would be allowed to operate as a stimulus to A. The accuracy or validity of such a prediction is a function of the probability of situation R's occurring as perceived by A in situation T and the similarity of situation T to situation R.

Let us consider the probability dimension. It seems reasonable to assume that if the probabilities of situation R occurring as seen by an individual in the eliciting situation are very small, then if situation R actually occurred, the very fact of its occurrence would be signified by changes in the situation in which the individual finds himself. Thus, when the eliciting situation T is far removed from situation R along the probability dimension, a series of complex variables, over which the investigator has no control, are automatically introduced into the predicting process. The letters written by LaPiere and Kutner seem to fall at

this point on the probability dimension, as the respondents probably felt that visitation by the non-caucasian groups would be rather rare. In fact, the negative responses themselves would lower the probability, as seen by the respondents, of situation R occurring. The more direct communication established by Kutner's phone calls, however, would seem to increase the probability of situation R occurring as seen by the respondents. It should be clear, in general, that as the probability of situation R occurring as seen by an individual in an eliciting situation T increases, then there is less opportunity for the introduction of additional variables as noted above.

At present it seems that the similarity dimension would have degrees of specificity or levels of abstraction as units, i.e., how specific is the eliciting situation T to a particular situation R. Chein (6) in a discussion of consistency and inconsistency in intergroup relations suggests that the difference in levels of abstraction between attitude questionnaires and behavioral situations may account for the failure to find expected relationships. Let us consider a hypothetical situation in which we want to predict the behavior of a group in an integrated school (situation R). Let us further assume that the group is white and that it has been informed that on a certain date in the near future Negro students will begin to attend the group's school. The first scale we administer to the group consists of items referring to specific behavioral incidents that have occurred or can occur in newly integrated schools. This test (I) would seem to be fairly similar to situation R.

The second scale to be administered would be one in Thurstone's (26) vein; that is, an equal appearing interval scale. Here the items are not as specific to the integration situation, but do refer to Negroes. This test (II) would seem to be farther removed from situation R than test I. A generalized scale of the Remmers (22) type might also be administered. This test (III) would seem to be slightly farther away from situation R, since it is not quite as specific as the Thurstone scale. The F Scale (1) (test IV) might be administered to anchor the similarity dimension at the extreme dissimilar end. This test (IV), in terms of levels of abstraction, would be farthest from situation R. One would expect, according to the formulation presented above, to find the strongest relation between performance in situation R and test I, next strongest with test II, the next strongest with test III, and the weakest with test IV. The results predicated on this formulation would seem to be in line with the data reported from generalization experiments in the learning literature.

Although the position described above was not completely formulated until after the present study was well underway, the conditions allowing for maximal prediction of behavior have been built into the study, i.e., the probability of situation R occurring was high as seen by the respondents from the eliciting situation T (the respondents knew that integration was scheduled to take place at the time the questionnaire was administered) and situation T was made similar to situation R by basing all questionnaire items on behavioral incidents that could occur in an

integrated school (situation R).

Although Thurstone (26) and Likert (18) were the pioneers in the field of measurement of attitude toward the Negro, Rosander (23) and Pace (21) were apparently among the first to utilize the Thurstone and Likert techniques in the development of instruments consisting of items based on specific behavioral situations. Rosander used the equal appearing intervals technique to develop a scale of items based on behavioral situations. Pace used the Likert technique, in which item scale values are derived from the responses to the items rather than from judges' sortings, to develop a test designed to measure social, political and economic attitudes in which the items described behavioral situations. Ford (8) used a combination of these two techniques in scaling the past experience of whites' contacts with Negroes. Prior to the present study, the writer knows of only one use of the Guttman technique for scaling in which behavioral items have been used. This scale was developed by Campbell (5).

A more extensive review of techniques used in the past does not seem to be called for here. McNemar (20) cites more than 800 references re attitude measurement, if a detailed study of past work is desired.

CHAPTER II

METHODOLOGY

As previously stated, the Guttman technique was adopted to develop scales designed to predict future behavior. The first step in the Guttman procedure is the definition of item universes. As five areas of behavior were to be investigated, five sub-universes needed definition. Before considering the five sub-universes separately, however, the universe of items from which the sub-universes were drawn will be considered as a whole. All sub-universes come from a larger universe of items expressing behavioral incidents that can occur in the interaction between members of two different ethnic groups and that are manifestly indicative of acceptance or rejection by a member of one ethnic group of a member or several members of another ethnic group.

The first sub-universe to be considered defines the content area of scale 1, i.e., the attitude (as defined above) of white students toward Negro students, and of scale 6, the attitude of Negro students toward white students. Sub-universe 1 is made up of items expressing behavioral incidents that can and do occur in a school situation in the interaction between one student and one or more other students of a different ethnic group and that are manifestly indicative of the acceptance or rejection by one student of a student or group of students from the different ethnic group.

Sub-universe 2 defines the content area of scale 2, the attitude

of white students toward Negro teachers and scale 7, the attitude of Negro students toward white teachers. Sub-universe 2 is made up of items expressing behavioral incidents that can and do occur in the interaction between one student and one or more teachers of a different ethnic group and that are manifestly indicative of the acceptance or rejection by one student of a teacher or group of teachers of a different ethnic group.

The third sub-universe defines the content area of scale 3, the white students' perception of their parents' attitude toward an integrated school system; scale 8, the Negro students' perception of their parents' attitudes toward an integrated school system; scale 4, the white students' perception of their mothers' attitudes toward an integrated school system; and scale 5, the white students' perception of their fathers' attitudes toward an integrated school system. Sub-universe 3 consists of items expressing the students' perception of behavioral incidents that can and do occur in the interaction between parents and the school system and are manifestly indicative of acceptance or rejection by the parents of the school system.

Sub-universe 4 defines the content area of scale 9, the attitude of white teachers toward Negro students. Sub-universe 4 is made up of items expressing behavioral incidents that can and do occur in a school situation in the interaction between one teacher and one or more students of a different ethnic group and that are manifestly indicative of the acceptance or rejection by one teacher of a student or group of students from the different ethnic group.

The fifth sub-universe defines the content area of scale 10, the attitude of white teachers toward Negro teachers. Sub-universe 5 is made up of items expressing behavioral incidents that can and do occur in a school situation in the interaction between one teacher and one or more other teachers if a different ethnic group and that are manifestly indicative of the acceptance or rejection by one teacher of another teacher or group of teachers from the different ethnic group.

The second step following the definition of sub-universes was the selection of items from these universes. Two methods of selection were used. In the first method teachers from the Oak Ridge system were asked to submit brief write-ups of behavioral incidents they had observed in the following interaction areas: student-student, student-teacher, teacher-student, and teacher-teacher. Each incident reported was supposed to indicate, in the estimation of the reporting teacher, the acceptance or rejection by the person initiating the behavioral incident of the other person or persons involved in the incident. Use of this method resulted in only a few usable items. Failure on the part of the investigator to communicate adequately the behavior concept involved seems the most likely explanation for the failure to develop more usable items from this source. The remainder of the items were developed by the investigator after observing the school system and talking with school officials.

All items that were developed from these two methods are shown in facsimiles of the questionnaires in the Appendix. In Appendix A, items

1 - 16 were drawn from sub-universe 1 and form scale 1. Items 17 - 24 in Appendix A were drawn from sub-universe 2 and form scale 2. Items 25 - 29 were drawn from sub-universe 3 and form scale 4. Items 30 - 34 were drawn from sub-universe 3 and form scale 5.

In Appendix B, items 1 - 16 were drawn from sub-universe 1 and form scale 6. Items 17 - 24 were drawn from sub-universe 2 and form scale 7. Items 25 - 29 were drawn from sub-universe 3 and form scale 8.

In Appendix C, items 25 - 29 were drawn from sub-universe 3 and form scale 3.

In Appendix D, items 1 - 8 were drawn from sub-universe 4 and form scale 9. Items 9 - 21 were drawn from sub-universe 5 and form scale 10. Sub-universes 4 and 5 also furnished items for scales measuring attitude of Negro teachers toward white students and Negro teachers toward white teachers. As the N involved for these scales was so small (9), they were not subjected to scale and further analysis as were the other scales.

The questionnaires were administed on April 20, 1955 to students in two junior high schools, the senior high school and the Negro school. All students present that day in the following grade levels participated in the study: 8th grade in junior high school J, 8th grade in junior high school R, 10th, 11th, 12th grades in the senior high school, and grades 7 - 12 in the Negro school. The questionnaires were administered by classroom teachers. The two 8th grades, and the 10th and 12th grades in the white schools received the questionnaire shown in Appendix A. Students in the 11th grade at the high school received the questionnaire

shown in Appendix C. This short questionnaire was given in order to allow sufficient time for the administration of a different questionnaire in connection with another study. Half of the 11th grade group received the questionnaire shown in Appendix C first, while half received the questionnaire from the other study first.

Grades 7 - 12 in the Negro school received the questionnaire shown in Appendix B. As in the case of the 11th grade group in the high school, all students in this group received a short questionnaire in order to allow time for the overlap described above. The same counterbalancing procedure was followed. (No significant order effects were found where overlap took place.)

At the close of the school day, all teachers in the schools involved attended staff meetings during which they completed the questionnaire shown in Appendix D in the case of the white schools and a similar questionnaire in the case of the Negro school.

The white students yielded 1212 usable questionnaires while the Negro students yielded 64. White teachers yielded 109 usable questionnaires. Questionnaires were classified as unusable if they did not meet the following two criteria: name sufficiently legible for identification purposes and response to all items on the questionnaire. Ten percent of the students' and five percent of the teachers' questionnaires were classified as unusable according to this standard. Inspection of the source of these questionnaires revealed no grouping trend with respect to any particular grade or school. No further attempt was made to analyze these questionnaires.

Following return of the questionnaires, school records were consulted to confirm and obtain the following information on each student participating in the study: sex, grade, number of years in Oak Ridge system, states in which other schools were attended, family status (did student live with real or foster parents?), education of father, education of mother, father's occupation, intelligence quotient as determined by the Science Research Associates Primary Mental Ability Test (PMA) (28), birth date, and names of all teachers the student had during the school year prior to April 20.

All of the information listed above was coded and punched into IBM cards along with item responses.

Before describing the actual scaling process used, a brief summary of the Guttman (11) rationale is in order. The basic notion of the Guttman process is that if a set of items can be arranged in cumulative order and the pattern of responses to the items is of such a nature that there is only one pattern of responses corresponding to any given total score on the set of items, then the scalability and unidimensionality of the set of items has been demonstrated.

