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ABSTRACT

The five articles in this document provide a diverse look at the influence of cultural factors in classrooms and schools. In the first article, "The Cultural Identification of Students in Bilingual Classrooms," M. Beatriz Arias discusses particularly the heterogeneous cultural identification of Anglo and Mexican American students in California. In the second article, "Racial Prejudice and Its Relationships...", Thomas C. Denne, J. William Moore and William E. Hauck examine a multitude of variables such as race, grade, and sex, and compile correlations relating racial prejudice to personality variables. In "A Bicultural Approach to the Issue of Achievement Motivation," Tracy C. Gray examines and compares achievement motivation in Mexican American and Anglo elementary school children. In the fourth article, "Variables Affecting the Intellectual Performance of Black and White Children," James E. Savage and Philip Friedman review the effects of race and sex of examiner on test results. In the final article, "Ethnic Group Bias in Intelligence Test Items," Janice Scheuneman presents a definition and discusses what is suggested by the title. Each article is followed by a critical analysis. (Author/EB)

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CULTURAL FACTORS IN LEARNING AND INSTRUCTION


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CULTURAL FACTORS IN LEARNING AND INSTRUCTION

Introduction

The importance of the papers in this collection is in the representation of the early work of scholars who turned to relatively unstudied issues. They give us a diverse look at some cultural factors in schools. If there is a theme relating all of them, it may be the idea that cultural difference is important when we conduct our searches for new knowledge.

Let me briefly discuss the papers in the order of their appearance and point a way for some future research. The Arias paper, "Cultural Identification of Mexican-American Children," assesses cultural identification of Anglo-American and Mexican-American students in some bilingual classrooms in California. Especially, the paper deals with heterogeneity of cultural identification. Some evidence of reliability and construct validity is reported. A table of F ratios readily displays the differences described in the paper.

The instrument to assess degree of identification with ethnic groups was a questionnaire of 34 items. Results from the use of a questionnaire should be viewed with some caution, however. A refreshing seminar on questionnaire design and use at the 1978 AERA conference made it apparent that the vagaries of what words mean to different people confound the results gained from most questionnaires.

Denne's paper, "Racial Prejudice and Its Relationships," gives us a large sample, and a multitude of variables are examined. The Otis-Lennon 1967 Test was used in this study as a measure of intelligence. Interestingly, it is precisely this test that is described in the final paper by Scheuneman as being biased and under revision.

The next paper is Gray's, "A Bicultural Approach to the Issue of Achievement Motivation." To me the word "approach" in the title indicates a type of intervention or curriculum. Such is apparently not the case; Gray examines and compares achievement motivation in Mexican-American and Anglo-American elementary school children. She used a questionnaire-type scale; the same cautious interpretation of results should be made. In any case the results suggest that sex is a more reliable predictor of achievement motivation than language dominance. I am surprised that there was not more intensive research using case studies or ethnographic procedures, usually typical of the Center for Applied Linguistics.

The Savage paper, "Interaction of Racial Variables with Digit Span and Block Design Performance," sheds additional light on the well-researched variable of the racial identification of the examiner. Two recent articles have a bearing on this paper (and on others in this collection). One paper, "In Defense of Measurement" (Green, 1978), suggests that large ethnic differences in average test scores may indicate the extent of national disadvantage experienced by minorities and, to a lesser extent, test bias. The second article, "The Many Definitions of Test Bias" (Flaugher, 1978), takes the position that sources of test bias are many and highly significant. Both of these well-argued articles indicate the ferment into which Savage and the others in this collection insert themselves. The reactor to this paper points out other interesting facets.

Finally the Scheuneman paper gives us a straightforward and operational definition of "Ethnic Bias in Intelligence Test Items." The chi square technique and tables she devised give us a highly adequate display. I think that the paper shows a creative attack on the problem, with its reversibility of thinking. I appreciate her honesty in admitting that it may not be possible to build difficult IQ test items that are culturally fair. The probability of previous exposure being the same for persons of diverse backgrounds becomes less and less as the items become more difficult.

What are my suggestions for future research? The studies should be supplemented by a few intensive case studies--call them ethnographic, if you will, intensive, constructionist, or whatever the current term you prefer for the decided emphasis on finely descriptive work in the field. This intensive methodology has been the topic of much attention during this 1978 session of AERA. Such research would add richness to the interpretation of the data; it would help to clarify some of the possible differences in how subjects interpret the questions on questionnaires; it would help to differentiate the effects--to show individual responses and differing reactions that are not apparent when mean performance is all that we are shown. These refinements are only some of the advantages of using such an approach. I feel that all the papers in this session would have been richer in insights with the addition of such intensive methodology. In summary, the plea from the discussant is for more intensive study that moves from carefully wrought questions to most appropriate and even to multitudinous design within one study.

We are grateful to the reactors from various minority groups who have responded to each of the papers. They respond not only to the content, but to the related theory and research that are a part of their various backgrounds.

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The Cultural Identification of Students
in Bilingual Classrooms

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In communities where desegregation efforts have involved significant numbers of Mexican-American students, the question has been frequently raised, at one time or another, as to the cultural assimilation, cultural isolation, or extent of cultural identification of this population. The question is usually phrased, "When do Mexican-American children become part of the mainstream?" or "When are Mexican-American students no longer culturally isolated?"

Despite the fact that the *Keyes v. School District 1* decision established the precedent for consideration of Mexican-Americans as an ethnic minority which has suffered the consequences of residential and educational segregation practices, the changing demographic characteristics of communities, especially in the Southwest, have motivated integration planners to attempt to ascertain that percentage of the Mexican-American population which has not been victimized. These efforts are motivated by a need to augment the "other white" category: that is, students who could be considered as white only for purposes of desegregation and filling the appropriate racial percentages at each school.

The Problem

While some scholars and community representatives find the question of cultural identification or "mainstream" of Mexican-American students indicative of a lack of appreciation and knowledge of the characteristics of this population, the question itself is one which recognizes the heterogeneity of the Mexican-American population and one which should be addressed by researchers cognizant of the political, social and educational implications of such a question.

For example, an educational implication of the cultural identification of Mexican-American students can be related to the development of curriculum for bilingual bicultural education, especially in the cultural component of these programs. Some critics of bilingual bicultural education have questioned the role of the cultural component in government-funded programs. They base their argument on the notion that the goal of this

instructional component is to strengthen the ethnic identification of students, and they feel that this goal, while laudable, is not the role of the federal government. There are several limitations to this argument. The first is that research has not been conducted on the effect of the instructional component on a student's ethnic identification. We do not know if such an instructional component has a positive, negative, or no effect on a student's ethnic identification. Another limitation is that this argument attributes a static nature to the cultural component. That is, this instructional component is uniform across schools and grades. Not only do we know that the curricular content is not uniform across schools and grades, but we also know that the amount of instructional time devoted to the cultural component varies widely from one bilingual program to another (AIR Evaluation of the Impact of ESEA Title VII Spanish/English Bilingual Programs, Vol. II Project Descriptions, 1977). Finally, the severest limitation to the argument is that it assumes a homogeneous Mexican-American population which will be uniformly affected in the direction of enhanced cultural identification by the instructional component.

Objectives of the Study

This study of the cultural identification of students in bilingual classrooms was conceptualized as the first in a series of studies to be conducted by the author in the area of cultural and ethnic identification. It addresses the question, "What is the cultural identification of students in a bilingual classroom?" Other studies related to cultural identification currently in progress include cultural identification and its relationship to learning styles (Fall 1978), the developmental stages in the child's acquisition of ethnic identification (Spring 1979), and the implications of cultural identification for bilingual programs undergoing desegregation (Winter 1978). Once salient variables in the development and acquisition of ethnic identification in children have been established, research is planned which will examine the effects of the cultural curricular component on students.

The present study assessed the extent of cultural identification of Anglo-American and Mexican-American students in a small sample of bilingual classrooms which had no instructional cultural component.

The Sample

The sample of students selected for the study consisted of 483 fourth and sixth graders participating in local school district funded Spanish/English bilingual programs. The bilingual

classrooms, it should be noted, were "bilingual" in the sense that (1) the teacher was bilingual or, if not bilingual, was assisted by a bilingual paraprofessional aide; (2) Spanish and English were used freely in the classroom both for instructional purposes and between students; (3) bilingual resource materials were available to the teacher from resources provided to state and federal bilingual programs in the district. The distinction between the bilingual classrooms which were the subject of the study, and bilingual classrooms which have abundant resources for instructional planning and implementation and staff development for particular bilingual bicultural instructional models, should be kept in mind. In other words, the curriculum implemented in the bilingual classrooms studied here did not follow a set "bilingual curriculum guide," and consequently an instructional component such as the cultural component (readily found in most federally funded bilingual programs) is absent.

The areas of interest for the study were urban and rural sites in Northern and Southern California. Two schools from each of the urban areas, San Jose and Pasadena, and one school from each of the rural areas, Watsonville and Santa Paula, were selected. Socioeconomic status of the schools' attendance area and degree of ethnic mix were controlled. In these schools over 80 percent of the student population participated in free lunch programs, and the Mexican-American student population was at 50 percent or higher of the total school population.

Instrumentation

In order to assess the student's extent of identification with the Anglo-American and Mexican-American cultures, a Cultural Identification Scale (CIS) was field tested and developed for this purpose. The CIS is a questionnaire type instrument consisting of 34 items which can be answered "yes" or "no." It is available in both English and Spanish versions. This questionnaire attempts to assess the extent to which a student identifies with aspects of both cultures which are considered salient both in the literature and by other researchers. Three subtests within the questionnaire tap (1) language usage, (2) attitude to heritage, and (3) preferred associations. It is possible for the student to indicate an affiliation with both cultures. The scores yield three categories: traditional American, bicultural, and traditional Mexican.

Development of the Cultural Identification Scale

The first subtest was based on a sociolinguistic assessment of language use focusing on when, where, and with whom a

language is used. The origins of this line of research are given in Fishman's Bilingualism in the Barrio (1971), and Readings in the Sociology of Language (1968). These studies clearly indicated that this sociolinguistic assessment provides a useful measure of cultural identity.

The theory of bicultural development postulated by Ramirez and Castaneda (1974) stresses the ability of an individual to familiarize himself with traditions of either culture, thus facilitating his or her ability to function in different cultural settings. The items in the second subtest are related to traditional cultural components such as holidays, folklore, foods, and history. These items have been found to be reliable and valid indicators of identification with the Mexican-American population (Teske and Nelson, 1973).

The last subtest, preferred associations, was based on Atilano Valencia's findings of his Cultural Sensitivity Test (1971). This test found that a child's attitudes towards relationships between cultural groups was an indicator of biculturalism. The items in the preferred associations subtest assessed students' willingness and/or desire to interact with children of similar or different ethnic and language backgrounds.

Pilot testing with the CIS found that the students' scores correlated with teachers' rank ordering of their cultural orientation .78. Kuder-Richardson 21 was used to compute the reliability coefficient of the CIS at .86.

Administration of the Questionnaire

The procedure for administration of the CIS was as follows: questionnaire administrators were introduced to the entire class by the teachers. Students were told that the researchers were interested in how they felt about things. They were informed that on this questionnaire there were no right or wrong answers, but that the goal was to identify how they felt. Questionnaire administrators were bilingual bicultural Mexican-Americans fluent in both English and Spanish. Students were given the choice of having the questionnaire read to them in either Spanish or English. The administration of the questionnaire was done in the preferred language in small groups (6-8), in an unobtrusive part of the classroom (where possible). Each item was read and repeated to the students so that reading ability would not interfere with answering the questions. Sample items were done as a group, and when the administrator was satisfied that the instructions were understood, she or he began the questionnaire. Total administration time was thirty minutes.

Analysis

In order to assess the degree of identification across various components, the positive scores from each subscale were added, creating a composite score. This score was to be an indicator of the student's overall cultural identification. The possibilities were: traditional Mexican, bicultural, or traditional Anglo-American.

Preliminary analysis of variance was computed to determine the main effect of age, grade, location, sex and ethnicity as independent variables. As shown in Table 1, significant difference was due mainly to sex and ethnicity. In Table 2 we observe the mean scores on the composite score and see that the scores of the Anglo-American children are significantly different from those of the Mexican children (means of 7.33 and 16.6, respectively). The mean for boys is 11.31, and the mean for girls is 12.37. Thus, while there are large overall differences in the responses of the children due to ethnicity, sex does not seem to account for a large part of the variation.

In order to more clearly define the respondents according to their cultural identification, intervals of the composite score were chosen which divided the children into three categories: traditional Anglo-American, bicultural, and traditional Mexican. Table 3 indicates the breakdown of the responses of children who identified with each cultural system by ethnicity and sex. This table shows that the majority of Anglo-American children (N=157) identify with traditional Anglo-American culture as measured by the CIS. Only 11 percent of these children identify with both cultures, and one child identifies with the traditional Mexican culture. The direction of the identification process for Anglo-American students shows that there is little identification with aspects of the Mexican culture. As for the Mexican-American population, it is evident that it is a population with varying degrees of cultural identification. Approximately 33 percent of the Mexican population (N=106) remains identified with the traditional Mexican culture. However, 51 percent of this population has adopted some Anglo-American culture, while retaining some of their own traditional culture. Sixteen percent of the Mexican population totally identifies with the traditional Anglo-American culture as presented in the CIS. Upon examining each subscale by the ethnic group, it was of interest that on the preferred association subscale the two ethnic groups reported a tendency to prefer to interact. On all the other subscales, the Anglo-American group tended to stay well within the limits of what would be called the Anglo-American cultural identification. On the other hand, the Mexican group tended to center within the bicultural category.