The basic operations involved in arranging the items cumulatively and determining the uniqueness of response patterns are simple. Let us assume a set of items and a sample of individuals that will yield a perfect scale. The items are:

1. Are you taller than 5'0"?
2. Are you taller than 5'3"?
3. Are you taller than 5'6"?
4. Are you taller than 6'0"?

The responses to each item are yes or no. We will give a score of two points for each yes answer and a score of one point for each no answer. Thus, the maximum possible total score is 8 and the minimum possible total score is 4. We find that in our hypothetical sample of five individuals, one has a score of 8, one 7, one 6, one 5, and one 4. These scores are ranked in descending order as shown in Figure 1. The "yes" answer categories are ranked in ascending order from left to right according to frequency of endorsement, followed by the "no" answer categories ranked in descending order according to frequency of endorsement. It can be seen in Figure 1 that the pattern of responses of all individuals to all items forms a parallelogram. It is also clear from this pattern of responses that there is only <u>one</u> pattern of responses associated with any one total score, e.g., a total score of 7 can be obtained only by endorsing the "yes" categories for items 3, 2, and 1 and by endorsing the "no" category for item 4. Thus, the individual obtaining a score of 7 must be between 5'6" and 6'0" tall. This example is very trivial, i.e., there are easier ways for measuring height, but it illustrates the most important property of a perfect Guttman scale, which is that knowledge of the total scores of a group of individuals enables one to reproduce the pattern of responses of all individuals to all items. Essentially this means that each

Item Responses

Total Score	Number Category	4 yes	3 yes	2 yes	1 yes	4 no	3 no	2 no	1 no
8		x	x	x	x				
7			x	x	x	x			
6				x	x	x	x		
5					x	x	x	x	
4						x	x	x	x
Frequency		1	2	3	4	4	3	2	1

Figure 1

Hypothetical Guttman Scale Pattern

score is uniquely defined and permits the total score to "stand for" the responses to all items in the scale.

The preceeding discussion has dealt with the case of a perfect scale--a situation seldom, if ever, obtained in actual practice. In practice the pattern obtained is distorted; that is, item responses fall outside of the parallelogram pattern shown in Figure 1. The extent of distortion or error is determined by counting the number of responses falling outside of the parallelogram pattern and dividing this figure by the total number of responses. The resulting quotient is the coefficient of reproducibility and is a measure of the accuracy with which the entire pattern can be reproduced by knowledge of total scores alone.

Although typically scalibility of a set of items is determined on the basis of a sample of 100 persons, the present study utilized data on all individuals in the study. In general, the IBM procedure for Guttman scale analysis developed by Kahn and Bodine (13) was used. The 401 Alphabetic Accounting Machine was used instead of the 405, and the 602-A Calculating Punch was used instead of the 602.

Inspection of the first order tabulations of item-by-item responses indicated that the answer categories should be dichotomized. That is, it was apparent that a substantial reduction of error could be obtained by the appropriate combining of categories. After tabulations of response patterns similar to that shown in Figure 1 were developed, it was decided to retain the simple scoring (9) feature of the array. Scale scoring (9)

would have required the arbitrary reassignment of individuals having imperfect response patterns (patterns not entirely within the parallelogram pattern), to perfect patterns or scale types to which they were most similar. This procedure would have increased reproducibility (it can be shown that error is cut in half by this procedure) but would have destroyed the simple relationship between total scores and item scores. Thus, the total score would no longer be the sum of item scores. As the lowest coefficient of reproducibility obtained was .807, it will be noted that all scales would then have met Guttman's chief criterion for scalability, 90 per cent reproducibility. Although the issue of sampling variation of reproducibility coefficients is somewhat academic here, it should be noted that empirical studies (11) have shown the variation to be small.

Use of the simple scoring procedure implies, then, that the present investigator preferred to retain the straightforward properties of the total score at the cost of increased error in the pattern of item responses.

Table I shows the obtained coefficients of reproducibility and distributions of item marginals.

Although the reproducibilities of scales 3, 6, 7, 8, 9, and 10 are probably spuriously high due to extreme item marginals (percentage of respondents endorsing positive or negative response for each item), this is not of great concern here as the primary aim of this study is to develop usable instruments for a particular situation; that is, to develop

TABLE I

DISTRIBUTION OF ITEM MARGINALS
AND REPRODUCIBILITY COEFFICIENTS

Marginals		Scales									
Percent Pos.	Percent Neg.	1	2	3	4	5	6	7	8	9	10
10	90	2									
20	80										
30	70										
40	60										
50	50		2			1					1
60	40	2	2		1	1					
70	30	4	2		2	3					
80	20	7		2	2		1	1			
90	10	1	2	3			7	1		2	3
100	0						8	6	5	6	9
n = items		16	8	5	5	5	16	8	5	8	13
N = subjects		1212	1212	258	954	954	64	64	64	109	109
Reproducibility		.807	.844	.926	.901	.900	.86	.91	.98	.94	.93

a set of unidimensional items that can be used for prediction of behavior in a particular population in a particular situation. Generalizing to the item universes (from which the items in scales 3, 6, 7, 8, 9, and 10 were drawn) from the obtained reproducibility coefficients probably would not be justified.

Guttman's criterion for randomness of error was met by inspection of the scale patterns. No consistent grouping of error patterns was noted.

After completion of scale analysis the relationships between scales and other variables was determined by use of the chi-square and ϕ / ϕ max. (7) (10) techniques. Fisher's exact test was used where theoretical cell frequencies were too small for the application of chi-square.

In general, distributions of total scores were dichotomized at the mean rather than the median to avoid the rather arbitrary process of assigning scores that fell at the median. The chi-square technique was used because it meets the assumptions required by the ordinal nature of the scale data. Phi over phi $_{max}$ provides a measure of the strength of the intrinsic relationship between two variables (10) and can be interpreted as an approximation to the product moment r (7).

CHAPTER III

RESULTS

In Figures 2 through 11 are shown the items appearing in each scale in cumulative order along with the response patterns associated with the various total scores. Thus, in Figure 2, a total score of 25 is associated with positive responses to items 16, 8, 2, 1, 5, 9, 6, 13, and 10 and negative responses to items 4, 15, 7, 3, 14, 11, and 12. The symbol x indicates a positive response and the symbol o indicates a negative response. The way in which response categories were combined is also evident from these tables. For example, either a disagree or an undecided response to item 5 in Figure 2 was scored as positive. The scoring procedure is also seen from these tables: a score of two being given for each positive response to an item and a score of one for each negative response.

Assuming for a moment that these scales have perfect reproducibility, it can be seen how each total score is uniquely defined by a particular pattern of responses. It should be noted, however, that each scale is imperfect and that some individuals with a given score will not demonstrate the perfect answer pattern associated with that score.

These Figures (2-11) will not be discussed in detail, since, in general, they are self-explanatory. However, a few comparisons seem to be in order. In Figure 2 (Scale 1), it can be seen that the items least

Figure 2

Scale 1 Rep. = .807

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
32	o	x	x	12.	I would not date a Negro student for a school dance.
31	o	x	o	11.	I would not dance with a Negro student at a school dance under any circumstances.
30	x	o	o	14.	I would introduce a Negro classmate to my patents if we met outside of school.
29	o	x	o	3.	I would not sit next to a Negro student while eating in the school cafeteria.
28	x	o	o	7.	I would not object to going on a field trip with Negro students.
27	o	x	x	15.	If invited, I would decline an invitation to visit a Negro student's home.
26	x	o	o	4.	I would vote for a Negro student as a class officer if I thought he or she would make a good one.
25	o	x	o	10.	I would not attend a school dance if I knew Negro students were going to be present.
24	o	x	o	13.	I would move if a Negro student sat next to me in the school auditorium.
23	o	x	o	6.	I would not voluntarily work on a class project committee with a Negro student.
22	o	x	x	9.	I would not use the same rest room that is used by Negro students.
21	o	x	x	5.	I would not voluntarily sit next to a Negro student in a classroom.
20	o	x	o	1.	I would not stand next to a Negro student in the school cafeteria line.
19	o	x	x	2.	I would not eat at the same table with Negro students in the school cafeteria.
18	o	x	o	8.	I would try to get my class changed if assigned to a class with Negro students.
17	x	o	x	16.	I would introduce a Negro classmate to my friends either inside or outside of school.
16					

Figure 3

Scale 2 Rep. = .844

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
16	x	o	o	19.	I would ask a Negro teacher to sit at my table in the cafeteria if I liked her.
15	x	o	o	21.	I would volunteer to stay after school to help a Negro teacher organize class materials.
14	x	o	o	23.	I would offer to show a new Negro teacher around the school.
13	o	x	o	24.	I would not introduce a Negro teacher to my friends either inside or outside of school.
12	o	x	o	18.	I would not join a school club I was interested in that was sponsored by a Negro teacher.
11	x	o	o	22.	I would not object to going on a field trip led by a Negro teacher.
10	o	x	x	17.	If assigned to a class with a Negro teacher, I would attempt to get my class changed.
9	o	x	o	20.	I would not do my homework if I had to stay in a class with a Negro teacher.
8					

Figure 4

Scale 3 Rep. = .926

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
10	o	x	o	28.	I think my parents will not permit me to go to a school dance if Negro students will be present.
9	o	x	o	27.	I think my parents will try to get my class changed if I am assigned to a class with Negro students and a Negro teacher.
8	o	x	o	25.	I think my parents will move from Oak Ridge if Negroes and whites go to the same school.
7	o	x	o	29.	I think my parents will try to get my class changed if I am assigned to a class with a Negro teacher and all white students.
6	o	x	o	26.	I think my parents will try to get my class changed if I am assigned to a class with Negro students and a white teacher.
5					

Figure 5

Scale 4 Rep. = .901

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
10	o	x	o	27.	I think my mother will try to get my class changed if I am assigned to a class with Negro students and a Negro teacher.
9	o	x	o	28.	I think my mother will not permit me to go to a school dance if Negro students will be present.
8	o	x	o	25.	I think my mother will want to move from Oak Ridge if Negroes and whites go to the same school.
7	o	x	o	26.	I think my mother will try to get my class changed if I am assigned to a class with Negro students and a white teacher.
6	o	x	o	29.	I think my mother will try to get my class changed if I am assigned to a class with a Negro teacher and all white students.
5					