Table 1

F Tests of Significant Composite CIS Scores
for Location, Age, Grade, Sex, and Ethnicity

Source of Variance	F	df	P
Location: Urban/Rural	.11	1/483	n s
Age	.33	5/483	n s
Grade	.25	2/483	n s
Sex	4.24	1/483	.05
Ethnicity	398.9	1/482	.001

Table 2

Means, Standard Deviation, and F Ratios of
Composite CIS by Sex and Ethnicity

	Males			Females			Total by Ethnicity	
	\bar{X}	SD	N	\bar{X}	SD	N	\bar{X}	N
Anglo American	6.63	2.99	85	7.93	2.76	74	7.33	159
Mexican American	15.99	5.80	175	17.21	5.06	149	16.6	324
Total by Sex	11.31		260	12.57		223		

F Ratio
137.37**

** indicates $p < .001$.

Table 3

Percentage of Children Who Identified with the
Three Value Systems of Ethnicity and Sex

	Anglo-American				Mexican-American			
	Males	N	Females	N	Males	N	Females	N
Trad. Anglo	48%	76	39%	62	10%	33	6%	18
Bicult'l	3%	6	8%	12	27%	86	24%	75
Mexican	.6%	1		0	17%	54	16%	52
Total		83		74		173		145

Results

The results of this study show that within each ethnic group, there are children who identify with the traditional Anglo-American, bicultural, or traditional Mexican cultural orientations. While children of both ethnic groups were distributed within these three categories, intragroup variability was more evident within the Mexican-American group. Although the majority of the Anglo-American population (87 percent) identified with the mainstream Anglo-American culture, as depicted in the questionnaire, there were 11 percent who identified with a bicultural orientation. The most salient subscale for identifying biculturalism within the Anglo-American sample was the preferred associations. In this scale, the Anglo-American students chose Mexican companions as much as they chose Anglo-American companions for playmates or partners in classwork. While this finding is limited in that it was not corroborated by actual behaviors and reflects what the students say they will do on a questionnaire, nevertheless it is indicative of a trend occurring within bilingual classrooms which have a balanced (60-40 or 50-50) ratio of Mexican-American and Anglo-American students. This trend may be significant, since in the past the polarization between the two ethnic groups has been more obvious than their mutual association (Simmons, 1961).

Implications

The implications of this research relate to issues of curriculum, instruction, evaluation and social relations in desegregation efforts. Recognizing that there is heterogeneity of cultural identification within both the Mexican-American and Anglo-American student populations, curriculum developers should reassess the goals and objectives of the "cultural component" so that static and unidimensional aspects of culture are not emphasized. Rather, that component should help students gain an understanding of the dynamics of culture and the transmission of values across generations, and how these are affected by cultures in contact.

Instructional implications of this research address the teacher's style of teaching. Students have indicated preference for languages of instruction and awareness of cultural heritage. Teachers who have little familiarity with Mexican-American students should not expect them all to identify to the same degree with the Mexican-American culture. Consequently, some students may need instruction in areas of the culture which teachers assume they have acquired at home.

Similarly, before an evaluation component is designed, evaluators of bilingual programs should assist program developers to clearly delineate the goals and objectives for the cultural component as well as identify cultural knowledge of the students. This would allow for evaluation to be linked to the actual instructional component based on students' abilities. This planning is essential before we can evaluate the effect of an instructional component, such as the "cultural curriculum package," on students' ethnic awareness and identification.

Perhaps the most important implications of this research relate to issues of social relations and the possible impact of ethnic group mix for integrated classrooms. While there is a scarcity of research available on the effects of integrated settings on Mexican-American students (which this research was not designed to assess), this study reveals that in highly integrated classrooms students from the dominant culture are associating with children from the minority culture. The finding that the students studied tend to prefer to mutually associate indicates a positive development in fostering interethnic relationships and cultural understanding.

Future research is urgently needed in the area of desegregation and its effect on Mexican-American students. In the

meantime, it is hoped that by illustrating the cultural diversity within the Mexican-American population studied, future research will attempt to study this issue through other means, such as student interviews and classroom observations of behaviors.

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Racial Prejudice and Its Relationships to Amount of
Interracial Contact, Race, Sex, Grade in School,
Intelligence, and Several Personality Variables

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Abstract

Racial prejudice was assessed through use of a multi-faceted instrument on black and white elementary and high school students. Using race, grade, and sex as variables, ANOVAs were conducted on the various racial prejudice scales. Correlations were compiled relating racial prejudice to personality variables. On all scales females were less prejudiced than males. On most scales blacks were less prejudiced than whites. Interracial contact and grade had little effect on prejudice. Correlational results indicated low significant relationships between racial prejudice and personality. Results showed a pattern in prejudice of white students that was dependent on type of interracial interaction.

The multitude of definitions used in reference to racial prejudice (Ehrlich, 1973) and the expansiveness of the social problems that relate to prejudice are indicators of the complexities involved in the formation of an attitudinal scale for racial prejudice. Several researchers have offered suggestions that address the problems encountered in constructing such a scale. Williams (1964) used a variety of different types of questions (e.g., questions on issues, social distance questions, etc.) in gathering data on racial prejudice. Shuman (1972, 1974) suggested that instead of simply stating platitudes, there should be items on the scale that force the individual to reconcile value conflicts. Weinstein (1972) concluded that in order to present an attitude scale that is highly related to behavioral manifestations of prejudice, it is necessary to present not only issue oriented questions but also action oriented items (e.g., an item on the willingness to sign a petition against some form of racial discrimination).

A review of previous research on the attitudinal assessment of racial prejudice and related variables shows that many issues have been researched but not resolved. The results of research

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on the effect of increased interracial contact on prejudice are equivocal. The literature shows some decreases in racial prejudice with increased interracial contact (interaction) (e.g., Sachdeva, 1973), some increases in prejudice with increased contact (e.g., Webster, 1961), and some studies where there were no changes in prejudice after increased contact (e.g., Shaw, 1973). Carithers (1970), Petroni et al. (1970), and Ehrlich (1973) have criticized investigations of the effects of increased interracial contact on prejudice for not exploring the interrelationships of a variety of different variables to interracial contact and racial prejudice.

Several researchers have studied the relationships among race, sex, and racial prejudice. Campbell and Yarrow (1958), Carithers (1970), Petroni et al. (1970), and Silverman et al. (1973) all indicated that the black female experiences great difficulty in interracial situations. Silverman et al. (1973) found that white males as well as black females were more prejudiced than white females and black males.

Regarding the relationship between grade in school and prejudice, there is some evidence (St. John, 1964; Tanner, 1964) to indicate that more informal interracial interaction occurs when students of different races are integrated during the elementary school years. There is also some earlier information (Clark, 1955) indicating that while racial attitudes of elementary school children are somewhat flexible, the racial attitudes of sixth grade students are more fixed and very similar to those of high school students.

The relationships between racial prejudice and other variables have also been investigated. Ehrlich (1973) summarized the results of several studies that found significant negative correlations between racial prejudice and intelligence test scores. Studies conducted by St. John (1971) and Shaw (1974) indicate that it is no longer appropriate to assume that, because of past suppressions, black children have lower self-concepts (self-esteem) than white children. There is, however, little or no data on the relationship between self-concepts and racial prejudice. Research is also lacking on the relationships between racial prejudice and a number of other personality variables such as anxiety and locus of control.

The present study was designed to investigate the relationships of a number of variables to racial prejudice as measured by an attitude scale (Denne, 1976; see Appendix A for the Racial Prejudice Scale).

The Racial Prejudice Scale is designed to yield a total index of racial prejudice (TIRP) score (a total score based on 14 items

for students of each race) and several subscale scores for each student. The primary subscales each consist of combined scores for at least three items on the Racial Prejudice Scale. The titles for each of these subscales are derived from the general topics focused on in the respective subscale items. The primary subscales are: human interaction--dating and marriage (HIDM); school (SCH); human interaction--social (HIS); and eating (E). An additional single item directly asks the students how prejudiced they are (against blacks if they are white students and against whites if they are black students). This item is referred to as the direct prejudice (DP) subscale.

Based primarily on research summarized above, the major hypotheses tested in this study were:

1. No significant differences in racial prejudice are attributable solely to race.
2. No significant differences in racial prejudice among white students are attributable solely to amount of interracial contact (school contact) with blacks.
3. No significant differences in racial prejudice are attributable solely to grade.
4. No significant differences in racial prejudice are attributable solely to sex.
 - a. As an interaction effect, for the total index of racial prejudice (TIRP), black females have a higher degree of racial prejudice than white males, who have a higher degree of prejudice than white females and black males.
5. A significant negative correlation exists between intelligence and racial prejudice.
6. No significant correlation exists between locus of control and racial prejudice.
7. A significant positive correlation exists between anxiety and racial prejudice.
8. A significant negative correlation exists between self-concept and racial prejudice.

[In all of the hypotheses stated above (with the exception of 4a) the use of the term racial prejudice refers to separate analyses conducted on the TIRP and the HIDM, SCH, HIS, E, and DP subscales.]

9. For white subjects, the HDM subscale scores are higher, indicating more prejudice, than the SCH subscale scores, which are higher than the HIS subscale scores, which are higher than the E subscale scores.

Method

Subjects

The subjects (Ss) were 400 students from grades 6, 8, 9, and 10 of an urban Central Pennsylvania school district. The racial mixture of the school district is unique since there are two elementary schools (grades 1 through 6), one naturally racially integrated and one naturally segregated (all white students). These two schools feed into a racially integrated junior-senior high school (grades 7 through 12). Descriptive information was gathered from all Ss in the four grades. Any S absent for any portion of the data collection was eliminated from the study.

There were 93 black students and 307 white students present for all data collections. Of the white students 196 had attended or were attending the integrated elementary school and 111 had attended or were attending the segregated elementary school. There was a total of 224 males and 176 females. There were 107 sixth graders, 103 eighth graders, 114 ninth graders, and 76 tenth graders (due to the small tenth grade sample size, the ninth and tenth grades were considered one group for most data analyses).

Materials

In addition to the Racial Prejudice Scale described above, test instruments were used to assess intelligence, locus of control, anxiety, and self-concept. Appropriate forms of the Otis-Lennon Mental Ability Test (Otis and Lennon, 1967) were used to measure intelligence. The Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, and Crandall, 1965) was used for the assessment of locus of control. The IPAT Self-Analysis Form was used to determine the anxiety of the Ss, and a scale developed by Richard Cox (1975), the Student Opinion Poll, was used to evaluate the self-concepts of the Ss.

Procedure

Data collection took place in March, 1975. The Student Opinion Poll and the Racial Prejudice Scale were teacher administered while the Otis-Lennon Test, the Intellectual Achievement Responsibility Questionnaire, and the IPAT Self-Analysis Form were administered by the author and another graduate student.

Scoring

For the Racial Prejudice Scale (Denne, 1976; Appendix A), items 5, 6, 7, 8, 9, 12, 13, 16, 17, 18, 19, 20, 21, and 22 make

up the TIRP scale for black students, and items 1, 2, 5, 6, 7, 13, 14, 15, 16, 23, 24, 25, 26 and 27 make up the TIRP scale for white students. Each item can be answered on a scale of from 1 to 5. For blacks and whites 8 of the 14 items are worded so that an answer of 1 reflects the highest degree of prejudice and an answer of 5 reflects the lowest degree of prejudice. The six remaining items scored for each race are worded so that a 5 score reflects the highest degree of prejudice and a 1 score reflects the lowest degree of prejudice. For scoring purposes, each of the eight items where a 1 indicates the highest degree of prejudice is manipulated so that a response of 1 is assigned a score of 5, a 2 response is assigned a 4, . . . a 5 response is assigned a score of 1. In this way a consistent score can be totaled and a high score reflects a high degree of prejudice. For both races the possible range of scores for the TIRP goes from 14 to 70.

Items 13, 16, and 20 for blacks, and 13, 16, and 25 for whites, make up the HDM subscales. Items 5, 6, 7, and 22 for blacks, and 5, 6, 7, and 27 for whites, make up the SCH subscales. The HIS subscales are made up of items 12, 17, and 21 for blacks and 14, 15, and 26 for whites. The E subscales consist of items 8, 9, and 18 for black students and 1, 2, and 23 for white students. Item 19 for blacks and item 24 for whites make up the DP subscales.

Items 10 and 11 for blacks, and 3 and 4 for whites, are not scored in reference to any measure of racial prejudice. These items were designed to make up Self-Preservation subscale. No analyses of the results of students on these items are included in this paper.

All other measures were scored in accordance with standard recommended scoring procedures provided with each test instrument.

To maintain confidentiality regarding the information obtained from Ss, student names were removed from all answer sheets and the answer sheets were numerically coded before any test information was removed from the school premises.

Results

Hypotheses 1 through 4a were tested by several analyses of variance (ANOVA), with the six measures of racial prejudice referred to above used as dependent variables. Each ANOVA consisted of a 3 x 3 x 2 factorial design with the following independent variables: race (a combination of race and white

Interracial contact consisting of three groups: blacks, white segregated--those whites who had attended or were attending the all white elementary school, and white integrated--those whites who had attended or were attending the integrated elementary school); grade (6, 8, 9 and 10, with 9 and 10 considered one group due to the small sample size of grade 10); and sex (males and females).

Table 1 shows the significant sources of variance for the analyses of variance conducted in order to test hypotheses 1 through 4a. Table 1 is presented instead of the traditional ANOVA summary table for a number of reasons: it is a more concise representation of the significant results than six separate ANOVA summary tables; none of the interaction effects for any analysis were statistically significant ($p < .05$); it allows for observations of significant comparisons across measures of prejudice; and it is supplemented in the text of this paper by observed F scores, degrees of freedom, significance levels, and where appropriate, posttest results for all significant sources of variance.

Table 1

Significant Sources of Variance for ANOVAS
Conducted Using Racial Prejudice Scale
Measures as Dependent Variables

Independent Variables	Measures of Racial Prejudice					
	TIRP	HIMM	SCH	HIS	E	DP
Race	$p < .001$	$p < .001$	$p < .001$	n.s.	n.s.	$p < .01$
Sex	$p < .001$	n.s.	$p < .025$	$p < .025$	$p < .005$	$p < .005$
Grade	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

For the dependent variable, TIRP (see Table 1), Newman-Keuls posttesting indicated that for race ($F = 10.63$, $df = 2/382$, $p < .001$), the mean black score of 29.96 was significantly different ($p < .01$) from both the mean white segregated score of 35.91 and the mean white integrated score of 36.43. For the independent variable, sex ($F = 11.01$, $df = 1/382$, $p < .001$), the female mean score of 32.45 was significantly less than the male mean score of 36.60.