Figure 6

Scale 5 Rep. = .900

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
10	o	x	o	32.	I think my father will try to get my class changed if I am assigned to a class with Negro students and a Negro teacher.
9	o	x	o	33.	I think my father will not permit me to go to a school dance if Negro students will be present.
8	o	x	o	31.	I think my father will try to get my class changed if I am assigned to a class with Negro students and a white teacher.
7	o	x	o	30.	I think my father will want to move from Oak Ridge if Negroes and whites go to the same school.
6	o	x	o	34.	I think my father will try to get my class changed if I am assigned to a class with a Negro teacher and all white students.
5					

Figure 7

Scale 6 Rep. = .86

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
32	o	x	x	15.	If invited, I would decline an invitation to visit a white student's home.
31	x	o	o	14.	I would introduce a white classmate to my parents if we met outside of school.
30	o	x	x	12.	I would not date a white student for a school dance.
29	o	x	o	6.	I would not voluntarily work on a class project committee with a white student.
28	x	o	o	16.	I would introduce a white classmate to my friends either inside or outside of school.
27	o	x	o	5.	I would not voluntarily sit next to a white student in a classroom.
26	x	o	x	4.	I would vote for a white student as a class officer if I thought he or she would make a good one.
25	x	o	o	7.	I would not object to going on a field trip with white students.
24	o	x	x	11.	I would not dance with a white student at a school dance under any circumstances.
23	o	x	x	3.	I would not sit next to a white student while eating in the school cafeteria.
22	o	x	o	13.	I would move if a white student sat next to me in the school auditorium.
21	o	x	o	9.	I would not use the same rest room that is used by white students.
20	o	x	o	10.	I would not attend a school dance if I knew white students were going to be present.
19	o	x	o	8.	I would try to get my class changed if assigned to a class with white students.
18	o	x	o	2.	I would not eat at the same table with white students in the school cafeteria
17	o	x	o	1.	I would not stand next to a white student in the school cafeteria line.
16					

Figure 8

Scale 7 Rep. = .91

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
16	x	o	o	19.	I would ask a white teacher to sit at my table in the cafeteria if I liked her.
15	x	o	o	23.	I would offer to show a new white teacher around the school.
14	x	o	o	21.	I would volunteer to stay after school to help a white teacher organize class materials.
13	x	o	o	22.	I would not object to going on a field trip led by a white teacher.
12	o	x	o	20.	I would not do my homework if I had to stay in a class with a white teacher.
11	o	x	o	18.	I would not join a school club I was interested in that was sponsored by a white teacher.
10	o	x	o	17.	If assigned to a class with a white teacher, I would attempt to get my class changed.
9	o	x	x	24.	I would not introduce a white teacher to my friends either inside or outside of school.
8					

Figure 9

Scale 8 Rep. = .98

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
10	o	x	o	29.	I think my parents will try to get my class changed if I am assigned to a class with a white teacher and all Negro students.
9	o	x	o	28.	I think my parents will not permit me to go to a school dance if white students will be present.
8	o	x	o	27.	I think my parents will try to get my class changed if I am assigned to a class with white students and a Negro teacher.
7	o	x	o	25.	I think my parents will move from Oak Ridge if Negroes and whites go to the same school.
6	o	x	o	26.	I think my parents will try to get my class changed if I am assigned to a class with white students and a white teacher.
5					

Figure 10

Scale 9 Rep. = .94

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
16	x	o	o	8.	If I had Negro students, I would try to encourage them to participate in extra-curricular activities.
15	o	x	x	4.	If I had a few Negro students and many white students assigned to my class, I would try to have the Negro students sit together.
14	x	o	o	7.	I would try to give extra help to Negro students if they needed it.
13	o	x	o	1.	If assigned to a class with Negro students, I would attempt to get my assignment changed.
12	o	x	o	2.	I would object to taking a class including Negro students on a field trip.
11	o	x	x	5.	I would not lend a personal book to a Negro student.
10	o	x	x	3.	If I had Negro students, I would try to discourage them from participating in extracurricular activities.
9	o	x	o	6.	I would not ask a Negro student to stay after school in order to help him with his homework.
8					

Figure 11

Scale 10 Rep. = .93

(x indicates positive response)
(o indicates negative response)

Total Score	Response pattern AG	DIS	UN		Items
26	x	o	o	20.	I would invite a Negro teacher to my home if I liked her.
25	o	x	o	11.	I would try to avoid sitting next to a Negro teacher in the auditorium.
24	x	o	o	12.	I would offer to show a new Negro teacher around the school.
23	x	o	o	9.	I would offer to aid in the preparation of a school program sponsored by a Negro teacher.
22	o	x	o	19.	I would not introduce a Negro teacher to my friends even if I liked her.
21	o	x	x	13.	I would not accept an invitation from a Negro teacher to join her at lunch in the cafeteria.
20	o	x	o	18.	I would not offer to lend personal books to a Negro teacher.
19	o	x	o	17.	If asked to aid in the preparation of a school program sponsored by a Negro teacher, I would refuse.
18	o	x	o	16.	I would try to avoid sitting next to a Negro teacher in a staff meeting.
17	x	o	o	10.	I would offer to lend personal books to a Negro teacher.
16	o	x	o	14.	I would not use the same rest room that is used by Negro teachers.
15	o	x	o	15.	I would not use the same faculty lounge that is used by Negro teachers.
14	o	x	o	21.	I would resign my position if Negro teachers were teaching in my school.
13					

likely to be positively endorsed are those involving fairly close personal contact between Negro and white students in a school situation. Inspection of Figure 7 (Scale 6) reveals that the items least likely to be favorably endorsed by Negro students are those involving fairly close personal contact outside of the immediate school situation. Figure 11 (Scale 10) indicates that the item least likely to be positively endorsed by white teachers is one involving fairly close personal contact with Negro teachers outside of the school situation.

Appendix E contains the scale distribution data for various breakdowns of the samples as well as for the total samples, both white and Negro. The distributions showing total white and total Negro samples were dichotomized at the means and the chi-square and $\frac{\phi}{\phi_{max}}$ analyses were applied.

Scale interrelationships are shown in Table II. Contingency tables were set up to provide the data shown in this as well as all other tables in this series. In addition to showing the relationships between the scales, these $\frac{\phi}{\phi_{max}}$ coefficients serve as estimates of the lower bounds of reliability coefficients for the scales (7). Thus, the lower bound for scales 1 and 2 is seen to be .71, while .85 serves as the lower bound for scales 4 and 5.

The correlation between scale 3 and scale 1 was .42. This was the highest correlation between scale 3 and any other scale. This is distinctly lower than the correlations between scales 4 and 5 and scale 1.

TABLE II

SCALE INTERRELATIONSHIPS

Scales	χ^2_c	P					$\frac{\phi}{\phi max}$	N
		.001>P	.01>P	.05>P	.10>P	P>.10		
1, 2	455.46	x					.71	1212
1, 3	39.06	x					.42	258
1, 4	214.86	x					.51	954
1, 5	212.16	x					.49	954
2, 3	33.61	x					.38	258
2, 4	221.92	x					.60	954
2, 5	223.31	x					.55	954
4, 5	570.03	x					.85	954
6, 7	10.95	x					.46	64
6, 8	2.93				x		.44	64
7, 8	6.26			x			.59	64
9, 10	9.94		x				.36	109

As the only difference found among scales 3, 4, and 5 is in the choice of words ("parents" in scale 3, "mother" in scale 4, and "father" in scale 5) it seems likely that the cause of the attenuated relationship between scale 3 and the other scales (and other variables) is a function of the ambiguity involved in the use of the word "parents." The interrelationships among scales 6, 7, and 8, and between scales 9 and 10 are fairly low. Whether this is a function of the lack of reliability of the scales or merely represents a low relationship between the scales cannot be determined from these data.

Table III shows how scale scores and educational level of parents are related. Extreme groups on the education distribution were selected to demonstrate this relationship as well as all other relationships between scale scores and variables derived from school records. (Distributions of variables taken from school records are shown in Appendix F.) In general, the trend apparent in Table III indicates that students whose parents had completed college are significantly more receptive to Negro students and Negro teachers and perceive their parents as being significantly more receptive to the desegregated school situation than students whose parents had not completed high school. The ambiguity of scale 3 seems to be apparent here as indicated by the insignificant relationships between it and the education variable. These results agree with those obtained by Allport and Kramer (3) in a study of the correlates of generalized prejudice. Insufficient data were available to

TABLE III

SCALE SCORES AND EDUCATIONAL LEVEL OF PARENTS

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Educational level of father	1	62.19	x					.52	545
	2	48.31	x					.40	545
	3	.254					x	.11	117
	4	51.71	x					.63	428
	5	61.78	x					.62	428
Educational level of mother	1	45.02	x					.65	458
	2	24.06	x					.43	458
	3	.320					x	.17	88
	4	35.28	x					.72	370
	5	28.37	x					.57	370

analyze similar relationships in the group of Negro students.

The relationships between occupational level of the father and scale scores are shown in Table IV. The high occupational level group consisted of those students whose fathers were engaged in managerial, professional, or semi-professional occupations; while the low occupational level group consisted of those students whose fathers were engaged in semi-skilled or unskilled occupations. Definitions abstracted by Shartle (25) from the Dictionary of Occupational Titles were used in classifying occupations. It is seen that students in the high group are significantly more receptive to Negro students and teachers than students in the low group and that students in the high group perceive their parents as being significantly more receptive than do students in the low group. Again the ambiguity of scale 3 seems to be manifest. This relationship, in general, is similar to that reported by Harlan (12) who found that subjects whose parents were engaged in business or professional occupations or whose income was high were less prejudiced toward Jews than those at the other end of the occupational or economic continuum. Insufficient data were available to analyze similar relationships among Negro students.

Simultaneous operation of the two criteria mentioned above were used to develop two extreme groups on what was arbitrarily called the socio-economic continuum. Thus, the students in the high group came from families where both parents had finished high school, at least one parent had finished college and the father was engaged in a managerial,

TABLE IV

SCALE SCORES AND OCCUPATIONAL LEVEL OF FATHER

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Occupational level of father	1	13.26	x					.22	308
	2	16.35	x					.32	308
	3	.248					x	.11	68
	4	20.17	x					.32	240
	5	15.68	x					.28	240

professional, or semi-professional occupation. The low group consisted of students from families where neither parent had finished high school and where the father was engaged in a semi-skilled or unskilled occupation. These data are shown in Table V, where the ambiguity of scale 3 is again apparent. However, considering the other scales, the same trend that was found with respect to the two previously analyzed variables is apparent. Although it would be interesting to compare the strength of the relationships between these education-occupation variables and the scales, this cannot be done with these data since the sampling distribution of the $\frac{\phi}{\phi max}$ coefficient is not known.