For the dependent variable, HIM (see Table 1), Newman-Keuls posttesting indicated that for race ($F = 31.83$, $df = 2/382$, $p < .001$), the mean black score of 6.79 was significantly different ($p < .01$) from the mean white segregated score of 10.08 and the mean white integrated score of 10.42.

For the ANOVA conducted on the dependent variable, SCH (see Table 1), the race ($F = 7.81$, $df = 2/382$, $p < .001$) and sex ($F = 5.4$, $df = 1/382$, $p < .025$) variables were found to be significant sources of variance. For race, Newman-Keuls testing indicated that the black mean score of 7.14 was significantly different ($p < .01$) from both the white segregated mean of 8.59 and the white integrated mean of 8.34. For sex, the female mean score of 7.71 was significantly less than the male mean score of 8.53.

For the dependent variable, HIS (see Table 1), sex ($F = 5.89$, $df = 1/382$, $p < .025$) was a significant source of variance. Females scored significantly less (mean score = 6.09) than males (mean score = 6.96).

On the E subscale (see Table 1), sex ($F = 7.95$, $df = 1/382$, $p < .005$) was again a significant source of variance. The mean female score of 5.70 was significantly less than the mean male score of 6.30.

On the DP measure (see Table 1), Newman-Keuls posttesting indicated that for race ($F = 5.09$, $df = 2/382$, $p < .01$) the mean black score of 1.68 differed significantly ($p < .05$) from the mean white segregated score of 2.14 and the mean white integrated score of 2.20. Also, for sex ($F = 7.93$, $df = 1/382$, $p < .005$), the female mean score of 1.89 was significantly less than the male mean score of 2.20.

Table 2 shows the Pearson-Product-Moment correlations related to hypotheses 5 through 8. This table shows the relationships of intelligence, locus of control, anxiety and self-concept to each of the measures of racial prejudice. For each correlation coefficient presented in Table 2, a test of significance was performed according to the formula given by Sokal and Rohlf (1969).

The fact that there were so many observations ($n = 400$) for each measure greatly contributed to the establishment of statistical significance for the relatively low correlations in Table 2. It should be noted that each variable is significantly related to the Racial Prejudice E subscale. Also, while the significant correlations between the anxiety and racial prejudice subscales are both positive, the significant relationships for intelligence and self-concept and the racial prejudice measures have one positive and one negative value.

Table 2

Correlation Between Measures of Racial
Prejudice and Other Variables

Variables	Measures of Racial Prejudice					
	TIRP	HIDM	SCH	HIS	E	DP
Intelligence	.00	.13**	.01	-.02	-.19***	.07
Locus of Control	-.05	.00	-.03	-.05	-.12**	.00
Anxiety	.08	.03	.04	.02	.14**	.11*
Self-Concept	.02	.09*	.05	.03	-.13**	.01

* $p < .05$ ** $p < .01$ *** $p < .001$

The rank ordering of the mean scores for white students perfectly matched ($r = 1.00$, $df = 2$, $p < .01$) the ordering as given in hypothesis 9. The mean white student score for the primary subscales was: HIDM = 10.31; SCH = 8.43; HIS = 6.73; and E = 6.01 (for this analysis, scoring of the 4 question SCH subscale was adjusted to equate with the 3 question HIDM, HIS, and E subscales). The black student mean scores (not included in hypothesis 9) did not completely parallel the order of the white student scores. The black mean subscale scores were: SCH = 7.16; HIDM = 6.80; HIS = 6.04; and E = 5.98 (once again the SCH scores were adjusted as noted above).

Of the more relevant ad hoc analyses conducted, Table 3 shows an interesting personality pattern for black male students. Low prejudice black males were those students whose TIRP scores were less than one standard deviation below the overall TIRP mean score for the 400 students. Likewise the high prejudice scores were greater than one standard deviation above the TIRP mean score. Using high and low prejudice as an independent variable, scores for the dependent variables (intelligence, locus of control, anxiety, and self-concept) were compared (see Table 3).

Table 3

Low and High Prejudice Black Male Performance
on I.Q. Tests and Personality Variables

Variables	Low Prejudice (n = 16)		High Prejudice (n = 8)		+
	Mean	S.D.	Mean	S.D.	
Intelligence	97.00	9.96	83.75	8.14	3.48*
Locus of Control	23.81	3.01	18.88	4.48	2.81*
Anxiety	26.31	10.31	36.36	5.74	3.07*
Self-Concept	9.00	4.00	7.25	3.93	1.02

*p < .01

An observation of the results shown in Table 3 indicates that black males of high prejudice were less intelligent, more external (feeling that they have little control over what happens to them) on the locus of control measure, and more anxious than black males who scored low in racial prejudice. In similar analyses, no significant comparisons were found for white males or white females. Comparisons were not conducted for black females since there were no black females with TIRP scores less than one standard deviation below the total (n = 400) group TIRP mean.

For the Racial Prejudice Scale, correlations among the subscales and the TIRP are given in Table 4.

Table 4
Intercorrelations for the Racial
Prejudice Scale Measures

Measures	1.	2.	3.	4.	5.	6.
1. HIDM	--	.44	.44	.26	.38	.73
2. SCH		--	.48	.41	.47	.80
3. HIS			--	.50	.39	.77
4. E				--	.38	.68
5. DP					--	.62
6. TIRP						--

Note. All correlation coefficients in this table are significant at the $p < .00001$ level.

Discussion

Hypothesis 1 states that: No significant differences in racial prejudice are attributable solely to race. This hypothesis was not supported for the TIRP, HIDM, SCH and DP measures. For each of these measures blacks were significantly less prejudiced than both the white segregated and white integrated groups. Hypothesis 1 was supported for the HIS and E measures of racial prejudice.

In addition to indicating that blacks are less prejudiced than whites in many situations, this result also points to the situational specificity of prejudice. Whites seem to be more prejudiced than blacks in situations involving prolonged inter-racial contact (e.g., HIDM, SCH); but there is no difference in prejudice between blacks and whites in situations involving inter-racial contact with less intimacy over shorter time periods (e.g., HIS, E). Ideally, it may be appropriate to integrate in situations similar to those suggested in the E subscale with a gradual change to more prolonged SCH type interactions.

Hypothesis 2 states that: No significant differences in racial prejudice are attributable solely to the amount (degree) of interracial contact (school contact with blacks). Since the white segregated and white integrated students did not differ on any measures of racial prejudice, this hypothesis was supported. These results support the body of research that contends that amount of contact alone is not a significant factor in determining racial prejudice. Quality and type of contact need to be assessed.

Hypothesis 3 states that no significant differences in racial prejudice are attributable solely to grade. The results of the study support this hypothesis for all measures of prejudice. These findings lend support to and update an earlier contention of Clark (1955).

Hypothesis 4 states that: No significant differences in racial prejudice are attributable solely to sex. Females were significantly less prejudiced than males on five of the six measures of racial prejudice. Even on the one measure (HIDM) where significant differences were not found, females tended to be less prejudiced ($p < .10$) than males. Unless the Racial Prejudice Scale assessed prejudice in some type of sex biased manner, females appear to be consistently less prejudiced than males.

Hypothesis 4a states that: Black females have a higher degree of racial prejudice (as measured by TIRP only) than white males who in turn have a higher degree of prejudice than white females and black males. Since there was no significant Race X Sex interaction for the TIRP ANOVA, the results do not support this hypothesis. Moreover, since no black female had a prejudice score greater than one standard deviation above the total ($n = 400$) group mean, it appears that black females tended to be the least prejudiced Race X Sex group.

For the results related to hypothesis 4 and 4a it may be that females were more influenced to respond in the socially acceptable manner than males. However, a more likely explanation for the 4a results is that recent attempts to enhance the status of black women in this country have created a situation where black women are no longer in the tenuous position in interracial encounters that earlier research (e.g., Dwyer, 1958; Carithers, 1970) had suggested.

Hypotheses 5 through 8 will not be discussed individually because while some of the results shown in Table 2 lend partial support to these hypotheses, the strength of the correlations is weak at best. No measure of racial prejudice had any great

(no $r < .20$) relationship to intelligence, locus of control, anxiety, or self-concept.

However, the results shown in Table 3 indicate that intelligence and personality variables deserve further research in relationship to racial prejudice. The partial profile created for black males of high and low prejudice is both logical in terms of the direction of the results, and worthy of further research. If, as shown in this study, black males with low prejudice are more intelligent, more external, and more anxious than black males of high prejudice, it may be that future research can further explore these relationships and discover other Race X Sex relationships for racial prejudice and personality variables.

Hypothesis 9 states that: For white subjects, the HIDM subscale score is higher (more prejudice) than the SCH subscale, which is higher than the HIS subscale, which is higher than the E subscale. The rank order correlational results directly correspond to the ordering predicted in the hypothesis. These results, when viewed in conjunction with the intercorrelations among the measures presented in Table 4, indicate the viability of viewing racial prejudice as a multifaceted, situational/social distance oriented, construct. Future research involving racial prejudice measures with more and different subscale areas may point to interactions involving less interracial prejudice than that found for the E subscale in this study. Considerations for organizing a hierarchy of racially tense interactions should be investigated in future research.

The complexity of this study in terms of the number of variables studied, the number of statistically significant results, and the various measures developed to study prejudice, precludes any attempt to formulate a single conclusion that would adequately represent the results. However, it can be said that the Racial Prejudice Scale proved to be a useful instrument for the purposes of this study and that revisions of this scale may prove to be useful in future research. All of the variables studied in this research merit further investigation. Future research on racial prejudice should also investigate additional variables such as socioeconomic status and perceived prejudice of Ss' primary referent (parent, peer, etc.). With future multi-variable research on racial prejudice, it is hoped that social intervention strategies can be developed to minimize interracial conflict in the nation's schools.

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Appendix A

Racial Prejudice Scale

Please read each of the following questions carefully and after reading each question circle the number on your answer sheet for the answer that best describes how you feel. For example, if the question is:

Would you like to be a doctor?

1. No, definitely not
2. No, probably not
3. I don't know
4. Yes, probably
5. Yes, definitely

If you feel that you would like to be a doctor very much, you would circle the number 5 on the answer sheet.

There are no right or wrong answers - just answer the questions as honestly as you can. Your answers to these questions will not be shown to either your teacher, parents, or friends. All students should answer all of the first 17 questions.

1. Do you think Negroes should be allowed to eat in all restaurants?
 1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

2. Suppose that a Negro man entered a restaurant in which there were no other Negroes. If the white restaurant owner approached the Negro man and asked him to please eat somewhere else even though the owner knew that his business would not be hurt if he started serving dinner to Negroes, do you think the owner was right in asking the man to eat somewhere else?
 1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

3. If the restaurant owner (in question 2) knew that his business would improve slightly if he began serving dinners to Negroes and he still refused to serve this Negro man do you think the owner was right in refusing to serve the Negro man?
 1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

4. If this same restaurant owner knew that if he started serving dinner to Negroes his business would drop off slightly and he refused to serve this black man, do you think the owner was right in refusing to serve the Negro man?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
5. In one small city in which blacks and whites lived in the same neighborhoods there were two separate school districts, one just for black students and one just for whites. If it was known that both school systems provided their students with approximately equal educations, do you think it would be best to let the school districts remain separate?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
6. If it was known that the two school districts mentioned in question 5 did not provide their students with equal educations, that the school with black students gave a better education than the school with white students, do you think it would be best to merge the school districts and form one school district with blacks and whites together?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
7. If it was known that the two school districts did not provide an equal education and that the white school district provided a better education than the black school district, do you think it would be best to merge the school districts and form one school district that provides a good education with blacks and whites together?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

8. Do you think white people should be allowed to eat in all restaurants?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
9. Suppose a white man entered a restaurant in which there were no other white people. If the black restaurant owner approached the white man and asked him to please eat somewhere else even though the owner knew that his business would not be hurt if he started serving dinner to whites, do you think the owner was right in asking the man to eat somewhere else?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
10. If the black restaurant owner knew his business would improve slightly if he began serving dinners to whites and he still refused to serve the white man, do you think the owner was right in refusing to serve the white man?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
11. If the same restaurant owner knew that his business would drop off slightly if he began serving whites and he refused to serve this white man, do you think the owner was right in refusing to serve the white man?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
12. There is an opening for one player on a black basketball team that is well known for its trick-shooting ability. The player who was most qualified to be put on the team was white. The black coach refused to put the white man on the team because of the team's "black tradition." Do you think the coach was right in refusing to put the white man on the team?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

13. Should black girls be allowed to have white boyfriends?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

14. The James family and the Smith family were white people living in an all-white neighborhood. The James family moved and sold their house to a Negro family. The Smith family became very angry at the James family for selling their house to Negroes because they did not want to live next to Negroes. Was the Smith family right in getting angry at the James family?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

15. There is an opening for one player on a white hockey team well known for its great teams. The player who was most qualified to be put on the team was black. The white coach refused to put the black player on the team because of the team's "white tradition." Do you think the coach was right in refusing to put the black man on the team?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

16. Should white girls be allowed to have black boyfriends?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

17. The Harris family and the Williams family were black people living in an all-black neighborhood. The Harris family moved and sold their house to a white family. The Williams family became very angry at the Harris family for selling to whites because they did not want to live next door to white people. Was the Williams family right in being angry at the Harris family?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

If you are black answer questions 18 through 22 then stop.

If you are white skip questions 18 through 22 and answer questions 23 through 27 and stop.

18. Would you feel comfortable eating at the same table with a white person?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
19. Do you feel that you are prejudiced against white people?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
20. Would you feel that it was OK if your sister married a white man?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
21. Would you feel comfortable living next to white people?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
22. Would you like to go to a school with all black students?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

If you are black stop here. If you are white begin to answer the questions starting with number 23.