Levinson (17), among others, has reported a negative correlation between prejudice and intelligence. The data shown in Table VI support this general finding. (High scale scores in the present study are associated with receptivity toward Negroes.) The lack of relationship indicated between scores on scale 8 (Negro attitudes toward an integrated school system) and intelligence is probably due to the extremely skewed distribution of scores obtained on scale 8. (See distribution 8.1 in Appendix E.) For the white students (scales 1-5), extreme groups were obtained by selecting those students with Primary Mental Ability I.Q.'s above 120; the low group consisted of students with Primary Mental Ability I.Q.'s below 90. The small number of Negro students (scales 6-8) forced dichotomization of their I.Q. distribution at 80.

Table VII shows the relationship between sex and scale scores. Considering scales 1-5 first, it seems clear that female students are more

TABLE V

SCALE SCORES AND
SOCIO-ECONOMIC LEVEL

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Socio-economic level	1	6.44			x			.26	157
	2	11.64	x					.47	157
	3	[a]					x	.11	37
	4	8.49		x				.30	121
	5	14.79	x					.46	121

[a] P value determined by Fisher's exact test.

TABLE VI

SCALE SCORES AND INTELLIGENCE

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Intelligence	1	4.49			x			.22	215
	2	15.06	x					.35	215
	3	[a]							6
	4	6.96		x				.28	209
	5	5.97			x			.25	209
	6	2.01					x	.38	30
	7	[b]					x	.38	30
	8	0					x	0	30

[a] Insufficient data for analysis.

[b] P value determined by Fisher's exact test.

TABLE VII

SCALE SCORES AND SEX

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Sex (F+, M-)	1	17.10	x					.13	1212
	2	48.14	x					.20	1212
	3	.032					x	.09	258
	4	.747					x	.04	954
	5	.281					x	- .02	954
	6	0					x	- .02	59
	7	1.37					x	.23	59
	8	1.21					x	.41	59
	9	.338					x	- .17	107
	10	3.01				x		- .46	107

receptive to Negro students and teachers than male students; and it seems equally clear that male and female students do not differ in their perception of their parents attitudes toward an integrated school system. With respect to Negro students, sex is apparently not related to their attitudes re white students and teachers; also, sex is apparently not a factor in their perception of their parents' attitudes. There is no significant difference between male and female teachers with respect to Negro students, although the trend established by the white students is reversed here. There is a suggestion at the .10 level that female white teachers would react less favorably than males to Negro teachers. The relationships established and suggested here are in line with that found by Allport and Kramer (3), who concluded from a generalized attitude study (Negroes were included as objects in the study) that female college undergraduates are less prejudiced than male undergraduates. No attempt will be made here to suggest which of the two present groups, high school students, or high school teachers, is closer to the population from which Allport's group was drawn.

Studies by Lasker (16), Blake and Dennis (4), and others have demonstrated racial awareness and attitudes may develop during early childhood. The data shown in Table VIII indirectly support these earlier findings and demonstrate the importance of the geographical variable. Two groups of white students were selected. All students in one group first attended school in a state where Negroes constituted more than 30 per cent of the population according to the 1950 census (30). In the

TABLE VIII

SCALE SCORES AND LOCATION
OF FIRST SCHOOL

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Location (10 per cent or less, +, 30 per cent or more, -)	1	14.92	x					.27	308
	2	24.77	x					.29	308
	3	6.00			x			.30	78
	4	34.79	x					.41	230
	5	29.26	x					.39	230

other group all students first attended school in a state where Negroes constituted less than 10 per cent of the population in 1950. It is clear from these data that students whose first educational experience was in the "Deep South," states with more than 30 per cent Negro population, (Alabama, Georgia, Louisiana, Mississippi, South Carolina, and the District of Columbia) are significantly less receptive to Negro students and teachers than students whose first educational experience was in states where Negroes were less visible. It is also apparent that students from these states perceive the attitudes of their parents as being significantly less favorable to school integration. Since the students who first attended school in states where Negroes constituted less than 10 per cent of the population were likely to have attended a desegregated school or schools, this data would also lend support to findings of Rose et al. (24), Winder (33), and MacKenzie (19), who concluded, in general, that equal status contacts between Negroes and whites led to more favorable attitudes on the part of the whites.

Allport (2) in reviewing the literature on the relationship between age and prejudice concludes that the relationship between these variables is primarily a function of the time, place, and specificity of the study attempting to ascertain the relationship. In the present study the data suggest that the younger students are more receptive to Negro students and teachers than the older students. These data are shown in Table IX. Why a significant difference was found for scale 5, but not for scale 4, is not immediately apparent. Younger Negro students are seen to be more receptive toward white teachers, whereas there is no difference between age

TABLE IX

SCALE SCORES AND AGE

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Age (old, +, young, -)	1	7.03		x				- .23	417
	2	4.99			x			- .23	417
	3	[a]							11
	4	.899					x	- .11	406
	5	7.22		x				- .31	406
	6	.090					x	- .34	51
	7	4.61			x			- .38	51
	8	[b]					x	- .38	51

[a] Insufficient data for analysis.

[b] P value determined by Fisher's exact test.

groups with respect to attitude toward white students, or perception of parents' attitudes. The group of younger white students consisted of all students fourteen years of age or younger, while the older group consisted of students nineteen years of age or older. The small N in the Negro group forced dichotomization at the seventeen year level.

The data shown in Table X are somewhat inconclusive; but they suggest that white students who are not living with both parents, but instead are living with one or two foster parents, may be more receptive toward Negro students and teachers than students who live with both parents. No differences are suggested in the Negro group.

Three hypotheses were formulated regarding the relationship between number of school systems attended outside of Oak Ridge, number of years in the Oak Ridge system, teacher attitudes, and scale scores. Regarding the relationship between scale scores and number of school systems attended outside of Oak Ridge, it was felt that students having had a history of "change" in their school environment would be more receptive to the "change" introduced by desegregation. This hypothesis was tested with respect to scales 1-8 and could not be accepted. It was also hypothesized that students who had been in the Oak Ridge system longest, who would have had the greatest exposure to the prevailing favorable attitude toward desegregation in the school system, would be more receptive to integration than students who had been in the system only a short time. This hypothesis was also rejected on all counts. No significant relationship between teacher attitudes and student attitudes was found. This relationship was investigated by computing, for each white student, the mean scores (on

TABLE X

SCALE SCORES AND FAMILY STATUS

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
Family status (Both parents, + Other, -)	1	4.38			x			-.22	1202
	2	3.27				x		-.22	1202
	6	0					x	.05	51
	7	.184					x	.15	51

scales 9 and 10) of the teachers under whom he had had classes during the school year. Extreme groups were selected from both the scale 9 and the scale 10 mean distributions.

In view of the significant relationships reported above with respect to education of parents and occupational level, it was felt that a difference due to these factors would be found between students of the two junior high schools. Junior high school J is located in a relatively desirable section of town and most of the residents in that area are permanent residents. Junior high school R is located in a less desirable section of town and according to a superficial evaluation, the residents in general are functioning at a lower socio-economic level than the residents in the area in which junior high school J is located. The data shown in Table XI indicate a clear-cut relationship between attitudes as measured by scales 1, 2, 4, and 5 and the school attended.

A research program has been initiated by Whitmore (31) which, among other things, is designed to provide data for the validation of the scales developed in this study. Behavioral incidents involving white and Negro students are being recorded by teachers in the Oak Ridge high school. An incident is given a plus score if it indicates acceptance of the Negro student by the white student initiating the incident and a minus score if rejection is indicated. Seventeen students who took scale 1 in the present study have been involved in such incidents. Cross classification of these students with respect to incident scores and scores on scale 1 yields the following table:

TABLE XI

SCALE SCORES AND SCHOOL ATTENDED

	Scale	χ^2_c	P					$\frac{\phi}{\phi max}$	N
			.001>P	.01>P	.05>P	.10>P	P>.10		
School (8J, +; 8R, -)	1	13.11	x					.25	421
	2	11.42	x					.20	421
	4	25.00	x					.31	420
	5	14.24	x					.22	420

		Incident score		
		-	+	
Scale 1 score	above median	0	10	10
	below median	3	4	7
		3	14	17

The P value, as determined by Fisher's exact test, associated with this table is .051. This suggests a significant relationship ($\frac{\phi}{\phi max}$ = 1.00) between these variables. These data, then, suggest that the techniques developed in this study may be of value with respect to the prediction of behavior.

CHAPTER IV

CONCLUSIONS

This study was designed to develop instruments from which the occurrence of a particular kind of behavior in a particular situation could be predicted. Although preliminary validation data indicate that this primary goal is likely to be attained, it should be pointed out that validation in this specific situation does not necessarily imply that these instruments would be valid for the prediction of behavior in other situations. One could say with a certain amount of confidence that these data indicate that the technique used here (the development and use of scales with behavioral referents) could be applied to other situations and behavior predicted thereby. One could say with considerably less confidence that the present scales would successfully predict behavior in other situations.

The fact that the present situation is unique (orders to desegregate originating with the Federal Government, no self-government in the community, small Negro population, etc.) also restricts the interpretation that can be put on the findings with respect to the correlates of attitudes. Allport's (2, pp. 79-80) comments re generalizations made from this type of study seem especially appropriate here:

> Perhaps we may venture three generalizations that seem to be most widely supported by evidence. The first is that, on the average, attitudes toward Negroes are less favorable in Southern than in Northern and Western states.... Regarding education, it

generally but not always appears from researches that people with college education are slightly less intolerant than people with grade school or high school education. . . .Finally it seems fairly well established that white people in the lower socio-economic levels are, on the average, more bitterly anti-Negro than people at the higher levels. . . .Beyond these tentative assertions it seems unsafe to estimate the relation of religion, sex, age, region, or economic status to prejudice. . . .But for the present it seems best to conclude that there is in this country no proof-positive of invariant relationships between demographic groupings and prejudice.

CHAPTER V

SUMMARY

The first step of the study was the defining of item universes from which could be drawn sets of items having the following content areas: attitude of white students toward Negro students, attitude of white students toward Negro teachers, white students' perception of their parents' attitudes toward an integrated school system, attitude of Negro students toward white students, attitude of Negro students toward white teachers, Negro students' perceptions of their parents' attitudes toward an integrated school system, attitude of white teachers toward Negro students, and the attitude of white teachers toward Negro teachers.

All ~~items~~ areas selected had behavioral referents and were scaled by use of the Guttman scale analysis procedure after they had been administered to a very substantial proportion (about 75 per cent) of the present Oak Ridge ~~high~~ City school system school population. Demographic data were obtained from school records and relationships between scale scores and various demographic variables were analyzed.