23. Would you feel comfortable eating at the same table as a black person?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
24. Do you feel you are prejudiced against black people?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
25. Would you feel that it was OK if your sister married a black man?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
26. Would you feel comfortable living next door to a black family?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely
27. Would you like to go to a school with all white students?
1. No, definitely not
 2. No, probably not
 3. I don't know
 4. Yes, probably
 5. Yes, definitely

Reaction to "Racial Prejudice and Its Relationships to Amount
of Interracial Contact"

The assessment of the related variables identified to racial prejudice by the authors, hopefully, will interject a timely yardstick for responsible governmental and business leaders as they confront the innumerable majority-minority and sex population issues of today.

Since a critical underlying assumption of the study was that the data collected accurately reflected the variables described, their conclusions would seem to strengthen the position held by some urban educational researchers. Their data in this category reveal that urban school governance must be examined in the social context of its existence and thus racial prejudice must be examined in a multifaceted complex and also assessed in a holistic manner.

The authors' analysis of the main external factors affecting racial prejudice within the selected school setting and their determined results should provide additional insight for those social scientists who are charged with the responsibility for developing programs of human interaction that affect sex equality in education and employment, affirmative action, and the total aspect of governmental accountability for urban decay. The data, in these instances, should reduce further the broad generalizations and manifestations associated with prejudice acts.

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A Bicultural Approach to the Issue of Achievement Motivation

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The Problem

Current assessment measures for achievement motivation have given limited attention to the distinction between the motive to achieve and the manner in which this motive is actualized--dependent on culturally approved means and ends. In contrast, the achievement motivation literature emphasizes that achievement depends on a generalized desire to achieve; it does not deal with the issue of whether or not a culture values the appropriate achievement behavior. For example, initial studies of achievement motivation conducted with white, middle-class males showed that high need achievers valued achievement for self (McClelland, Atkinson, Clark & Lowell, 1953). In contrast, studies conducted in this area with Japanese Americans showed that high need achievers were more inclined to pursue goals benefiting others, particularly the family. Success for oneself was seen as a sign of excessive immoral egoism (DeVos, 1968). According to Maehr (1974) the desire to achieve is often confounded with the goal to be achieved. This results in the possibility that one might exhibit behaviors characteristic of highly motivated persons, but directed to different goals which are acceptable in one culture but not in another.

Within the current assessment framework for achievement motivation, children from different ethnic groups tend to be classified as low in need achievement (Carpenter, 1967; Coleman et al., 1966; Heller, 1966, 1971; Mingione, 1965; Rosen, 1959). The problem may be due to the fact that current assessment procedures are so culture-bound that they sample instances of achievement motivation associated with a given culture. It should be remembered that persistence and variation in performance are not the sole property of individuals in any given culture. In fact, they are universal behavior patterns assumed to exist to the same degree across cultural groups (DeVos, 1968; Maehr, 1974). Variations may be found, however, in the incentives for motivation, i.e., why does an individual want to achieve? In order to best assess the variations in incentives for motivation in a cross-cultural study it is necessary to introduce the concept of biculturalism as it relates to the study of achievement motivation.

The Concept of Biculturalism

The concept of biculturalism relates directly to the reality that countless children must learn to deal with the cultural worlds of home and school. According to Valentine (1970) with regard to black Americans:

Biculturalism strongly appeals to us as a key concept for making sense out of ethnicity and related matters: the collective behavior and social life of the Black community is bicultural in the sense that each Afro American ethnic segment draws upon both a distinctive repertoire of standardized Afro American group behavior, and simultaneously, patterns derived from the mainstream cultural system of Euro American derivation. Socialization in both systems begins at an early age, continues throughout life, and is generally of equal importance in most individuals' lives. (p. 7)

The central theoretical premise of bicultural development is that there are two different but equally important sociocultural systems which influence the behavior of the individual (Ramírez and Castañeda, 1974). Polgar (1960), for example, found that people living on a Mesquakie Indian reservation regularly go through a process which he termed "biculturation." That is, they are simultaneously socialized in two different ways of life, a contemporary form of their traditional Amerindian lifeways and the mainstream Euro-American culture.

The concept of biculturalism has important implications for the theory of achievement motivation (Castaneda, 1973). Any viable cross-cultural assessment of the motive to achieve must analyze the problem in terms of two sociocultural systems, school and home. According to DeVos (1968) and Findling (1971), achievement motivation is affected by a constellation of situations in which the individual motive states are expressed. One can argue that the preferred mode of achievement, i.e., for the benefit of self and/or others, may vary depending upon the cultural values which define the achievement setting. The bicultural child may be socialized to achieve for the benefit of others in the home setting, while in the school setting he is socialized to achieve for the benefit of self. For example, the bicultural child from a culture that values achievement for home and family, such as the traditional Mexican (Ramírez and Castañeda, 1974) and Japanese (Caudill and DeVos, 1956) cultures, may press a high need to achieve for the family, concomitant with a high need to achieve for self in the school setting. Thus this study is more concerned

with the identification of the preferred mode of achievement in a culturally defined setting, rather than the mere identification of children as high or low need achievers.

Bicultural Achievement Motivation Scale

In order to assess bicultural achievement motivation a questionnaire-type scale, originally developed by Castañeda, Gray and Garcia (1973) has been used to assess and identify the preferred mode of achievement motivation, i.e., achievement for the benefit of self and achievement for the benefit of others. For example, the results from this scale will enable the identification of Mexican-American children who exhibit a strong preference for both modes, i.e., achievement for others and self, as a function of the particular achievement setting. The scale permits assessment of the absolute as well as the relative strength of each motive.

Language Usage as a Correlate of Acculturation

In a study of this nature it is important to examine both intercultural and intracultural sources of variability with regard to the Mexican-American population (Ramírez and Castañeda, 1974). These researchers contend that the use of Spanish and English can be associated with the degree to which the family or group adheres to the traditional Mexican value system and follows the traditional socialization practices with their young. They have provided a useful analysis of the community which illuminates the intracultural sources of variability among the Mexican-American population. The variability within the community is evident when one examines values, socialization practices and language usage which result in differences in cognitive styles, human relational styles and incentives for achievement motivation. Ramírez and Castañeda (1974) have identified three main communities: traditional, dualistic, and atraditional. Table 1 presents a summary of the main characteristics identified with each type of Mexican-American community. Each community is described in terms of its general characteristics, degree of identification with family, community and ethnic group, and language usage behavior.

It is important to note that these classifications are not absolute. Ramírez and Castañeda (1974) note that some communities do not fit into any one particular category. Furthermore, not all Mexican-American residents of the same community maintain the same value systems as have been outlined. Yet the values, socialization goals, and language usage as discussed

Table 1

A Summary of Characteristics of Traditional, Dualistic, and Atraditional Communities

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Traditional Community

This community is generally situated in a rural setting, close to the Mexico-United States border. It is ethnically homogeneous in population. There is a strong sense of identification with the traditional Mexican value system, rather than the dominant Anglo culture. Children who are socialized in this community develop a strong sense of family importance and are encouraged to accept a responsibility to help the family whenever possible. These children are encouraged to achieve through a cooperative reward structure for the benefit of the family, community and ethnic group. The principal medium of communication is Spanish for both adults and children. Children will be expected to respond in Spanish to authority figures in the community irrespective of their language proficiency in English.

Dualistic Community

This community is generally situated in a semi-urban setting, removed from the border. It is ethnically heterogeneous. There is a moderate sense of identification with the traditional Mexican value system which is counterbalanced by a substantial amount of pressure to acculturate into the majority Anglo value system. There is a strong identification with family and peer group, but a weak community and ethnic group tie. Children who are socialized in this setting may fall into the category of a bicultural individual. These children are familiarized with both the cooperative and competitive mode of achievement. The principal language of adults is Spanish while the primary language of children is usually English. Children will generally be familiar with Spanish and exhibit some degree of bilingual proficiency. They may be expected to respond to some authority figures, i.e., grandparents, in Spanish.

Atraditional Community

This community is situated in an urban setting, with a substantial distance from the border. Mexican Americans comprise a minority in the community. There is a limited degree of family ties outside of the nuclear unit. Due to the limited number of Mexican Americans, there is also a lessening of ethnic cohesiveness. Interpersonal relationships with peers may have greater importance to the child than family ties. Independence training is considered important in the socialization practices of this community. A concern for independence, a limited ethnic identification and limited commitment to mutual cooperation all increase the probability of a preference for a competitive reward structure in the achievement setting.

here are those most frequently noted in these community settings, and are useful for analysis of language usage as it relates to degree of individual acculturation and subsequent expression of incentive motivational styles.

Several other studies have focused on the relationship between an individual's verbal behavior and degree of acculturation in a particular society (see Barker, 1974; Friedrich, 1965; Heyden, 1966; Hofman, 1968; Lambert, 1972; Lieberman, 1965; Mackey, 1967; Nahirny and Fishman, 1965; Royal Commission, 1967; and Rustow, 1968). These studies support the theory that language usage¹ within a cultural group is one possible indicator of:

- 1) Degree of acculturation,
- 2) Frequency and extent of intergroup contacts, and
- 3) Other similar dimensions of sociocultural integration between neighboring populations.

In this study a Language Usage Index was developed to assess the language behavior of the Mexican-American children. It is based on a scale devised by Fishman and Terry (1966).

Relationship between Language Usage Index and Bicultural Achievement Motivation Scale

It is important to discuss the possible relationship between language usage as a correlate of acculturation and achievement motivation.

This study will examine the correlation between language behavior and preferred mode of achievement. It is hypothesized that the traditional individual, as measured by the Language Usage Index (LUI), will exhibit a stronger orientation to achieve for others than for self (particularly in the case of the Mexican-American female in the home setting). Conversely the dualistic individual, as measured by the LUI, will exhibit both modes of achievement motivation: achievement for self and achievement for others. The atraditional individual as measured

¹Language usage is defined by Fishman (1966) as "who speaks what language to whom and when."

by the LUI will tend to exhibit a stronger orientation to achieve for self (particularly in the case of the Mexican-American male in the home setting).

The Sample

The sample of students selected for the study consisted of 480 elementary school students. A minimum of 20 Mexican-American and 20 Anglo-American students were chosen from a minimum of two classrooms of fourth graders and two classrooms of sixth graders from each of two schools in each of three districts: Cucamonga, Pasadena, and Berkeley. The classrooms were selected if: (1) at least 40 percent and not more than 60 percent of the students were Mexican-American, and (2) there was no more than a 40-60 percent male-female split.

Results and Conclusions

The purpose of this section is threefold: (1) to review the intent of this study within the context of the main findings; (2) to consider some possible modifications of this study for further research; and (3) to discuss the implications of this study for educational policy.

Objectives of the Study

The aim of this study was to examine possible cultural and sex differences in achievement motivation from a bicultural perspective. The problem was approached on two levels. Theoretically, a bicultural model of achievement motivation was presented to explain the sociocultural origins of differences in mode of achievement (for the benefit of self and others). This model examines the phenomenon of achievement motivation in terms of the values inculcated in the child from two sociocultural systems: home and school. It enables the identification of the preferred mode of achievement, for the benefit of self and others within the culturally-defined achievement setting. Other factors, such as degree of acculturation, number of years in the country, are believed to have an impact on the relative strength of the preferred mode of achievement.

Additionally, the study sought to assess achievement motivation within this bicultural framework. The Bicultural Achievement Motivation Scale was used to identify the preferred mode of achievement. This scale permits the identification of the individual's achievement mode in a culturally-defined setting, rather

then the mere identification of children as high or low in achievement motivation.

Main Findings

The results of this research support the hypotheses of a joint effect of sex and ethnic group membership on mode of achievement. The general hypotheses are strongly supported by the results from the Bicultural Achievement Motivation Scale. These results show significant ethnic and sex differences in the relative strength of achievement for the benefit of self and others in the academic and home settings--with one exception. These results will be discussed at length in this section.

An overall examination of the mean values reveals a similar pattern for the four groups across the two achievement settings. The mean values for the groups increased from achievement for self to achievement for others. This may have been a function of the scale; however, in preliminary studies this trend did not occur. Consistent with the hypothesis, Mexican- and Anglo-American females had higher mean scores in achievement for others than the males in both the academic and home settings.

The males from both ethnic groups had relatively similar scores in achievement for self in the academic and home settings. As predicted, they show a divergent pattern with regard to achievement for others in both settings. The Mexican-American males show a relatively stronger orientation to achieve for others, particularly in the home setting--findings consistent with those of Grebler, Moore and Guzman (1970), Moore (1970), and Ramirez and Castañeda (1974), with regard to the strong emphasis placed on achievement for the benefit of the family in the Mexican-American home. More specifically,

In the Academic Setting. The results supported the hypotheses of significant differences in the predicted direction: Mexican-Americans scored relatively higher in achievement for others than the Anglo-Americans. Additionally, females from both ethnic groups scored higher for others than the males. These results are consistent with the findings of Baruch (1967), Horner (1968), McClelland (1953), and Ramirez and Price-Williams (1971).

One of the unpredicted findings of this study is the significant interaction between ethnicity and sex in achievement for self in the academic setting. Unexpectedly, Anglo-American females show a relatively lower need to achieve for self than the Mexican-American females in this setting.

A possible explanation for this interaction may be that the majority of all students in this study tended to be from low SES families. It may be hypothesized that there is a stronger emphasis placed on achievement in school for the Mexican-American female than the Anglo-American female. For the low SES Mexican-American family, school may be seen as the only viable means of moving into a higher SES level.

This finding is in contrast to numerous studies which stress the low achievement motivation of Mexican-American children (e.g., Heller, 1968, 1971). However, they are consistent with those of Anderson and Johnson (1968) with regard to contradicting the stereotype that Mexican families place little emphasis on education. Their findings show that Mexican-American children express a stronger desire to achieve in school than their Anglo-American peers. Moreover, they found that Mexican-American children experience as much pressure from their parents to do well in school, complete high school, and attend college as their Anglo-American contemporaries.

Additionally, it seems from this study that the socialization of low SES Anglo-American females to avoid press for competitive excellence in schools may be stronger than previously imagined (French, 1951; Horner, 1968; Lipman-Blumen, 1972). If this is true, it may be predicted that it is more socially acceptable for the low SES Anglo-American female to maintain a more passive, non-assertive role in the classroom than the Mexican-American female. On the other hand, this pattern may be reversed for females from higher SES groups.

The findings which show significant differences between females and males in the academic setting are consistent with the general trend of research in this area. However, the conclusions that are drawn from these differences are too often negative and have been a misrepresentation of the achievement motive in females. An example of this type of misrepresentation is characterized by Callard (1969) who writes:

It is possible . . . that boys are biologically predisposed to develop certain motives, such as achievement motive, while girls are predisposed to develop other motives, such as affiliation.
(p. 20)

The fact that women show a stronger need to achieve for the benefit of others has been interpreted to mean that women's achievement activities and strivings are motivated by the need for approval and affection, while those of men are more autonomously determined by their own internal achievement standards and

their need for self-approval (Veroff, 1969). This approach is limited in that women, like men, may also be motivated by their own internal achievement standards and a need for self-approval. It is the direction of their achievement motive (i.e., to achieve for the benefit of others) that may distinguish women from men in this regard. The relation between the two modes of achievement is not one of lower achievement motivation to higher, but rather one of coordination--both are functional and their development should be encouraged and recognized by the schools.

Another possible interpretation for ethnic and sex differences found in the academic setting may be understood as differences in competitive orientations as reflected in preferred mode of achievement. Differences in motivational incentives between Mexican-American and Anglo-American children have been studied through competition-cooperation tasks. Using an instrument designed to investigate cooperation and competition, Kagan and Madsen (1971, 1972) studied the behavior of Mexican, Mexican-American and Anglo-American children. Mexican and Mexican-American children exhibited more cooperative behavior than Anglo-American children in a task that rewarded cooperation. When the experiment gave the children a competitive set on the same task, Anglo-American children were more competitive than either the Mexican or Mexican-American children. Thus, the results indicated that the Mexican-American children were more highly motivated in the cooperative setting than in the competitive setting. Additionally, more Anglo-American girls than boys were never rivalrous in the competitive settings. No consistent sex trends were observed for the Mexican children.

In the Home Setting. The results for the home setting show greater similarity among Anglo-American and Mexican-American females and Mexican-American males in mode of achievement than in the academic setting. Consistent with the findings in the academic setting, this can be attributed to the strong emphasis placed on family and home in the Mexican-American socialization practices. It is interesting to note the differences between the males from the two ethnic groups. While the Mexican-Americans show an increase in the relative strength to achieve for others in the home setting (as compared with the academic setting) the Anglo-American males show only a slight relative increase in achievement for others in the academic and home settings. Anglo-American males have the highest score for self and the lowest score for others in the home setting. This is in accordance with the socialization goals for the Anglo-American males as depicted in the studies of Atkinson (1958), McClelland et al. (1953), Rosen (1959), Veroff (1969), and Winterbottom (1958). McClelland concluded as a result of his studies on achievement motivation that:

The data we have to date strongly support the hypothesis that achievement motives develop in cultures and in families where there is an emphasis on the independent development of the individual. In contrast, low achievement motivation is associated with families in which the child is more dependent on his parents and subordinate in importance to them. (p. 328)

As previously mentioned, McClelland's studies failed to deal with the issue of whether or not a culture values the appropriate achievement behavior. Thus, it may be concluded that achievement for the benefit of self is consistent with the desire and goal to achieve for the Anglo-American male.

Cross-cultural studies on the socialization patterns for women show an emphasis on the development of achievement for the benefit of others (Haavio-Mannila, 1967; Hoffman, 1972). Although the Mexican-American females had the highest relative need to achieve for others in both achievement settings, the differences between the females are less than expected.

A possible explanation for the high scores of the females in achievement for others may be found in the work of Lipman-Blumen (1972, 1974). She suggests that this type of achievement orientation is encouraged during the socialization period and leads to the development of a vicarious mode of achievement; i.e., women find fulfillment of their achievement needs primarily through the accomplishments of their family. Her research confirms the impact of early socialization which encourages satisfaction of achievement needs through passive identification with the accomplishments of others. Lipman-Blumen found that women transferred the vicarious mode of achievement to their husbands when they married. The survey data showed that:

. . . a majority of all the women in the sample, both in the contemporary and in the traditional categories sought to satisfy their achievement needs vicariously. . . . Relatively few seemed to prefer the balanced mode in which the accomplishments of the husband and wife had equal weight. (p. 36)

Another interpretation of the achievement motive in women can be found in the work of Horner (1968, 1973). She explains the dynamics of female motivation as an approach-avoidance conflict: while women may have a strong need to achieve, there is a strong fear that achievement will bring with it some form of social rejection from peers, particularly of the opposite

sex. Consequently she concludes that low aspirations in women are due to a prevailing fear of success and the social rejection that may coincide with achievement endeavors.

While these studies do not actually deal with the motive to achieve for the benefit of others, but rather the motive to achieve through the accomplishments and achievements of others, they do suggest the need to look at the sensitive area of socialization practices of the home and school. This issue is one that needs to be handled with caution and understanding in order to avoid possible conflicts between the values of the home and school.

With regard to sex-typing of children, one may ask how much influence the school has as compared with the home. Minuchin (1965) and Minuchin et al. (1969) studied children's sex-typed behavior and attitudes in traditional and progressive homes and schools. They found that the progressive homes and schools did not emphasize fixed appropriate behavior; traditional homes and schools did. Minuchin et al. (1969) found that although the home influence for sex-typing was stronger, the school's philosophy for sex-appropriate behavior had significant effects on the children's sex-role preferences, sex-typed activities, and differences between boys' and girls' display of aggression. They concluded that the school's sex-typing does contribute to the general socialization of its children.

The same situation occurs with regard to differing values of the home and school. This present study was based on the assumption that schools reinforce a motivation to achieve which stresses values alien to the traditional Mexican-American child, and from the results of this study these values apparently are also alien to other children, particularly females. In order to bridge the gap between these school policies and practices and the cultural dynamics of the students from different cultural and ethnic groups (i.e., in the sense that the school reflects an understanding and acceptance of differences in the incentives underlying achievement motivation), there is a need for the systematic exploration and delineation of cultural and sex differences among school populations.

In order to provide an educational learning environment which encourages bicultural and balanced sex-role development, the schools must develop new approaches to teaching, reorganization of the existing curriculum, and the training and retraining of personnel with a new orientation (Deslondes, 1975). This new orientation would imply a background and exposure to psychological, sociological, and anthropological theory and understanding of the relationship between culture and behavior.

One area for change is that of the textbooks. The obvious issue being raised is one of defining sex-appropriate domains and available cultural role models. The girl too often finds other females in school either in front of the chalkboard or wrapped in an apron in a storybook. If we expect and desire females to participate fully in our society, it must be recognized that there is a definite lack of adequate role models which will complicate the already difficult process of succeeding at a non-traditionally sex-appropriate skill or profession (Bell, 1970).

Mexican-American children experience the same type of problems with regard to stereotyped models in the textbooks. Cortes (1971) reviewed a dozen popular U.S. history textbooks used in California secondary schools only to find "little in the texts which would contribute to the pride of the young Chicano, but much that could assault his ego and reinforce the concept of Anglo superiority." To counteract this type of negative stereotyping found in textbooks, teachers must be encouraged to enhance their curricula with bicultural materials which generate self-esteem through appreciation of cultural heritage.

Ramírez and Castañeda (1974) suggest that a heritage curriculum, like language, is essential for improving self-esteem. They cite the study of Alvarez and Ramirez (1970) in which Mexican-American children who had received lessons in Mexican and Mexican-American heritage scored significantly higher on the Coopersmith Self Inventory than a comparable group of children who received no such instruction.

Discussion of Results from Language Usage Index and Bicultural Achievement Motivation Scale

The results from the analysis of intracultural variability in mode of achievement are consistent with those for the entire sample. The scores on the EAMS were more closely related to the sex of the Mexican-American students than to degree of language dominance; i.e., sex was the major predictor of the achievement motive. Thus, the likelihood was greater that females would show a significantly stronger need to achieve for others than males in both the academic and home settings.

On the other hand, language dominance showed a similar kind of relationship to mode of achievement within the females and males. The Spanish dominant females did show the highest relative achievement score for others in both settings. The English dominant females were clearly more aligned with the Spanish dominant males in achievement for others than either of the other two female groups. This finding was in accord with the fact that the expression of traditional Mexican-American values

may be relatively stable with regard to language dominance for females and males. While the Spanish dominant females clearly show a relatively stronger need to achieve for others, the Spanish dominant males are clearly more oriented to achieve for others than the Anglo-American males, particularly in the home setting (Madsen, 1963). This is also consistent with the traditional Mexican-American values to achieve for the benefit of the family. These findings are in accord with those of Ramirez and Price-Williams (1974), who found that traditional Mexican-American children appear to be motivated to achieve for the family. This contrasts with McClelland's results that Anglo-American males who exhibit a high need to achieve are oriented to achieve for self. The findings of this study are also in accordance with those for Hawaiian high school males (Gallimore, 1968), women (Lipman-Blumen, 1972), and Japanese and Japanese-Americans (Caudill and DeVos, 1956; DeVos, 1968). In general, these researchers have presented evidence of the limited applicability of the McClelland-Atkinson model for achievement motivation to widely diverse cultural groups when factors other than need achievement are taken into account. Castañeda (1974) states that the more acculturated individuals will tend to experience socialization practices which stress independence training as defined by McClelland et al. (1953). These individuals may have a limited ethnic identification and show a preference for a competitive reward structure in the achievement setting.

It would appear that the relationship between language dominance as a possible measure of acculturation and mode of achievement depends not only on language dominance but also on the sex of the individual. Although highly plausible, these interpretations must remain conjectural until additional investigations concerning language correlates of achievement motivation are conducted. Such research should include a more rigorous investigation of the students' cultural identification. As yet, however, there is not a test which accurately assesses cultural identification.

Educational Implications

The significance and educational implications of this study have been recently discussed by numerous social scientists (DeVos, 1966; Lipman-Blumen, 1973; Maehr, 1974; Ramirez and Castañeda, 1974). These writers have expressed a growing concern with the basic assumptions underlying the theory of achievement motivation (Atkinson, 1958, 1965; McClelland et al., 1953, 1961). This concern is based on recent research which suggests that the reasons underlying achievement-oriented

behavior may differ from culture to culture. The possibility that cultural reasons may account for variability in achievement orientation among Mexican-Americans and Anglo-Americans has only recently been implied (Maehr, 1974; Ramirez and Castañeda, 1974). In fact, the present research shows that these differences are real and must be examined further. In order for educational practitioners to design more effective reinforcement and motivational strategies for children of diverse cultural backgrounds, information derived from this type of study is critical and essential.

An important implication of these findings is that there are sociocultural differences in the reasons why individuals are motivated to achieve. As educators and psychologists are attempting to deal with the issue of motivating students in the classroom, it seems important to consider the findings of this study. The Mexican-American child is too often described as "passive," "difficult to motivate," "disinterested in academic success," etc. Heller (1966, 1971) contends that Mexican-American children are socialized in an environment which "fails to stress the motive to achieve." The results of this present study tend to refute this negative perspective. All children are motivated to achieve. As educators we must tap the reasons for their achievement, be it for the benefit of self or for others.

Other implications of this study concern the professional training of teachers in bilingual-bicultural classrooms. Since variation in mode of achievement seems to be related to ethnic group membership, sex of the student and, to some degree, language dominance (as a possible measure of acculturation), educators should find this information useful in their efforts to familiarize teachers about inter- and intracultural sources of variability. Such efforts could include helping these teachers-in-training to become more aware of differences in motivational styles in order to reinforce students' achievements, and to modify on these differences to provide meaningful incentives for the students in the classroom. For example, a student who is more traditional in orientation might tend to be more motivated to achieve in a cooperative environment. A teacher who is sensitive to this may utilize the information in such a way as to encourage the development of both modes of achievement. This development would be more plausible in an educational situation where the student felt secure, i.e., a Spanish dominant student in a Spanish language arts class. In this type of situation a student who is motivated to achieve for the benefit of others might be encouraged to achieve for the benefit of self. In order to promote achievement by bicultural individuals, it is necessary for the schools to foster the development of both modes of achievement, rather than to encourage one over the other.

These findings could also be useful not only to teachers in the classroom, but also to employers and counselors who attempt to guide students into appropriate vocations. Those individuals who favor one mode of achievement over another might tend to favor certain occupations. This is an area for further study and qualification.

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Reaction to "A Bicultural Approach to the Issue of Achievement
Motivation "

The unique contribution of Gray's work is in her four-dimensional approach to the issue of achievement motivation. Although two of the four variables included in her research--sex and ethnicity--have been widely studied in connection with achievement motivation, they have not been linked together with "culturally related incentive" and "levels of acculturation" and studied as a four-dimensional phenomenon. As Gray herself has noted, one of the four variables, culturally approved incentives, has received little previous attention.

A second important aspect of Gray's research is her definition and application of bicultural influences. While studies of this nature generally conceptualize bicultural influences in terms of "white" versus "non-white" values, Gray looked at the "school" versus the "home" culture. Consequently, educational implications are both specific and useful.

The minority ethnic group selected for this particular study seems appropriate for two reasons. One, Mexican-Americans constitute the second largest minority group in the United States and their numbers continue to increase at a very rapid rate. Therefore schools need to give serious consideration to identifying and understanding culturally related educational requirements of Mexican-American students. Two, teachers seem to accept the widespread assumption that Mexican-American families do not value education very highly, and that consequently their children are not motivated toward academic achievement.

Gray's research has shed light on achievement motivation of Mexican-American students in ways that could help to improve teachers' understanding of this issue and facilitate the development of appropriate skills to effectively motivate Mexican-American students.

This is a complex research study posing many critical questions which deserve careful consideration from both teachers and research scientists. These questions include variables such as sex role socialization, culturally biased incentives, and levels of acculturation.

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Variables Affecting the Intellectual Performance
of Black and White Children

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Abstract

Digit span and block design data were gathered from 240 randomly selected male and female students at three grade levels (1st, 3rd, and 5th). These students were enrolled in either a predominantly black or white mono-racial school, or in a multiracial school. An analysis of variance resulted in significant differences for race of examinees and school type. Race of testers significantly interacted with both race and sex of examinees. This effect was not mediated by school type or grade level, but was affected by the nature of the task.