It was found that high educational level of parents and high occupational level of the father were both associated with favorable attitudes toward Negro students and teachers on the part of both white students and their parents (as perceived by the students).

It was found that high intelligence was associated with the same

trend of attitudes noted directly above as far as white students were concerned, but no relation between intelligence and attitudes was found in the group of Negro students.

Female white students were found to have more favorable attitudes toward Negro students and teachers than male students. No sex differences were found with respect to perception of parents' attitudes by white students. No sex differences were found in the Negro group. With respect to white teachers, the data suggested that male white teachers are more receptive toward Negro teachers than female white teachers.

pg 43 White students who first attended school in states where Negroes constituted 30 per cent or more of the population were shown to have less favorable attitudes and to perceive their parents as having less favorable attitudes toward Negroes than students who first attended school in states where Negroes constituted less than 10 per cent of the population.

A slight trend in the direction of younger students of both races being more favorably inclined toward the opposite race than older students was noted.

The data suggested that white students who did not live with both parents were more receptive to Negro students and teachers than students who lived with both parents.

No significant relationship was found between the following variables and any of the scales: length of time in Oak Ridge school system, number of different school systems attended outside of Oak Ridge, and teacher attitudes.

Preliminary behavioral data suggest the validity of scale 1, the attitude of white students toward Negro students.

Development of the study stimulated the formulation of an hypothesis designed to show the conditions which govern the magnitude of the relationship between elicited attitudes and overt behavior.

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APPENDICES

APPENDIX A

FACSIMILE OF QUESTIONNAIRE

Department of Psychology, University of Tennessee

Name _____ Sex _____ Time _____
Last First Middle

This questionnaire is designed to get information in a race relations research project. In answering the statements below, imagine yourself going to a desegregated school. For each statement check AGree if the statement is correct for you; DISagree if the reverse of the statement is correct for you; and UNdecided if you are not sure whether the statement or its reverse is most nearly correct for you.

AG	DIS	UN		
___	___	___	1.	I would not stand next to a Negro student in the school cafeteria line.
___	___	___	2.	I would not eat at the same table with Negro students in the school cafeteria.
___	___	___	3.	I would not sit next to a Negro student while eating in the school cafeteria.
___	___	___	4.	I would vote for a Negro student as a class officer if I thought he or she would make a good one.
___	___	___	5.	I would not voluntarily sit next to a Negro student in a classroom.
___	___	___	6.	I would not voluntarily work on a class project committee with a Negro student.
___	___	___	7.	I would not object to going on a field trip with Negro students.
___	___	___	8.	I would try to get my class changed if assigned to a class with Negro students.
___	___	___	9.	I would not use the same rest room that is used by Negro students.
___	___	___	10.	I would not attend a school dance if I knew Negro students were going to be present.

APPENDIX A (continued)

AG	DIS	UN		
___	___	___	11.	I would not dance with a Negro student at a school dance under any circumstance.
___	___	___	12.	I would not date a Negro student for a school dance.
___	___	___	13.	I would move if a Negro student sat next to me in the school auditorium.
___	___	___	14.	I would introduce a Negro classmate to my parents if we met outside of school.
___	___	___	15.	If invited, I would decline an invitation to visit a Negro student's home.
___	___	___	16.	I would introduce a Negro classmate to my friends either inside or outside of school.
___	___	___	17.	If assigned to a class with a Negro teacher, I would attempt to get my class changed.
___	___	___	18.	I would not join a school club I was interested in that was sponsored by a Negro teacher.
___	___	___	19.	I would ask a Negro teacher to sit at my table in the cafeteria if I liked her.
___	___	___	20.	I would not do my homework if I had to stay in a class with a Negro teacher.
___	___	___	21.	I would volunteer to stay after school to help a Negro teacher organize class materials.
___	___	___	22.	I would not object to going on a field trip led by a Negro teacher.
___	___	___	23.	I would offer to show a new Negro teacher around the school.
___	___	___	24.	I would not introduce a Negro teacher to my friends either inside or outside of school.

APPENDIX A (continued)

AG	DIS	UN		
___	___	___	25.	I think my mother will want to move from Oak Ridge if Negroes and whites go to the same school.
___	___	___	26.	I think my mother will try to get my class changed if I am assigned to a class with Negro students and a white teacher.
___	___	___	27.	I think my mother will try to get my class changed if I am assigned to a class with Negro students and a Negro teacher.
___	___	___	28.	I think my mother will not permit me to go to a school dance if Negro students will be present.
___	___	___	29.	I think my mother will try to get my class changed if I am assigned to a class with a Negro teacher and all white students.
___	___	___	30.	I think my father will want to move from Oak Ridge if Negroes and whites go to the same school.
___	___	___	31.	I think my father will try to get my class changed if I am assigned to a class with Negro students and a white teacher.
___	___	___	32.	I think my father will try to get my class changed if I am assigned to a class with Negro students and a Negro teacher.
___	___	___	33.	I think my father will not permit me to go to a school dance if Negro students will be present.
___	___	___	32.	I think my father will try to get my class changed if I am assigned to a class with a Negro teacher and all white students.

APPENDIX B

FACSIMILE OF QUESTIONNAIRE

Department of Psychology, University of Tennessee

Name _____ Sex _____ Time _____
Last first middle

This questionnaire is designed to get information in a race relations research project. In answering the statements below, imagine yourself going to a desegregated school. For each statement check AGree if the statement is correct for you; DISagree if the reverse of the statement is correct for you; and UNdecided if you are not sure whether the statement or its reverse is most nearly correct for you.

AG	DIS	UN		
___	___	___	1.	I would not stand next to a white student in the school cafeteria line.
___	___	___	2.	I would not eat at the same table with white students in the school cafeteria.
___	___	___	3.	I would not sit next to a white student while eating in the school cafeteria.
___	___	___	4.	I would vote for a white student as a class officer if I thought he or she would make a good one.
___	___	___	5.	I would not voluntarily sit next to a white student in a classroom.
___	___	___	6.	I would not voluntarily work on a class project committee with a white student.
___	___	___	7.	I would not object to going on a field trip with white students.
___	___	___	8.	I would try to get my class changed if assigned to a class with white students.
___	___	___	9.	I would not use the same rest room that is used by white students.

APPENDIX B (continued)

AG	DIS	UN		
___	___	___	10.	I would not attend a school dance if I knew white students were going to be present.
___	___	___	11.	I would not dance with a white student at a school dance under any circumstances.
___	___	___	12.	I would not date a white student for a school dance.
___	___	___	13.	I would move if a white student sat next to me in the school auditorium.
___	___	___	14.	I would introduce a white classmate to my parents if we met outside of school.
___	___	___	15.	If invited, I would decline an invitation to visit a white student's home.
___	___	___	16.	I would introduce a white classmate to my friends either inside or outside of school.
___	___	___	17.	If assigned to a class with a white teacher, I would attempt to get my class changed.
___	___	___	18.	I would not join a school club I was interested in that was sponsored by a white teacher.
___	___	___	19.	I would ask a white teacher to sit at my table in the cafeteria if I liked her.
___	___	___	20.	I would not do my homework if I had to stay in a class with a white teacher.
___	___	___	21.	I would volunteer to stay after school to help a white teacher organize class materials.
___	___	___	22.	I would not object to going on a field trip led by a white teacher.
___	___	___	23.	I would offer to show a new white teacher around school.

APPENDIX B (continued)

AG	DIS	UN		
___	___	___	24.	I would not introduce a white teacher to my friends either inside or outside of school.
___	___	___	25.	I think my parents will move from Oak Ridge if Negroes and whites go to the same school.
___	___	___	26.	I think my parents will try to get my class changed if I am assigned to a class with white students and a white teacher.
___	___	___	27.	I think my parents will try to get my class changed if I am assigned to a class with white students and a Negro teacher.
___	___	___	28.	I think my parents will not permit me to go to a school dance if white students will be present.
___	___	___	29.	I think my parents will try to get my class changed if I am assigned to a class with a white teacher and all Negro students.

APPENDIX C

FACSIMILE OF QUESTIONNAIRE

Department of Psychology, University of Tennessee

Name _____ Sex _____ Time _____
Last First Middle

This questionnaire is designed to get information in a race relations research project. In answering the statements below, imagine yourself going to a desegregated school. For each statement check AGree if the statement is correct for you; DISagree if the reverse of the statement is correct for you; and UNdecided if you are not sure whether the statement or its reverse is most nearly correct for you.

AG	DIS	UN		
___	___	___	1.	I would not stand next to a Negro student in the school cafeteria line.
___	___	___	2.	I would not eat at the same table with Negro students in the school cafeteria.
___	___	___	3.	I would not sit next to a Negro student while eating in the school cafeteria.
___	___	___	4.	I would vote for a Negro student as a class officer if I thought he or she would make a good one.
___	___	___	5.	I would not voluntarily sit next to a Negro student in a classroom.
___	___	___	6.	I would not voluntarily work on a class project with a Negro student.
___	___	___	7.	I would not object to going on a field trip with Negro students.
___	___	___	8.	I would try to get my class changed if assigned to a class with Negro students.
___	___	___	9.	I would not use the same rest room that is used by Negro students.

APPENDIX C (continued)

AG	DIS	UN		
___	___	___	10.	I would not attend a school dance if I knew Negro students were going to be present.
___	___	___	11.	I would not dance with a Negro student at a school dance under any circumstances.
___	___	___	12.	I would not date a Negro student for a school dance.
___	___	___	13.	I would move if a Negro student sat next to me in the school auditorium.
___	___	___	14.	I would introduce a Negro classmate to my parents if we met outside of school.
___	___	___	15.	If invited, I would decline an invitation to visit a Negro student's home.
___	___	___	16.	I would introduce a Negro classmate to my friends either inside or outside of school.
___	___	___	17.	If assigned to a class with a Negro teacher, I would attempt to get my class changed.
___	___	___	18.	I would not join a school club I was interested in that was sponsored by a Negro teacher.
___	___	___	19.	I would ask a Negro teacher to sit at my table in the cafeteria if I liked her.
___	___	___	20.	I would not do my homework if I had to stay in a class with a Negro teacher.
___	___	___	21.	I would volunteer to stay after school to help a Negro teacher organize class materials.
___	___	___	22.	I would not object to going on a field trip led by a Negro teacher.
___	___	___	23.	I would offer to show a new Negro teacher around the school.
___	___	___	24.	I would not introduce a Negro teacher to my friends either inside or outside of school.