Historically, Pressey and Teter (1919) suggested that ". . . tests given by white examiners to colored pupils can give reliable data for a comparison of the races" (p. 278). But Klineberg (1935, 1944) suggested that fear of white examiners contributed to the lower performance of black subjects on tests of intelligence. Teele and Mayo (1969) have pointed out inherent difficulties and detrimental effects of biracial testing on the performance of black children with the advent of increased desegregation.

Reviews of research on the influence of the tester, observer, and experimenter on the subjects being observed have been provided by Kintz et al. (1965), Sattler (1970), and Sattler and Theye (1967). These writers examined such effects as tester's race, personality, sex, expectancy, and modeling behavior. In general, these studies did not provide definitive evidence regarding the existence of the "tester influence phenomenon."

There is a dearth of systematic studies carried out in the area of intelligence testing with young male and female children. Sattler (1970), in his review of the literature, cited several studies which used both black and white testers in the same experiment. These studies suggested that the tester effect can be more reliably examined with better design procedures.

The present study examined the influence of the tester's race on the intellectual performance of elementary school children in a biracial testing situation. Previous literature suggests that white testers negatively affect the IQ performance

scores of black children in a dyadic test setting (Pegmoore and Retish, 1974; Solkoff, 1972). Yet these data indicate that this effect only holds true for students who are enrolled in black monoracial schools. There has been little or no experimentation carried out to investigate this effect in white nonracial schools, nor have there been any studies reported in the professional literature on the effects of the tester's race and sex on the testing situation in multiracial schools.

The present study will consider both black and white non-racial schools as factors in the experimental design. It will consider the dyadic relationship between testers and examinees as well as any contextual effects on this interaction. The influence of the testers' race on the test scores of black and white elementary school children will be analyzed. In addition, several classification and contextual variables will be studied with respect to their modifying effect on this biracial testing situation. These variables will include the racial composition of the schools, grade levels, sex of the student, and nature of the task.

Method

Subjects:

The subjects employed in this study were from three geographically and demographically distinct samples (N = 240). A group of black and white students came from a school located in a suburban area of Chicago. These students were selected because their school was reflective of the racial balance which existed in that community. A second group of black students came from a school located in a 95 percent black inner-city area of Chicago. These students were used because of the monoraciality of their school and thus provided an "extreme group" comparison for the multiracial sample. A group of white students was also selected from a school located in a suburb of Chicago. These students form another monoracial "extreme group" comparison for the multiracial school.

Materials:

The instruments employed in this study were:

1. The digit span sub-test of the Wechsler Intelligence Scale for Children (Wechsler, 1949). This sub-test consists of two parts: digits forward and digits backward. It measures a person's ability to listen attentively, store bits of information, and reproduce these units after a very short time interval. It is an individual scale which takes 5 to 10 minutes to administer.

2. The block design sub-test of the Wechsler Intelligence Scale for Children. This sub-test consists of ten two-dimensional designs to be reproduced with multicolored blocks within time limits. The principal mental abilities measured by this task are perceptual organization and spatial visualization. This is an individually administered sub-test which takes 5 to 10 minutes.

Procedure:

Tests were administered by ten black and ten white female testers. They ranged in age from 18 to 21 years with a mean of about 19. They possessed on the average 2.5 years of college training. Each tester participated in examining subjects in all three schools. They were counterbalanced by race and school, thus avoiding extraneous variables to pile up in one school.

Each tester administered a block design test and a digit span test in pre-counterbalanced order. Stop watches were used in administering the block design test. After each administration of the two sub-tests, the tester personally escorted the child back to the room and thanked the child and the teacher. This procedure was carried out in the same way within each school. All testing was completed within one week.

Data Analysis:

A multivariate analysis of variance (MANOVA, Clyde et al., 1966) was used for analysis of the data. This analytical tool not only provided a multivariate analysis of the composite variables, but also provided relevant F ratios, and performed a discriminant function analysis of the variables in such a way as to show what combination of all variables best discriminated among the groups. Inasmuch as one of the variables under investigation in this study related to the nature of the tasks employed as dependent variables, it necessitated the use of an analysis that allowed the composite solution of two or more dependent variables within the same analysis. In MANOVA, the Wilk's Lambda Criterion was used to produce F ratios to test significance of overall differences on these composite measures.

The F ratio is derived by converting Wilk's Lambda to F by a method provided by Rulon and Brooks (1968). This F permitted the use of the customary F tables found in most statistical texts.

If multivariate F's were significant, univariate analysis was used to help explain the significant statistical variation.

Results

Results of MANOVA:

In the results there were five main effects, viz., race of tester (T), sex of examinee (X), race of examinee (E), type of school (S), and grade level (G). The MANOVA of the composite scores of digit span and block design resulted in three effects reaching significance: race of examinee, type of school, and sex of student.

The significant effect of race of examinees resulted in white examinees scoring significantly higher than black examinees on the composite task of block design and digit span. The greatest disparity between black and white examinees occurred on the block design task.

There was also a significant effect of school type. A marked tendency was observed for students in the multiracial school to achieve higher scores than students in the monoracial schools, but most of the significance was attributed to block design. The main effect of sex of student resulted in the finding that females were scoring consistently higher than males on the digit span test.

Interaction Effects:

A number of interaction effects emerged from the MANOVA. Of particular interest were the first order interactions that reached significance: testers by examinees; examinees by school type; examinees by grade. Both the race of the examinees and the testers interacted significantly with the sex factor.

Univariate Analysis:

Univariate analyses of variance were computed following the overall MANOVA. Results of these analyses are shown in Table 1. Block design and digit span had only one significant effect in common--the main effect of examinees. They differed with respect to all other significant effects, especially the interaction effect of race of testers by race of examinees. This interaction effect was significant for block design, but it was not significant for digit span.

On block design there was also a main effect of school type, and on digit span a main effect of sex. On digit span, two first order interactions were significant: examinee by grade and school type by grade.

The univariate analysis indicated that the various effects under study occurred differentially across task. Also, they show that the effects related most to race of examinees.

Table 1

Univariate Analyses of Variance of Block Design
and Digit Span Scores

	df	Digit Span (F)	Block Design (F)
School Type (S)	1	0.49	6.19*
Examinees (E)	1	64.16**	92.63**
Testers (T)	1	3.47	1.92
Grade Level (G)	2	0.45	2.15
Sex (X)	1	12.59**	0.09
Examinees w. School E(S)	1	7.55**	0.28
S x T	1	1.15	0.60
E x T	1	0.08	5.22*
E(S) x T	1	0.00	0.14
S x G	2	12.21**	0.31
E x G	2	5.62**	0.54
E(S) x G	2	0.13	1.55
T x G	2	1.32	0.02
S x X	1	1.16	0.88
E x X	1	0.93	2.10
E(S) x X	1	0.60	0.37
T x X	1	0.32	0.77
G x X	2	0.72	0.61
S x T x G	2	1.28	1.63
E x T x G	2	2.04	1.19
E(S) x T x G	2	1.14	1.28
S x T x X	1	2.56	0.47
E x T x X	1	2.06	0.03
E(S) x T x X	1	0.04	0.39
S x G x X	2	0.06	2.42
E x G x X	2	0.12	3.02
E(S) x G x X	2	1.32	0.21
T x G x X	2	1.76	1.56
E x T x G x X	2	0.83	1.36
E(S) x T x G x X	2	2.52	2.82

**p < .01

*p < .05

Conclusion and Discussion

The multivariate analysis of variance was utilized to test the major null hypotheses of the study. The results showed several significant differences among treatment groups. Univariate analyses generated by the MANOVA program helped to explain the significant multivariate results. These significant findings relate to the hypotheses under study and other additional findings.

From the results it was concluded that black and white examinees tested by black and white testers on block design performed better with testers of the same race, but this effect did not hold true for digit span. The nature of the task and sex of the subject appeared to mediate the effect of the testers.

The statistical findings indicated that the three factors of examinee's race, tester's race, and examinee's sex, all interact to influence scores on digit span and block design. These interactions appeared across schools and grades. Blacks obtained higher scores under black testers in five out of six conditions under which they were tested. Only in the monoracial school at the third grade level and in the multiracial schools at the fifth grade level, did black testers elicit higher mean scores from white examinees. On the digit span task, the differences attributable to black and white testers were not as consistent as the differences on block design.

Indicative of these findings is a strong effect of tester's race on children's intellectual performance. Block design mirrors most of this effect. Examinees tend to be more negatively influenced by other race testers on this task than on digit span. Digit span tends to reflect more favorable examinees' mean score under other race testers, especially for white examinees.

It seems that a pure anxiety hypothesis does not explain the result. Digit span is a test which is easily influenced by anxiety. Therefore, if anxiety was the primary cause for the depression in examinees' scores under different race testers, then digit span should not have been non-significant as a contributory variable. It seems that an alternative explanation is needed.

One possible explanation concerns the amount of tester-examinee interaction. Block design required testers to produce more variable output related to the directions, instructions, and feedback for examinee success or failure. Consequently, examinees were required to make more inputs and more outputs. This in itself could have had anxiety producing properties. Digit span requires less interaction on the part of the testers and examinees.

Another alternative explanation relates to the quality of feedback. On the digit span test the examinee was quite unaware of any glaring error, and any verbal feedback from the tester was minimal. However, block design easily mirrored mistakes and feedback from the tester was greater than that for digit span.

It was concluded from the findings that grade level across school types was not a significant intervening variable modifying the reaction to race of the tester. However, grade level was found to interact significantly with school type and examinee race. This grade effect was most evident in the black monoracial school. Above the first grade level in other school types, the results are less clear-cut.

In the black monoracial school at the first grade level, it is possible that this effect was due primarily to anxiety. None of the students were in classes with white teachers or white peers. For all of these examinees it was one of the few instances of being left alone with a white adult within the classroom.

Black examinees in the multiracial school scored consistently higher under black testers than under white testers. This was most evident on the block design task, resulting in a significant Examinee x Tester interaction. Two alternative explanations should be considered.

It is possible that desegregation causes blacks to have increased racial awareness of their blackness, and also subsequent identification with other people of blackness. There is a possible interaction of the two phenomena that acts to increase the motivation of blacks tested by blacks in the multiracial school. Contrarily, in the multiracial school, it is possible that the black student suffered a loss of ethnic identification because the desegregated school had numerically reduced the number of children of his ethnic group within the classroom. Both of these propositions bear further investigation. Contrary to popular conception, interracial contact appears to be having a negative effect on the biracial test situation.

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Reaction to "Variables Affecting the Intellectual Performance
of Black and White Children"

The study of the interaction of racial variables with digit span and block design performance by James Savage and Philip Friedman is particularly important in light of continuing controversies regarding the appropriateness of standardized tests for blacks. Since a test must be representative of the group for which it was designed (Anastasi, 1968), and since blacks have been traditionally excluded from normative groups, these standardized tests are regarded by many to be invalid for use with black students.

Additionally, test results often exert far-reaching impacts upon the lives of black children (Green, 1967). They are used to place them in special classes, to limit their career aspirations, to assign them to vocational programs, to damage their self-concept, to label them intellectually inferior.

Studies like that of Savage and Friedman, which provide data on the effect of testing variables relative to black children, can be useful in improving testing conditions for these children and, consequently, in facilitating a more accurate assessment of their intellectual capacities.

Savage and Friedman found that in situations such as block design, which required considerable input from the tester, the assignment of a black tester to black examinees appeared to have a positive influence. This finding is consistent with the position of many social scientists that black models motivate black students to put forth their best effort. Also, when considerable interaction between tester and examinee is present in a testing situation, having a black tester interact with black examinees is likely to facilitate effective communication through mutual trust, mutual understanding, and mutual respect.

Savage and Friedman also found a relationship between ethnic makeup of the school, race of the tester and performance of examinees. Black examinees in the multiracial school appeared to be influenced to a greater degree by having a black tester than were examinees in the black school. The researchers' explanation of this apparent relationship seems quite plausible. It is natural for black students who may be experiencing feelings of racial isolation to have a tendency to identify more strongly with other blacks in the environment.

This study raises many intriguing questions concerning the differential influence of race under specific testing conditions. Further research in this direction could exert far-reaching impacts on current efforts to ensure a more equitable assessment of the abilities of black children.

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Ethnic Group Bias in Intelligence Test Items

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In the controversy over the use of intelligence tests with minority groups, it is usually assumed that such tests are biased in favor of the white middle class. Despite this commonly held belief, however, relatively little research has been done at the item level to detect differences in response patterns between blacks and whites which would suggest that such biases are in fact operating (Loehlin, Lindzey, and Spuhler, 1975). The most comprehensive work which has appeared on this topic to date is that of Jensen (1974, 1976). Jensen distinguishes between the broader question of prediction using intelligence test scores and questions of the internal statistical properties of the test, which he refers to as issues of construct validity. In the 1976 article, he provides a wide variety of evidence supporting the construct validity of several different intelligence tests for blacks. He first provides evidence that the different tests are measuring the same thing for blacks and whites. This evidence includes a comparison of (a) the correlation of raw scores with age, (b) internal consistency reliability indices, and (c) factor loadings of different tests on the first general factor or g. Having thus established that the tests are measuring the same thing, he goes on to compare the performance of blacks and whites on the items of the various tests in a number of different ways. His conclusion is that when differences are found, these are consistent with the hypothesis that the samples being examined differ in the ability being measured. Hence he discounts the likelihood that cultural bias is operating as well.

The weight of Jensen's evidence is compelling. He has reported several different studies relating to this issue, all with similar results. However, there are two major points which should be noted. First, while the evidence that the samples being studied differ in ability is difficult to dispute, Jensen does not provide evidence to suggest that the differences are other than would be expected quite apart from racial considerations. A number of factors other than ethnic group membership are known to affect IQ scores, and the samples used in Jensen's studies are apt to differ in a variety of these other factors. Hence the composition of the samples compared is crucial in evaluating this work. Unfortunately, Jensen does not describe his samples in any detail. In the 1976 paper, he reports only that "representative" samples were used. The question immediately arises, representative in what way? Samples representative of the ethnic group populations of which they are a part

would surely not be expected to have equivalent performance on intelligence tests for reasons other than ethnicity. In the 1974 article, he does specify that the samples were representative of the ethnic group populations in the particular community from which they were drawn, a community which was relatively homogeneous with regard to SES.