APPENDIX C (continued)

AG	DIS	UN	
___	___	___	25. I think my parents will move from Oak Ridge if Negroes and whites go to the same school.
___	___	___	26. I think my parents will try to get my class changed if I am assigned to a class with Negro students and a white teacher.
___	___	___	27. I think my parents will try to get my class changed if I am assigned to a class with Negro students and a Negro teacher.
___	___	___	28. I think my parents will not permit me to go to a school dance if Negro students will be present.
___	___	___	29. I think my parents will try to get my class changed if I am assigned to a class with a Negro teacher and all white students.

APPENDIX D

FACSIMILE OF QUESTIONNAIRE

Department of Psychology, University of Tennessee

This questionnaire is designed to get information that will help make the integration program scheduled for Oak Ridge run more smoothly. One thing that would be desirable to know is the effect teachers' attitudes have on students' attitudes. In order to find this relationship, I need to know which students and teachers have been together in classes. This cannot be found out unless you sign this questionnaire. If you sign, no one except myself--and I know none of you personally--will know how you responded to these statements. All the information obtained in this study will be punched on IBM cards with codes indicating individuals, and the papers will be destroyed. If you do not sign, the information collected will still be of value, but it will not allow the investigation of the relationship between teachers' attitudes and students' attitudes. In any event, I thank you for your cooperation, both in administering questionnaires to your students and in responding to questionnaires yourself.

Very sincerely,

/s/W. L. Williams, Jr.

Name _____ Sex _____ Time _____
Last First Middle

In answering the statement below, imagine yourself teaching in a desegregated school. For each statement check AGree if the statement is correct for you; DISagree if the reverse of the statement is correct for you; and UNdecided if you are not sure whether the statement or its reverse is most nearly correct for you.

AG DIS UN

___ ___ ___ 1. If assigned to a class with Negro students, I would attempt to get my assignment changed.

___ ___ ___ 2. I would object to taking a class including Negroes on a field trip.

APPENDIX D (continued)

AG	DIS	UN		
___	___	___	3.	If I had Negro students, I would try to discourage them from participating in extracurricular activities.
___	___	___	4.	If I had a few Negro students and many white students assigned to my class, I would try to have the Negro students sit together.
___	___	___	5.	I would not lend a personal book to a Negro student.
___	___	___	6.	I would not ask a Negro student to stay after school in order to help him with his homework.
___	___	___	7.	I would try to give extra help to Negro students if they needed it.
___	___	___	8.	If I had Negro students, I would try to encourage them to participate in extracurricular activities.
___	___	___	9.	I would offer to aid in the preparation of a school program sponsored by a Negro teacher.
___	___	___	10.	I would offer to lend personal books to a Negro teacher.
___	___	___	11.	I would try to avoid sitting next to a Negro teacher in the auditorium.
___	___	___	12.	I would offer to show a new Negro teacher around the school.
___	___	___	13.	I would not accept an invitation from a Negro teacher to join her at lunch in the cafeteria.
___	___	___	14.	I would not use the same rest room that is used by Negro teachers.
___	___	___	15.	I would not use the same faculty lounge that is used by Negro teachers.
___	___	___	16.	I would try to avoid sitting next to a Negro teacher in a staff meeting.

APPENDIX D (continued)

AG	DIS	UN		
___	___	___	17.	If asked to aid in the preparation of a school program sponsored by a Negro teacher, I would refuse.
___	___	___	18.	I would not offer to lend personal books to a Negro teacher.
___	___	___	19.	I would not introduce a Negro teacher to my friends even if I liked her.
___	___	___	20.	I would invite a Negro teacher to my home if I liked her.
___	___	___	21.	I would resign my position if Negro teachers were teaching in my school.

APPENDIX E

Scale Distribution Data

Distribution: 1.1 Scale: 1		Distribution: 1.2 Scale: 1		Distribution: 1.3 Scale: 1		Distribution: 1.4 Scale: 1	
Group	N	Group	N	Group	N	Group	N
8J	177	8J	177	8R	244	9HS	16
8R	244						
9HS	16						
10HS	305						
11HS	257						
12HS	213						
Total	1212	Total	177	Total	244	Total	16
Score	N	Score	N	Score	N	Score	N
32	38	32	16	32	8	32	1
31	81	31	12	31	14	31	
30	144	30	24	30	18	30	2
29	155	29	28	29	30	29	1
28	141	28	28	28	23	28	
27	120	27	14	27	31	27	2
26	100	26	13	26	19	26	1
25	77	25	7	25	19	25	2
24	71	24	10	24	14	24	1
23	52	23	10	23	12	23	
22	56	22	3	22	14	22	
21	44	21	3	21	13	21	2
20	34	20	3	20	8	20	2
19	32	19	1	19	8	19	
18	25	18	3	18	5	18	1
17	26	17	2	17	4	17	1
16	16	16	0	16	4	16	
Mean score: 26.19		Mean score: 27.44		Mean score: 25.72		Mean score: 23.88	
Modal score: 29		Modal score:28-29		Modal score: 27		Modal score:	
Median score: 27		Median score: 28		Median score: 27		Median score: 25	

APPENDIX E (continued)

Scale Distribution Data

Distribution: 1.5 Scale: 1		Distribution: 1.6 Scale: 1		Distribution: 1.7 Scale: 1		Distribution: 1.8 Scale: 1	
Group	N	Group	N	Group	N	Group	N
10HS	305	11HS	257	12HS	213	8JM	90
						9HSM	11
						8RM	128
						10HSM	160
						11HSM	119
						12HSM	110
Total	305	Total	257	Total	213	Total	618
Score	N	Score	N	Score	N	Score	N
32	3	32	5	32	5	32	17
31	11	31	23	31	21	31	35
30	30	30	35	30	35	30	62
29	33	29	42	29	21	29	69
28	31	28	39	28	20	28	62
27	39	27	15	27	19	27	65
26	31	26	22	26	14	26	51
25	27	25	15	25	7	25	43
24	15	24	16	24	15	24	40
23	13	23	12	23	5	23	32
22	16	22	9	22	14	22	29
21	15	21	5	21	6	21	28
20	6	20	7	20	8	20	22
19	13	19	6	19	4	19	17
18	7	18	3	18	6	18	18
17	11	17	1	17	7	17	17
16	4	16	2	16	6	16	11
Mean score: 25.47		Mean score: 26.87		Mean score: 26.06		Mean score: 25.65	
Modal score: 27		Modal score: 29		Modal score: 30		Modal score: 29	
Median score: 26		Median score: 28		Median score: 27		Median score: 26	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 1.9 Scale: 1		Distribution: 1.10 Scale: 1		Distribution: 1.11 Scale: 1		Distribution: 1.12 Scale: 1	
Group	N	Group	N	Group	N	Group	N
8JF	87	8JM	90	8JF	87	8RM	128
8RF	116						
9HSF	5						
10HSF	145						
11HSF	138						
12HSF	103						
Total	594	Total	90	Total	87	Total	128
Score	N	Score	N	Score	N	Score	N
32	21	32	6	32	10	32	4
31	46	31	5	31	7	31	7
30	82	30	14	30	10	30	18
29	86	29	14	29	14	29	16
28	79	28	15	28	13	28	11
27	55	27	7	27	7	27	16
26	49	26	8	26	5	26	8
25	34	25	3	25	4	25	12
24	31	24	5	24	5	24	7
23	20	23	3	23	7	23	7
22	27	22	2	22	1	22	6
21	16	21	3	21		21	6
20	12	20	1	20	2	20	5
19	15	19		19	1	19	2
18	7	18	2	18	1	18	4
17	9	17	2	17		17	3
16	5	16		16		16	2
Mean score: 26.76		Mean score: 27.23		Mean score: 27.65		Mean score: 25.76	
Modal score: 29		Modal score: 28		Modal score: 29		Modal score: 29, 27	
Median score: 28		Median score: 28		Median score: 28		Median score: 27	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:1.13 Scale: 1		Distribution:1.14 Scale: 1		Distribution:1.15 Scale: 1		Distribution:1.16 Scale: 1	
Group	N	Group	N	Group	N	Group	N
8RF	116	9HSM	11	9HSF	5	10HSM	160
Total	116	Total	11	Total	5	Total	160
Score	N	Score	N	Score	N	Score	N
32	4	32	1	32		32	1
31	7	31		31		31	5
30	6	30	1	30	1	30	12
29	14	29	1	29		29	11
28	12	28		28		28	13
27	15	27		27	2	27	24
26	11	26	1	26		26	18
25	7	25	2	25		25	14
24	7	24	1	24		24	5
23	5	23		23		23	11
22	8	22		22		22	10
21	7	21	1	21	1	21	10
20	3	20	2	20		20	3
19	6	19		19		19	7
18	1	18	1	18		18	5
17	1	17		17	1	17	7
16	2	16		16		16	4
Mean score: 25.69		Mean score: 24.55		Mean score: 24.40		Mean score: 24.78	
Modal score: 27		Modal score: 25,20		Modal score: 27		Modal score: 27	
Median score: 26		Median score: 25		Median score: 27		Median score: 26	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:1.17 Scale: 1		Distribution:1.18 Scale: 1		Distribution:1.19 Scale: 1		Distribution:1.20 Scale: 1	
Group	N	Group	N	Group	N	Group	N
10HSF	145	11HSM	119	11HSF	138	12HSM	110
Total	145	Total	119	Total	138	Total	110
Score	N	Score	N	Score	N	Score	N
32	2	32	1	32	4	32	4
31	6	31	7	31	16	31	11
30	18	30	9	30	26	30	14
29	22	29	21	29	21	29	6
28	18	28	13	28	26	28	10
27	15	27	8	27	7	27	10
26	13	26	11	26	11	26	5
25	13	25	9	25	6	25	3
24	10	24	12	24	4	24	10
23	2	23	7	23	5	23	4
22	6	22	6	22	3	22	5
21	5	21	3	21	2	21	5
20	3	20	5	20	2	20	6
19	6	19	6	19		19	2
18	2	18	1	18	2	18	5
17	4	17		17	1	17	5
16		16		16	2	16	5
Mean score: 26.22		Mean score: 26.01		Mean score: 27.61		Mean score:25.25	
Modal score: 29		Modal score: 29		Modal score:30,28		Modal score: 30	
Median score: 27		Median score: 26		Median score: 28		Median score: 26	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 1.21 Scale: 1		Distribution: 2.1 Scale: 2		Distribution: 2.2 Scale: 2		Distribution: 2.3 Scale: 2	
Group	N	Group	N	Group	N	Group	N
12HSF	103	8J	177	8J	177	8R	244
		8R	244				
		9HS	16				
		10HS	305				
		11HS	257				
		12HS	213				
Total	103	Total	1212	Total	177	Total	244
Score	N	Score	N	Score	N	Score	N
32	1	16	249	16	50	16	50
31	10	15	196	15	36	15	27
30	21	14	147	14	22	14	30
29	15	13	133	13	22	13	21
28	10	12	171	12	19	12	39
27	9	11	94	11	7	11	22
26	9	10	89	10	13	10	22
25	4	9	79	9	6	9	21
24	5	8	54	8	2	8	12
23	1						
22	9						
21	1						
20	2						
19	2						
18	1						
17	2						
16	1						
Mean score: 26.91		Mean score: 13.06		Mean score: 13.78		Mean score: 12.76	
Modal score: 30		Modal score: 16		Modal score: 16		Modal score: 16	
Median score: 28		Median score: 13		Median score: 14		Median score: 13	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 2.4 Scale: 2		Distribution: 2.5 Scale: 2		Distribution: 2.6 Scale: 2		Distribution: 2.7 Scale: 2	
Group	N	Group	N	Group	N	Group	N
9HS	16	10HS	305	11HS	257	12HS	213
Total	16	Total	305	Total	257	Total	213
Score	N	Score	N	Score	N	Score	N
16	3	16	46	16	50	16	50
15		15	47	15	56	15	30
14	1	14	29	14	40	14	25
13	4	13	35	13	29	13	22
12	4	12	47	12	34	12	28
11	1	11	32	11	20	11	12
10	3	10	23	10	15	10	13
9		9	27	9	8	9	17
8		8	19	8	5	8	16
Mean score: 12.69		Mean score: 12.60		Mean score: 13.49		Mean score: 12.98	
Modal score: 12-13		Modal score: 12,15		Modal score: 15		Modal score: 16	
Median score: 12-13		Median score: 13		Median score: 14		Median score: 13	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 2.8 Scale: 2		Distribution: 2.9 Scale: 2		Distribution: 2.10 Scale: 2		Distribution:2.11 Scale: 2	
Group	N	Group	N	Group	N	Group	N
8JF	87	8JM	90	8JM	90	8JF	87
8RF	116	8RM	128				
9HSF	5	9HSM	11				
10HSF	145	10HSM	160				
11HSF	138	11HSM	119				
12HSF	103	12HSM	110				
Total	594	Total	618	Total	90	Total	87
Score	N	Score	N	Score	N	Score	N
16	159	16	90	16	19	16	31
15	111	15	85	15	24	15	12
14	81	14	66	14	11	14	11
13	60	13	73	13	12	13	10
12	70	12	101	12	8	12	11
11	40	11	54	11	1	11	6
10	35	10	54	10	9	10	4
9	26	9	53	9	4	9	2
8	12	8	42	8	2	8	
Mean score:13.61		Mean score:12.53		Mean score:13.59		Mean score:13.98	
Modal score: 16		Modal score: 12		Modal score: 15		Modal score: 16	
Median score: 14		Median score: 13		Median score: 14		Median score: 14	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:2.12 Scale: 2		Distribution: 2.13 Scale: 2		Distribution:2.14 Scale: 2		Distribution:2.15 Scale: 2	
Group	N	Group	N	Group	N	Group	N
8RM	128	8RF	116	9HSM	11	9HSF	5
Total	128	Total	116	Total	11	Total	5
Score	N	Score	N	Score	N	Score	N
16	22	16	28	16	2	16	1
15	12	15	15	15		15	
14	14	14	16	14	1	14	
13	15	13	6	13	3	13	1
12	23	12	16	12	3	12	1
11	10	11	12	11	1	11	
10	11	10	11	10	1	10	2
9	13	9	8	9		9	
8	8	8	4	8		8	
Mean score:12.50		Mean score:13.04		Mean score:12.91		Mean score:12.20	
Modal score: 12		Modal score: 16		Modal score:13-12		Modal score: 10	
Median score: 12		Median score: 14		Median score: 13		Median score: 12	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:2.16 Scale: 2		Distribution:2.17 Scale: 2		Distribution:2.18 Scale: 2		Distribution:2.19 Scale: 2	
Group	N	Group	N	Group	N	Group	N
10HSM	160	10HSF	145	11HSM	119	11HSF	138
Total	160	Total	145	Total	119	Total	138
Score	N	Score	N	Score	N	Score	N
16	16	16	30	16	12	16	38
15	16	15	31	15	21	15	35
14	9	14	20	14	19	14	21
13	17	13	18	13	13	13	16
12	34	12	13	12	20	12	14
11	17	11	15	11	15	11	5
10	16	10	7	10	11	10	4
9	20	9	7	9	5	9	3
8	15	8	4	8	3	8	2
Mean score:11.86 Modal score: 12 Median score: 12		Mean score:13.41 Modal score: 15 Median score: 14		Mean score: 12.82 Modal score: 15 Median score: 13		Mean score: 14.06 Modal score: 16 Median score: 15	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:2.20 Scale: 2		Distribution:2.21 Scale: 2		Distribution: 3.1 Scale: 3		Distribution: 3.2 Scale: 3	
Group	N	Group	N	Group	N	Group	N
12HSM	110	12HSF	103	11HS	228	11HSM	106
Total	110	Total	103	Total	228	Total	106
Score	N	Score	N	Score	N	Score	N
16	19	16	31	10	141	10	64
15	12	15	18	9	40	9	17
14	12	14	13	8	14	8	6
13	13	13	9	7	11	7	5
12	13	12	15	6	9	6	5
11	10	11	2	5	13	5	9
10	6	10	7				
9	11	9	6				
8	14	8	2				
Mean score:12.34		Mean score:13.66		Mean score:9.12		Mean score:8.97	
Modal score: 16		Modal score: 16		Modal score: 10		Modal score: 10	
Median score: 13		Median score: 14		Median score: 10		Median score: 10	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 3.3 Scale: 3		Distribution: 4.1 Scale: 4		Distribution: 4.2 Scale: 4		Distribution: 4.3 Scale: 4	
Group	N	Group	N	Group	N	Group	N
11HSF	122	8J	176	8J	176	8R	244
		8R	244				
		9HS	16				
		10HS	281				
		11HS	29				
		12HS	208				
Total	122	Total	954	Total	176	Total	244
Score	N	Score	N	Score	N	Score	N
10	77	10	410	10	86	10	76
9	23	9	137	9	34	9	29
8	8	8	94	8	18	8	31
7	6	7	68	7	13	7	25
6	4	6	82	6	9	6	30
5	4	5	163	5	16	5	53
Mean score: 9.24		Mean score: 8.25		Mean score: 8.72		Mean score: 7.74	
Modal score: 10		Modal score: 10		Modal score: 10		Modal score: 10	
Median score: 10		Median score: 9		Median score: 9		Median score: 8	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 4.4 Scale: 4		Distribution: 4.5 Scale: 4		Distribution: 4.6 Scale: 4		Distribution: 4.7 Scale: 4	
Group	N	Group	N	Group	N	Group	N
9HS	16	10HS	281	11HS	29	12HS	208
Total	16	Total	281	Total	29	Total	208
Score	N	Score	N	Score	N	Score	N
10	4	10	133	10	11	10	100
9	2	9	44	9	5	9	23
8	2	8	20	8	5	8	18
7	1	7	18	7	1	7	10
6	2	6	24	6	3	6	14
5	5	5	42	5	4	5	43
Mean score: 7.38		Mean score: 8.42		Mean score: 8.21		Mean score: 8.27	
Modal score: 5		Modal score: 10		Modal score: 10		Modal score: 10	
Median score:7-8		Median score: 9		Median score: 9		Median score: 9	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 4.8 Scale: 4		Distribution: 4.9 Scale: 4		Distribution:4.10 Scale: 4		Distribution: 4.11 Scale: 4	
Group	N	Group	N	Group	N	Group	N
8JM	90	8JF	86	8JM	90	8JF	86
8RM	128	8RF	116				
9HSM	11	9HSF	5				
10HSM	144	10HSF	137				
11HSM	13	11HSF	16				
12HSM	106	12HSF	102				
Total	492	Total	462	Total	90	Total	86
Score	N	Score	N	Score	N	Score	N
10	207	10	203	10	52	10	34
9	68	9	69	9	13	9	21
8	47	8	47	8	8	8	10
7	31	7	37	7	4	7	9
6	47	6	35	6	5	6	4
5	92	5	71	5	8	5	8
Mean score: 8.17 Modal score: 10 Median score: 9		Mean score: 8.34 Modal score: 10 Median score: 9		Mean score: 8.88 Modal score: 10 Median score: 9		Mean score: 8.56 Modal score: 10 Median score: 9	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:4.12 Scale: 4		Distribution:4.13 Scale: 4		Distribution:4.14 Scale: 4		Distribution:4.15 Scale: 4	
Group	N	Group	N	Group	N	Group	N
8RM	128	8RF	116	9HSM	11	9HSF	5
Total	128	Total	116	Total	11	Total	5
Score	N	Score	N	Score	N	Score	N
10	39	10	37	10	3	10	1
9	18	9	11	9	1	9	1
8	15	8	16	8	1	8	1
7	12	7	13	7	1	7	
6	13	6	17	6	1	6	1
5	31	5	22	5	4	5	1
Mean score: 7.73		Mean score: 7.76		Mean score: 7.27		Mean score: 7.6	
Modal score: 10		Modal score: 10		Modal score: 5		Modal score:	
Median score: 8		Median score: 8		Median score: 7		Median score:	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:4.16 Scale: 4		Distribution:4.17 Scale: 4		Distribution:4.18 Scale: 4		Distribution:4.19 Scale: 4	
Group	N	Group	N	Group	N	Group	N
10HSM	144	10HSF	137	11HSM	13	11HSF	16
Total	144	Total	137	Total	13	Total	16
Score	N	Score	N	Score	N	Score	N
10	61	10	72	10	4	10	7
9	23	9	21	9	3	9	2
8	11	8	9	8	3	8	2
7	10	7	8	7		7	1
6	16	6	8	6	2	6	1
5	23	5	19	5	1	5	3
Mean score: 8.24		Mean score: 8.61		Mean score: 8.31		Mean score: 8.25	
Modal score: 10		Modal score: 10		Modal score: 10		Modal score: 10	
Median score: 9		Median score: 10		Median score: 9		Median score: 9	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 4.20 Scale: 4		Distribution: 4.21 Scale: 4		Distribution: 5.1 Scale: 5		Distribution: 5.2 Scale: 5	
Group	N	Group	N	Group	N	Group	N
12HSM	106	12HSF	102	8J	176	8J	176
				8R	244		
				9HS	16		
				10HS	281		
				11HS	29		
				12HS	208		
Total	106	Total	102	Total	954	Total	176
Score	N	Score	N	Score	N	Score	N
10	48	10	52	10	387	10	82
9	10	9	13	9	116	9	26
8	9	8	9	8	75	8	18
7	4	7	6	7	89	7	15
6	10	6	4	6	68	6	12
5	25	5	18	5	219	5	23
Mean score: 8.07		Mean score: 8.48		Mean score: 8.01		Mean score: 8.47	
Modal score: 10		Modal score: 10		Modal score: 10		Modal score: 10	
Median score: 9		Median score: 10		Median score: 9		Median score: 9	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 5.3 Scale: 5		Distribution: 5.4 Scale: 5		Distribution: 5.5 Scale: 5		Distribution: 5.6 Scale: 5	
Group	N	Group	N	Group	N	Group	N
8R	244	9HS	16	10HS	281	11HS	29
Total	244	Total	16	Total	281	Total	29
Score	N	Score	N	Score	N	Score	N
10	74	10	3	10	126	10	7
9	29	9	2	9	34	9	6
8	26	8	3	8	17	8	2
7	32	7		7	22	7	3
6	15	6	3	6	23	6	4
5	68	5	5	5	59	5	7
Mean score: 7.63		Mean score: 7.19		Mean score: 8.15		Mean score: 7.59	
Modal score: 10		Modal score: 5		Modal score: 10		Modal score: 5, 10	
Median score: 8		Median score:7-8		Median score: 9		Median score: 8	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 5.7 Scale: 5		Distribution: 5.8 Scale: 5		Distribution: 5.9 Scale: 5		Distribution:5.10 Scale: 5	
Group	N	Group	N	Group	N	Group	N
12HS	208	8JM	90	8JF	86	8JM	90
		8RM	128	8RF	116		
		9HSM	11	9HSF	5		
		10HSM	144	10HSF	137		
		11HSM	13	11HSF	16		
		12HSM	106	12HSF	102		
Total	208	Total	492	Total	462	Total	90
Score	N	Score	N	Score	N	Score	N
10	95	10	207	10	180	10	52
9	19	9	57	9	59	9	13
8	9	8	32	8	43	8	4
7	17	7	40	7	49	7	5
6	11	6	32	6	36	6	3
5	57	5	124	5	95	5	13
Mean score: 8.00		Mean score: 7.99		Mean score: 8.03		Mean score: 8.80	
Modal score: 10		Modal score: 10		Modal score: 10		Modal score: 10	
Median score: 9		Median score: 9		Median score: 9		Median score: 10	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:5.11 Scale: 5		Distribution:5.12 Scale: 5		Distribution:5.13 Scale: 5		Distribution:5.14 Scale: 5	
Group	N	Group	N	Group	N	Group	N
8JF	86	8RM	128	8RF	116	9HSM	11
Total	86	Total	128	Total	116	Total	11
Score	N	Score	N	Score	N	Score	N
10	30	10	39	10	35	10	3
9	13	9	16	9	13	9	
8	14	8	14	8	12	8	2
7	10	7	14	7	18	7	
6	9	6	6	6	9	6	2
5	10	5	39	5	29	5	4
Mean score:8.17		Mean score:7.62		Mean score:7.66		Mean score:7.09	
Modal score: 10		Modal score:10,5		Modal score: 10		Modal score: 5	
Median score: 8		Median score: 8		Median score: 8		Median score: 6	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:5.15 Scale: 5		Distribution:5.16 Scale: 5		Distribution:5.17 Scale: 5		Distribution:5.18 Scale: 5	
Group	N	Group	N	Group	N	Group	N
9HSF	5	10HSM	144	10HSF	137	11HSM	13
Total	5	Total	144	Total	137	Total	13
Score	N	Score	N	Score	N	Score	N
10		10	61	10	65	10	2
9	2	9	14	9	20	9	4
8	1	8	9	8	8	8	1
7		7	14	7	8	7	1
6	1	6	11	6	12	6	3
5	1	5	35	5	24	5	2
Mean score: 7.40		Mean score: 7.96		Mean score: 8.34		Mean score: 7.62	
Modal score: 9		Modal score: 10		Modal score: 10		Modal score: 9	
Median score: 8		Median score: 9		Median score: 9		Median score: 8	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:5.19 Scale: 5		Distribution:5.20 Scale: 5		Distribution:5.21 Scale: 5		Distribution: 6.1 Scale: 6	
Group	N	Group	N	Group	N	Group	N
11HSF	16	12HSM	106	12HSF	102	7-12 S	64
Total	16	Total	106	Total	102	Total	64
Score	N	Score	N	Score	N	Score	N
10	5	10	50	10	45	32	20
9	2	9	10	9	9	31	18
8	1	8	2	8	7	30	10
7	2	7	6	7	11	29	5
6	1	6	7	6	4	28	5
5	5	5	31	5	26	27	
						26	1
						25	2
						24	
						23	1
						22	
						21	1
						20	
						19	1
						18	
						17	
						16	
Mean score: 7.56		Mean score: 7.97		Mean score: 8.02		Mean score: 30.03	
Modal score:10,5		Modal score: 10		Modal score: 10		Modal score: 32	
Median score: 7		Median score: 9		Median score: 9		Median score: 31	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 7.1 Scale: 7		Distribution: 8.1 Scale: 8		Distribution: 9.1 Scale: 9		Distribution: 9.2 Scale: 9	
Group	N	Group	N	Group	N	Group	N
7-12 S	64	7-12 S	64	T-J	28	T-J	28
				T-R	36		
				T-HS	45		
Total	64	Total	64	Total	109	Total	28
Score	N	Score	N	Score	N	Score	N
16	25	10	52	16	74	16	19
15	14	9	9	15	22	15	3
14	10	8	1	14	7	14	3
13	8	7	1	13	4	13	2
12	4	6		12	1	12	1
11	3	5	1	11	1	11	
10				10		10	
9				9		9	
8				8		8	
Mean score:14.61		Mean score: 9.70		Mean score:15.48		Mean score:15.32	
Modal score: 16		Modal score: 10		Modal score: 16		Modal score: 16	
Median score: 15		Median score: 10		Median score: 16		Median score: 16	