Trotman (1977) produces evidence to suggest, however, that even if samples are in fact equivalent on SES, they may not be equivalent on a number of home environmental factors known to affect intellectual development. In her investigation, she obtained home environment indices for 50 white and 50 black middle-class girls. The two samples were found to be very similar in SES according to Warner's Index of Status Characteristics and yet still exhibited large and significant differences in the intellectual home environment index obtained through interviews with each girl's mother. The home environment index correlated .68 with IQ score for blacks and .37 for whites. Clearly such factors are related to obtained scores, even within the relatively restricted SES range.

The second point to be considered relates to the use of samples differing in ability when studying item bias. Let us suppose that, while true differences in ability exist between samples drawn from different ethnic groups, additional factors relating to ethnic background are also operating to further suppress the scores of the minority group. Little if any of the evidence presented by Jensen is inconsistent with such a possibility. In fact, when Jensen (1976) reports testing for item by group interaction, generally accepted as one means of assessing this possibility, the interactions were found to be significant. Jensen discounts this finding, however, because the variance accounted for was small compared to that produced by ability differences. It should be noted, however, that to the extent such an effect is consistent across items, it would be attributed to differences in ability rather than to the interaction.

It would be very difficult, if not impossible, to find samples which are equivalent in every important way except ethnic group membership in order to compare their performance on intelligence tests appropriately. However, it is possible, using the samples available, to turn the problem around and compare persons of different ethnic background, but roughly equivalent ability in their performance on these tests. Within such a context, an item which is not biased would be one for which the probability of a correct response is the same for all persons of a given ability level regardless of ethnic group background. With this model, the distribution of ability within the different ethnic groups becomes unimportant. The study reported in this paper takes this

approach to examine the performance of samples from three ethnic groups--blacks, whites, and Mexican-Americans--on a large pool of fairly heterogeneous intelligence test items. The purpose of this study is to determine if bias exists in these items and, if so, what kinds of items appear to be biased most often.

Method

This study was conducted as part of the item analysis program for the 1979 revision of the Otis-Lennon Mental Ability Test. Data were taken from those sites participating in the item analysis program that had a minority representation of 15 percent or more within the community. Two additional sites with over 50 percent minority population were also tested especially for the bias study in order to assure adequate sample sizes for the two minority groups. The white sample was made up of those tested in the same sites as the minorities. All testing sites were located in the South or Southwest. Ethnic group membership was identified by the examinee.

The item pool was contained in six booklets for the Intermediate level (grades 4-9) and three booklets for the Advanced level (grades 10-12). Although all items were intended to be a measure of general intelligence or g , the items were divided into four subscales for test construction purposes and each of these subscales was scored separately. Each booklet contained 15 Verbal Comprehension items, 30 Verbal Reasoning, 20 Quantitative Reasoning, and 15 Figural Reasoning items. Thus, with 80 items per booklet, the total pool at the Intermediate level was 480 items and at the Advanced level, 240 items. All booklets were arranged in a spiral omnibus format roughly in order of difficulty and were administered without time limit. The six Intermediate level booklets at grades 8-9 and the three Advanced level booklets at grades 11-12 were randomly assigned to pupils within a classroom. Samples taking the different booklets at a given grade level should therefore be comparable.

The procedure used for evaluating the items for bias was Scheuneman's chi square technique (1975, 1976). In this method, an unbiased item is defined as above, and ability is measured by total score on the test or on a subset of items containing the item in question. The ability distribution is then divided into a small number of subgroups each represented by a range of total scores, such that the ability groups are mutually exclusive and exhaustive. The number of correct responses made by members of each ethnic group within each ability range is the obtained frequency used in the computation of the chi square. The expected frequencies are then determined from the proportion of

correct responses of all subjects scoring within an ability range regardless of ethnic group membership. This procedure has been evaluated and compared with other procedures for assessing bias in test items by Rudner (1977) and Nungester (1977). These studies show that results using this procedure agree well with those obtained with other techniques. In this study, the four subscales--Verbal Comprehension, Verbal Reasoning, Quantitative Reasoning, and Figural Reasoning--were used as ability measures as these were more homogeneous than the test total.

The Intermediate level items were evaluated for bias at grade 5 and again at grades 8-9. The Advanced level items were evaluated only once at grades 11-12. Nearly half the items at grade 5, however, had too few correct responses to be analyzed for bias. Since this made the patterns of results ambiguous, only the results for grades 8-9 and grades 11-12 will be reported here. At grades 8-9, sample sizes for the six booklets ranged from 218 to 254 for whites, 181 to 209 for blacks, and 132 to 160 for Mexican-Americans. Samples for the three booklets at grades 11-12 were comparable, ranging from 294 to 312 for whites, 162 to 174 for blacks, and 94 to 102 for Mexican-Americans.

Results

All items were analyzed for bias using three to five ability ranges where the subscale score was the ability measure. The chi square values obtained, however, were smaller than would be expected by chance for the appropriate degrees of freedom. (Degrees of freedom with this test are $(r-1)(k-1)$ where r is the number of ability range groups and k is the number of ethnic groups.) Hence, although the probabilities of the chi square values were read using a standard table in order to compare results which had been obtained using different numbers of ability intervals, these probabilities will not correspond to the probability of obtaining that chi square value when the null hypothesis is true. The level selected as a cutoff point was a probability of .30, with items exceeding the usual .05 examined separately.

When evaluated using this procedure, 66 items at grades 8-9 and 79 items at grades 11-12 had chi square values sufficiently high to meet the criterion for bias. These items represent 14 and 33 percent of their respective item pools. However, since the criterion was arbitrarily set and the true alpha level is unknown, it is important to establish both that the results are meaningful and tend to be consistent across levels, and that they are different than would be expected if items had been selected randomly as biased. Results will be examined from two perspectives, (a)

the apparent direction of the bias for the three groups and (b) the types of items which tend to be biased at the two levels.

When the procedure is used with just two groups, results can only indicate that one group appears to be favored over the other. With three groups, however, it is possible to determine if one or more of the groups is performing about as expected while another is either performing better or less well. The direction of bias can be inferred by comparing the expected and obtained frequencies. For example, when the obtained number of correct responses for an ethnic group is less than expected in all or most of the ability ranges, the item would be considered biased against that group. When the chi square is sufficiently large to meet the criterion for bias, that part of the chi square which came from each of the ethnic groups can be determined to suggest which of the groups is contributing to the significant result. In Table 1, an item is illustrated which appears to be both biased against blacks and in favor of whites. Notice that the sum of the cell square contingencies (Totals for Groups) for both whites and blacks is around nine, while for Mexican-Americans it is close to zero. Table 2 shows an item which also appears to be biased against blacks, but the performance of whites and Mexican-Americans is only slightly better than would be expected. The totals for groups with this item are 8.03 for blacks, 3.23 for whites, and 2.24 for Mexican-Americans.

The direction of bias for the item studied is given in Table 3. In tabulating items for bias in either direction, a total of at least three for that ethnic group was arbitrarily selected as a criterion. Some items were counted more than once, since, for example, an item could be biased in favor of one group and against the other two. Items for which the direction was inconsistent across ability ranges, or where the group total was less than three for all three of the ethnic groups, were not included in this tabulation.

The results in Table 3 show a clear pattern of bias against blacks. Except for the most biased items at grades 8-9, where the frequencies were too small to test, the number of items found to be biased against or in favor of the different groups was significantly different than would be expected by chance. (Using a 2 x 3 contingency table and the normal chi square test, chi square values obtained were 23.50 for grades 8-9, and 50.48 and 35.46 at grades 11-12 for all biased items and the most biased items respectively. At two degrees of freedom, all are significant well beyond .01). On the other hand, the evidence here does not support a hypothesis of bias

Table 1
Computation of the Chi Square for One Item with Three Groups

Range	Group	No. scoring in interval ^a	No. correct	Expected proportion ^b	Expected no. correct ^c	Cell square contingencies ^d	
16-20	White	89	72		71.05	.01	
	Black	14	11		11.18	.00	
	Mex.-Am.	16	12		12.77	.05	
	Total	119	95	.798			
11-15	White	106	67		59.81	.86	
	Black	35	13		19.75	2.31	
	Mex.-Am.	38	21		21.44	.01	
	Total	179	101	.564			
0-10	White	69	25		13.86	8.94	
	Black	110	10		22.10	6.63	
	Mex.-Am.	35	8		7.03	.13	
	Total	214	43	.201			
Total Chi Square						18.95	
Total for Groups							
	Whites	9.82		Blacks	8.94	Mex.-Am.	0.19

^aThis figure has been adjusted by omitting those persons who did not respond to the item.
A total of 58 persons omitted this item.

^bThis number is obtained by dividing the total number of correct responses within the interval by the total number scoring in the interval.

^cThis number is obtained by multiplying the expected proportion correct by the total number in each ethnic group scoring in that interval.

^dThis number is the usual $(f_o - f_e)^2 / f_e$ where f_o is the number of correct responses and f_e is the expected number of correct responses for each ethnic group.

the apparent direction of the bias for the three groups and (b) the types of items which tend to be biased at the two levels.

When the procedure is used with just two groups, results can only indicate that one group appears to be favored over the other. With three groups, however, it is possible to determine if one or more of the groups is performing about as expected while another is either performing better or less well. The direction of bias can be inferred by comparing the expected and obtained frequencies. For example, when the obtained number of correct responses for an ethnic group is less than expected in all or most of the ability ranges, the item would be considered biased against that group. When the chi square is sufficiently large to meet the criterion for bias, that part of the chi square which came from each of the ethnic groups can be determined to suggest which of the groups is contributing to the significant result. In Table 1, an item is illustrated which appears to be both biased against blacks and in favor of whites. Notice that the sum of the cell square contingencies (Totals for Groups) for both whites and blacks is around nine, while for Mexican-Americans it is close to zero. Table 2 shows an item which also appears to be biased against blacks, but the performance of whites and Mexican-Americans is only slightly better than would be expected. The totals for groups with this item are 8.03 for blacks, 3.23 for whites, and 2.24 for Mexican-Americans.

The direction of bias for the item studied is given in Table 3. In tabulating items for bias in either direction, a total of at least three for that ethnic group was arbitrarily selected as a criterion. Some items were counted more than once, since, for example, an item could be biased in favor of one group and against the other two. Items for which the direction was inconsistent across ability ranges, or where the group total was less than three for all three of the ethnic groups, were not included in this tabulation.

The results in Table 3 show a clear pattern of bias against blacks. Except for the most biased items at grades 8-9, where the frequencies were too small to test, the number of items found to be biased against or in favor of the different groups was significantly different than would be expected by chance. (Using a 2 x 3 contingency table and the normal chi square test, chi square values obtained were 23.50 for grades 8-9, and 50.48 and 35.46 at grades 11-12 for all biased items and the most biased items respectively. At two degrees of freedom, all are significant well beyond .01). On the other hand, the evidence here does not support a hypothesis of bias

Table 1

Computation of the Chi Square for One Item with Three Groups

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Range	Group	No. scoring in interval ^a	No. correct	Expected proportion ^b	Expected no. correct ^c	Cell square contingencies ^d	
16-20	White	89	72		71.05	.01	
	Black	14	11		11.18	.00	
	Mex.-Am.	16	12		12.77	.05	
	Total	119	95	.798			
11-15	White	106	67		59.81	.86	
	Black	35	13		19.75	2.31	
	Mex.-Am.	38	21		21.44	.01	
	Total	179	101	.564			
0-10	White	69	25		13.86	8.94	
	Black	110	10		22.10	6.63	
	Mex.-Am.	35	8		7.03	.13	
	Total	214	43	.201			
Total Chi Square						18.95	
Total for Groups							
	Whites	9.82		Blacks	8.94	Mex.-Am.	0.19

^aThis figure has been adjusted by omitting those persons who did not respond to the item.
A total of 58 persons omitted this item.

^bThis number is obtained by dividing the total number of correct responses within the interval by the total number scoring in the interval.

^cThis number is obtained by multiplying the expected proportion correct by the total number in each ethnic group scoring in that interval.

^dThis number is the usual $(f_o - f_e)^2 / f_e$ where f_o is the number of correct responses and f_e is the expected number of correct responses for each ethnic group.

Table 2

Computation of the Chi Square for One Item with Three Groups

Range	Group	No. scoring in interval ^a	No. correct	Expected proportion ^b	Expected no. correct ^c	Cell square contingencies ^d
23-30	White	69	47		45.59	.04
	Black	14	7		9.25	.55
	Mex.-Am.	29	20		19.16	.04
	Total	112	74	.661		
15-22	White	109	37		33.47	.37
	Black	65	10		19.96	4.97
	Mex.-Am.	17	27		20.57	2.01
	Total	241	74	.307		
0-14	White	55	14		8.97	2.82
	Black	93	9		15.17	2.51
	Mex.-Am.	42	8		6.85	.19
	Total	190	31	.163		
Total Chi Square						13.50
Totals for Groups						
		Whites 3.23		Blacks 8.03		Mex.-Am. 2.24

^aThis figure has been adjusted by omitting those persons who did not respond to the item.
A total of 22 persons omitted this item.

^bThis number is obtained by dividing the total number of correct responses within the interval by the total number scoring in the interval.

^cThis number is obtained by multiplying the expected proportion correct by the total number in each ethnic group scoring in that interval.

^dThis number is the usual $(f_o - f_e)^2 / f_e$ where f_o is the number of correct responses and f_e is the expected number of correct responses for each ethnic group.

against Mexican-Americans. At grades 8-9, the number of biased items is not large, and the direction of bias is about as expected from the overall proportions of items in each direction. At grades 11-12, however, the pattern is much like that for whites in both the number and direction of biased items. It is possible that in some way this was a select sample. A large proportion of the Mexican-American sample was enrolled in parochial schools, which may make them atypical. When asked about bilingual status, 47 to 71 percent of those responding on the different booklets at the Intermediate level, and 74 to 81 percent of those at the Advanced level, reported that they were bilingual.