APPENDIX E (Continued)

Scale Distribution Data

Distribution: 9.3 Scale: 9		Distribution: 9.4 Scale: 9		Distribution:10.1 Scale: 10		Distribution: 10.2 Scale: 10	
Group	N	Group	N	Group	N	Group	N
T-R	36	T-HS	45	T-J	28	T-J	28
				T-R	36		
				T-HS	45		
Total	36	Total	45	Total	109	Total	28
Score	N	Score	N	Score	N	Score	N
16	24	16	31	26	40	26	8
15	10	15	9	25	39	25	9
14	1	14	3	24	10	24	2
13	1	13	1	23	7	23	5
12		12		22	5	22	1
11		11	1	21	4	21	2
10		10		20		20	
9		9		19		19	
8		8		18		18	
				17	1	17	
				16		16	
				15	1	15	
				14		14	
				13	2	13	1
Mean score:15.58		Mean score: 15.49		Mean score: 24.48		Mean score: 24.03	
Modal score: 16		Modal score: 16		Modal score: 26		Modal score: 25	
Median score: 16		Median score: 16		Median score: 25		Median score: 25	

APPENDIX E (Continued)

Scale Distribution Data

Distribution:10.3 Scale: 10		Distribution: 10.4 Scale: 10	
Group	N	Group	N
T-R	36	T-HS	45
Total	36	Total	45
Score	N	Score	N
26	18	26	14
25	12	25	18
24	1	24	7
23	2	23	
22	1	22	3
21	1	21	1
20		20	
19		19	
18		18	
17		17	1
16		16	
15		15	1
14		14	
13	1	13	
Mean score: 24.83		Mean score: 24.47	
Modal score: 26		Modal score: 25	
Median score: 25		Median score: 25	

APPENDIX F

Distributions of Demographic Variables

Age	White	Negro
22	4	
21	1	
20	12	2
19	63	4
18	195	6
17	264	8
16	230	10
15	90	9
14	327	4
13	10	8
No data	16	13
N	1212	64

Education of mother	White	Negro
Less than 6 years	13	
6 years	21	
Between 6 and 12 years	324	
12 years	453	
Between 12 and 16 years	98	
16 years	98	
More than 16 years	2	
No data	203	64
N	1212	64

NOTE: Horizontal lines in distributions indicate cutting points for extreme groups.

APPENDIX F (Continued)

Distribution of Demographic Variables

Education of father	White	Negro
Less than 6 years	19	
6 years	28	
Between 6 and 12 years	307	
12 years	393	
Between 12 and 16 years	76	
16 years	158	
More than 16 years	33	
No data	198	64
N	1212	64

Family Status	White	Negro
Living with both parents	1134	21
Not living with both parents	68	30
No data	10	13
N	1212	64

Location of First School	White
Negroes 30 per cent +	123
Negroes 10 per cent -	185
N	308

NOTE: Horizontal lines in distributions indicate cutting points for extreme groups.

APPENDIX F (Continued)

Distribution of Demographic Variables

Number of different school systems outside Oak Ridge	White	Negro
6	4	
5	11	
4	26	
3	67	1
2	109	6
1	459	34
0	540	23
No data		
N	1212	64

Occupational level of father	White	Negro
Professional, semi-professional, managerial	216	
Clerical	30	
Service	64	2
Agricultural	5	
Skilled	380	
Semi-skilled	89	
Unskilled	3	12
No data	425	50
N	1212	64

NOTE: Horizontal lines in distributions indicate cutting points for extreme groups.

APPENDIX F (Continued)

Distribution of Demographic Variables

Years in Oak Ridge school system	White	Negro
0	78	8
1	76	2
2	61	2
3	63	2
4	58	7
5	36	8
6	61	15
7	323	5
8	97	2
9	216	
10	116	
11	22	
No data	8	13
N	1212	64

PMA I.Q.	White	Negro
140 - 149	6	
130 - 139	11	
120 - 129	55	
110 - 119	125	
100 - 109	123	2
90 - 99	141	6
80 - 89	88	8
70 - 79	50	11
60 - 69	5	3
No data	608	34
N	1212	64

NOTE: Horizontal lines in distributions indicate cutting points for extreme groups.