Table 3
Apparent Direction of Bias in Items

	Grades 8-9		Grades 11-12	
	In favor	Against	In favor	Against
All biased items ^a				
Whites	26	6	15	3
Blacks	7	24	1	31
Mex.-Am.	<u>13</u>	<u>6</u>	<u>28</u>	<u>6</u>
Total	46	36	44	40
Most biased items ^b				
Whites	10	1	13	3
Blacks	1	12	1	24
Mex.-Am.	<u>1</u>	<u>2</u>	<u>13</u>	<u>2</u>
Total	12	15	27	29
Number of items:				
All biased		58		61
Most biased		14		29
Not tabulated		10		18

^aProbability of obtained chi squares is less than .30.

^bProbability of obtained chi squares is less than .05.

Different types of items appeared within each of the four subscales on the tests. In all, the Intermediate level tests contained 16 different item types and the Advanced tests contained 14. Tests at the two levels contained different items, however, with very few exceptions. Table 4 gives the distribution of biased

Table 4
Number of Biased Items by Item Type

Item type	Grades 8-9					Grades 11-12				
	No. in pool	All biased items No.	%	Most biased items No.	%	No. in pool	All biased items No.	%	Most biased items No.	%
Verbal Comprehension										
Opposites	42	9	21	1	2	24	6	25	2	8
Sentence Completion	36	3	8	0		21	11	52	5	24
Scrambled Sentences	12	0		0						
Verbal Reasoning										
Inference	30	5	17	2	7	18	5	28	1	6
Analogies	66	18	27	8	12	39	20	51	6	15
Classification	36	3	8	0		21	2	9	2	9
Word Matrix	24	5	21	1	4	12	4	33	1	8
Logical Selection	24	2	8	0						
Quantitative Reasoning										
Letter Series	24	5	21	1	4	12	7	58	2	17
Problems	18	3	17	1	6	12	6	50	5	42
Number Series	42	2	5	0		18	3	17	0	
Number Pairs	24	2	8	0		12	1	8	0	
Number Matrix	12	0		0		6	1	17	0	
Figural Reasoning										
Series	30	7	23	0		15	6	40	3	20
Analogies	36	2	6	0		18	3	17	2	11
Matrix	24	2	8	0		12	4	33	0	
Total	480	66	14	14	3	240	79	33	29	12

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items according to the different item types. At grades 8-9, five item types--verbal analogies, figure series, letter series, word matrices, and opposites--had more than 20 percent biased items. The lowest were scrambled sentences and number matrices, with no biased items, and number series with only 5 percent. At grades 11-12, verbal analogies, figure series, and letter series were again among the item types with the highest percent of bias. Sentence completion and number problems also had very high percentages of biased items at this level. The lowest percentages were with the straightforward number manipulation items--number series, number pairs, and number matrices. Also quite low percentages of biased items were found in verbal classifications and figure analogies. Both these were also quite low at grades 8-9. In general, the tendency is for the same types of items to be biased most often and least often at the two levels. Although frequencies are too small for significance tests, it appears clear that the obtained patterns are unlikely to have occurred by chance.

Within the three item categories that are high for both levels, the direction for the different groups was also examined. With the analogies, the most prevalent pattern appeared to be against blacks. At grades 8-9 and grades 11-12, eleven and nine items respectively were found to be biased against blacks. The percentage goes up when examining only the most biased items, where seven out of eight at grades 8-9 and five out of six at grades 11-12 were biased against blacks. The figure series items appeared to favor whites at Intermediate and to be biased against blacks at Advanced. Letter series, on the other hand, seemed to favor Mexican-Americans. The number problems at the Advanced level are also noteworthy. Five of the 12 items in the pool were found to be biased beyond the more stringent criteria. All were biased against blacks.

It seems clear that some number of items must have been selected as biased by chance so that it is easy to dismiss those items in categories with low frequencies of bias as being among the chance results. However, some surprising consistencies occur even here. For example, among the five number series items found to be biased at one level or the other, two required that a number other than the last in the series be filled in, and two depended more on the pattern made by the numbers than on the quantitative relationships among them. Both of these types of series were infrequently included in the test. Another interesting example comes from the classification items. One of the two biased items at the Advanced level included the terms, noisy, fragrant, bitter, rough, and thoughtless. At the Intermediate level, one of the three biased items included sour, bitter, sweet, salty, and spoiled. Both items were thus conceptually similar and both were biased in favor of blacks. Two other items found to be biased in

favor of blacks at the Intermediate level are inference items, both of which involve brothers--"If a man has brothers, but not nephews . . ." and "A few of the people who know my brother, know me . . ." Perhaps in a gross way, these items sound more relevant to black children than do some of the other items. Hence, the results appear to support the contention that at least in large part the items found to be biased reflect genuine response differences among the three ethnic groups.

Discussion and Conclusions

This study has used a large sample of intelligence test items taken from the item analysis edition of a group-administered intelligence test. These items were evaluated for bias using a method which compares the performance of persons of roughly equivalent ability, rather than the performance of groups with differing distributions of ability. With this technique, clear evidence of bias against blacks in intelligence test items was found. Contrary to expectation, however, no evidence of bias against Mexican-Americans was found, using this approach.

In addition to the tabulated results presented here, certain observations were made which suggest possibilities for further research. It was noted, for example, that no sample item was given which explained what was required for either letter series or figural series items. The only instructions were given in the item stem. Any uncertainty the pupil may have felt in responding to such an item might be reflected in just the sort of response decrement shown in the bias results. Consequently, an example of each of these item types was added to the final version of the test, thus increasing the number of samples from three to five.

Another observation concerned the proportion of biased items, which at grades 11-12 was more than double that at grades 8-9. It is interesting to speculate on why this should have occurred. Sample size is known to affect the size of the chi square when this technique is used, but sample sizes were quite comparable for the different booklets. Easy items have generally been found to be biased less often than difficult items, but again, the Advanced level items were only slightly more difficult on the average than were the Intermediate items at the appropriate grade levels. These results may, however, reflect a genuine difference in the tests. At least one possible explanation lies in the type of subject matter required to achieve the item difficulty needed for effective measurement. Although the results for grade 5 were not clear in many ways, few of the verbal analogy items which were tested at that level appeared to be

biased, a departure from the results at the two higher levels. At grade 5, most of the analogies tested involved body parts, common food stuffs, and other items which should be common in diverse cultures. However, as the level increases, such items no longer have adequate difficulty. By high school, those items which proved to be sufficiently difficult were those with the least common vocabulary and concepts. It may not be possible to build difficult items where the probability of previous exposure is the same for persons of diverse background. At least, such a task poses a challenge for those of us in the measurement community concerned with the construction of these tests.

In building the revised Otis-Lennon test, in addition to the change in the samples, those items which appeared to be biased using this procedure were not used whenever possible. However, it is not clear what effect these efforts will actually have on scores. Although this study supports the hypothesis that bias is a factor for blacks, it provides no evidence concerning the impact of such bias on results nor can it estimate how much, if any, of the observed differences between blacks and whites can be accounted for by such items. In the aggregate the effect of biased items may be rather small, yet the impact on an individual pupil's score may still be significant.

The use of the item analysis version of the intelligence test made possible the examination of a large number of items defined more specifically than verbal and non-verbal. The difference in the results for different types of verbal items suggests that this dichotomy is an oversimplification in discussing test bias. For example, while verbal analogies are frequently biased at both levels, verbal classification items are very infrequently biased at either level. These kinds of results, as well as those of Trotman's concerning the inadequacy of SES as a controlling variable of home background, suggest that the problem of bias in intelligence testing is far more subtle and complex than either the critics or defenders of these tests appear to believe. More research on the nature and effects of biases in intelligence tests is required if we are to use them intelligently with minority group persons.

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Reaction to "Ethnic Group Bias in Intelligence Test Items"

The stated purposes of the Scheuneman study, using the 1979 revision of the Otis-Lennon Mental Ability Test with three different ethnic group samples, were to identify (a) the existence of test item bias, (b) the direction of test item bias, and (c) the type of test items that tend to be biased at two criterion probability levels. Using a large sample of grade 8-9 and 11-12 white, black, and Mexican-American children who were grouped also according to "roughly equivalent ability," Scheuneman utilized a chi square technique that she specifically developed to determine biased test items. An arbitrary criterion probability of .30 was selected as the cutoff point to indicate test item bias; and those items from this group of items that exceeded the .05 level of confidence were considered to be "most biased"; these were analyzed separately.

The statistical analyses revealed that of the 480 test items from the four categories of test items (verbal comprehension, verbal reasoning, quantitative reasoning, and figural reasoning), at grades 8-9 there were 68 items (14 percent) that met the criterion for being biased of which 14 (3 percent) were considered to be "most biased"; and at grades 11-12 from the pool of 240 test items there were 79 items (33 percent) considered to be biased, of which 29 (12 percent) were considered to be "most biased."

Even in the face of Scheuneman's statement that "since the criterion was arbitrarily set and the true alpha level is unknown . . . the results are meaningful and tend to be consistent across all levels, and that they are different from what would be expected if the items had been selected randomly as biased," a more careful analysis of the data (especially of the two examples she presents) does not seem to be supportive of this contention. Scheuneman's ambitious effort to identify the direction of test item bias among the three groups of subjects, and the specific types of items that tend to be biased at the two criterion levels, indeed were less than convincing.

In showing that certain test items were biased against blacks, biased in favor of whites, and not biased either in favor of or against Mexican-Americans, Scheuneman used two examples that do not seem to meet her stated criterion of item bias among each of the ability ranges of subjects. The total chi square value of 9.82 for whites in the first example, 8.94 for blacks, and 0.19 for Mexican-Americans, accurately indicates significant differences among the three ability ranges of subjects; however, the data also show that there were no significant

departures (significant cell square contingency values) from chance within the 16-20 and 11-15 ability ranges, but there were significant cell square contingency values for the 0-10 ability range group for both white and black subjects. In the second example, the total chi square value was 8.03 for blacks, 3.23 for whites, and 2.24 for Mexican-Americans. However, the ability ranges of 23-30, 15-22, and 0-14 did not show significant cell square contingency values except for blacks within the middle range ability group. The blanket conclusion that these typical test items were biased against blacks (all blacks) is misleading and renders the rejection of the hypothesis suspect as being indicative of test item bias against black children and for white children--i.e., the results seem to show merely that some blacks, those in the lower ability range group (0-10) in the first example and those in the middle range group (15-22) in the second example, did significantly less well than expected and that the whites in these two ability groups did significantly better than expected.

In identifying the direction of test item bias, Scheuneman based her conclusions on an analysis of 58 out of 68 biased test items at grades 8-9, obtaining a significant chi square of 23.50; and on an analysis of 61 out of 79 items at grades 11-12 with a chi square of 50.48. For the "most biased" test items, there was no analysis for grades 8-9 due to small frequencies, but for grades 11-12 the analysis was based on all 29 items, yielding a chi square of 35.46. To base a conclusion on these analyses--which exclude nearly 15 percent of the items in the first instance (grades 8-9), and 22 percent of the items in the second instance (grades 11-12), because they did not meet the criterion for inclusion among the items that were biased (i.e., being biased in favor of one ethnic group and against the other two ethnic groups)--seems to render the conclusion that there is "a clear pattern of bias against blacks" a spurious and unsupportable interpretation of data.

Even more difficult to understand is Scheuneman's rationale for concluding that certain types of test items were biased against blacks. For example, from among the four test categories or subscales at grades 8-9, item types such as opposites, verbal analogies, word matrices, letter series, and figural series, there were between 21 and 27 percent of the items, for a total of 44 test items from these five subscale item types, that were considered to be biased. From data such as these, Scheuneman reached the conclusion that even though these percentages were not statistically significant, "it appears clear that the obtained patterns are unlikely to have occurred by chance." Other implications stated with regard to the type and direction of specific biased test items are not supported by robust statistical evidence. However, even though Scheuneman concludes that

her study "supports the hypothesis that bias is a factor for blacks," which this critic contends is not supported adequately by her research (even with apparent liberal interpretations), she rightfully points out the deficiency that her study does not provide any evidence concerning the impact of test bias on total test score; but she then hedgingly concludes that "In the aggregate the effect of biased items may be rather small, yet the impact on an individual pupil's score may still be significant." Her concern seems legitimate and laudable, but the contradiction between these two positions (conclusions) is obvious and distracting.

One final issue is that as indicated by the two-tailed chi square tests, the sample fit, especially among the Mexican-American children, was too good, but was not so good among whites and blacks; this could be attributed to sampling error, rather than to test item bias. It seems that Scheuneman has done little to dispel the contention made by Jensen that an analysis of wrong answers or incorrect response patterns on tests differs significantly from chance, which in essence could be attributed to cultural differences or ethnicity.¹ The point that is being made is not one of agreement with the position taken by Jensen, but rather a viewpoint espoused more by Dr. Roger T. Lennon who, in a lengthy presentation before a national conference on testing in 1969, stated that "Tests are not fair or unfair. People are fair or unfair."² The point stated in another way is that it seems safe to infer that tests are used inappropriately by people who, either by errors of omission, commission, or naivete, want to be more fair or unfair rather than diagnostic.

This critic agrees with Scheuneman's contention that more research must be done in this area before definitive conclusions can be reached and the critical issue of test item bias on intelligence tests can be resolved. The efforts of Scheuneman, however weak, to identify and exclude biased test items on the Otis-Lennon Mental Ability Test are to be applauded.

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¹Jensen, Arthur R. "Test Bias and Construct Validity," Phi Delta Kappan, Vol. 58, No. 4 (December 1976), pp. 340-46.

²Lennon, Roger T. "Testing: The Question of Bias," in Evaluation in the Inner City (Report of an Invitational Conference on Measurement in Education, Philadelphia, Pa., April 24-25, 1969). New York: Harcourt, Brace & World, Inc., 1970, pp. 38-53.