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AN INVESTIGATION OF THE EXTENT TO WHICH MEMBERS OF A SINGLE OCCUPATION (ELEMENTARY TEACHER) SHOW DIFFERENT OR IDENTICAL INTERESTS DEPENDING UPON WHETHER THEY ARE MALE OR FEMALE OR MEMBERS OF BLACK OR CAUCASIAN RACIAL GROUPS.

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An investigation of the extent to which members of a single occupation (Elementary Teacher) show different or identical interests depending upon whether they are male or female or members of Black or Caucasian racial groups

by

Daniel Clarence Robinson

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

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Major: Education (Higher Education)

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1978

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CHAPTER I. INTRODUCTION

Kuder (1977) in his book "Activity Interests and Occupational Choice" indicates the purpose of an occupational interest inventory

> ...is to help young people discover the occupations they will find most satisfying, then it follows that two fundamental requirements must be met by such an inventory. One is that it must be valid with respect to the criterion of job satisfaction. The other is that it must be suitable for use with young people who may have quite limited backgrounds of training and experience...(p.7).

Campbell (1977) stated:

> Interest inventories should perform one or both of two principle functions: First, telling people something about themselves and their relationship to the working world that will lead them to greater self-understanding and to better decisions about the course of their lives; and second, providing information to people who must make decisions about others - counselors, personnel managers, supervisors - so that their decisions and dispositions might better consider the unique qualities of each individual (p.1).

Harmon (1975) defines the goal of interest inventories as follows:

> The basic goal of interest measurement is to help individuals explore their interests in comparison with others and to promote good life planning (p.45)..

Statement of the Problem

Until recently developers and users of various vocational interest tests have lacked sufficient knowledge about the use of vocational interest inventories with women and members of a minority group who are disproportionately represented in a wide range of white collar and blue collar occupations. Datta (1975) in recognizing that women occupy all of the secretarial positions and men are represented in significantly higher numbers in professional and managerial positions, poses an interesting question:

> Has the counseling and guidance movement, and tools of its trade such as vocational interest inventories, contributed to occupational sex stereotyping, or reduced it?

This question could be easily expanded to include the issue of race bias in interest measurement which has received little if any attention in the literature.

A review of the literature in the area of sex bias; sex fairness and race bias in interest measurement raised a number of appropriate questions (Diamond, 1975):

1. Should parallel interest inventories be developed for different age groups and sexes?

2. Should the content of existing interest inventories be revised to reduce their alleged sex bias?

3. Should the content of existing interest inventories be reviewed to insure reduction of their apparent age, race, and social class biases

(Holland, 1975)?

4. Should both sexes respond to identical item pools?

5. Should activities traditionally assigned to one sex be included on future inventory design considerations?

6. Can valid items that are free of socialization effects be found and incorporated effectively into future inventory design considerations?

7. Should scores be reported for males on female-normed scales for which there are no male counterparts, and vice versa (Cole/Hansen, 1975)?

8. It is fruitful to establish whether there are differences in response to items, because item responses are the building blocks of interest measurement.

9. Could occupational scales be developed for each separate sex. Why are many homogeneous scales developed without reference to the sex of the respondents?

10. We need to know whether occupational or general norm groups or both should be separated by sex (Harmon, 1975).

These and other significant questions are currently being explored by a number of researchers with the intent of providing much needed information in the area of vocational interest measurement.

This study was developed to investigate the extent to which members of a single occupation (Elementary Teacher) show different or identical interests depending on whether they are male or female or members of black or caucasian racial groups.

The need for such a study is supported by the very absence of previous resources reported in the literature which examines the same occu-

pational group differences considering the variables of race and sex.

Objective of the Study

The primary objective of the study was to investigate the extent to which members of a single occupation (Elementary Teacher) show different or identical interests depending on whether they are male or female, or members of black or causasian racial groups.

Secondary objectives of this study include:

1. Collecting and reporting data which will be useful to future test developers who are concerned with the issues of sex bias; sex fairness and race bias in interest measurement.

2. Collecting and reporting data which will be useful to Vocational Interest Inventory users in the area of sex bias, sex fairness and race bias in interest measurement.

3. Collecting and reporting data which will add to the limited scope of current research in the area of race as a variable to be considered in interest inventories.

4. Collecting and reporting data which determine whether a male elementary teachers scale is necessary.

The objectives are met in this study by sampling elementary teachers randomly selected from a list of 5,000 subscribers to the Grade Teacher, published by MacMillan Company.

Organization of the Study

The Study was organized in the following manner:

1. Chapter one consists of the statement of the problem, the objectives of the Study, organization of the Study, limitations, definition of

terms, and the hypotheses to be tested.

2. Chapter two represents a general review of the literature in the areas of sex bias, sex fairness and race bias in interest measurement.

3. Chapter three is the methodology which consists of the sampling procedures, description of the sample, methods utilized in data collection and analyses of the hypotheses to be tested.

4. Chapter four represented the findings/conclusions.

5. Chapter five contain the discussion and recommendations.

Limitations

1. It will be difficult to generalize from the study of one occupational group to other occupations. However, since no study of this kind has been undertaken, it is a necessary limitation in this initial research.

2. The choice of Elementary Teachers as a reference group for study was dictated by several considerations, the major consideration being the apparent ease of access to members of the racial and gender groups in question.

3. Numerous efforts were made to include a sufficient number of black male elementary teachers in this study. An insufficient number of black males responded and as a result the study was limited to white females; white males and black females.

Definition of Terms

Sex Bias: Within the context of career guidance, sex bias is defined as any factor that might influence a person to limit - or might cause others to limit his or her consideration of a career solely on the

basis of gender (Diamond, 1975).

Race Bais: Race bias is also defined as any factor that might influence a person to limit his or her consideration of a career solely on the basis of race.

Errors of Classification: The frequency with which members of an occupational group obtained a higher score on a scale other than their own.

Divergent Validity: Represented by a low mean number of errors of classification obtained after comparing the members of a criterion group's score on their own scale each with their scores on all other scales available.

Hypotheses to be Tested

Based upon an extensive literature review of occupational choice and vocational theory the following hypotheses are generated:

A. There will be statistically significant differences in the interests of male and female elementary teachers, as measured by the Kuder Occupational Interest Survey.

B. There will be statistically significant differences in the interests of black and white elementary teachers, as measured by the Kuder Occupational Interest Survey.

CHAPTER II. REVIEW OF LITERATURE

Much of the research in the area of sex bias, sex fairness, and race bias in interest measurement has increased in recent years largely due to the changing role of women and the womens' liberation movement. We do find in the literature, however, limited studies which were conducted during periods of time when women and minorities were not highly representative in the work force.

The Civil Rights Act in 1964, the Equal Employment Opportunities Act, Affirmative Action, Title IX of the Civil Rights Act and other factors have also contributed to a limited increase in the pool of minority and women professionals in some occupations.

As a result, researchers have been able to revise and update some interest inventories which are utilized to assist the individual in exploring their career goals.

There is a great deal of controversy in the current literature which raises some crucial questions about the appropriateness of using tests which were developed based on white middle-class norms with any other group, i.e. Blacks, Asian Americans, Native Americans, and others. There is also considerable controversy centered around sex bias and sex fairness in interest measurement.

The selection of elementary teachers as reference group for study, as stated in Chapter I, was dictated by several considerations, the major consideration being the apparent ease of access to members of the racial and gender groups in question.

A U.S. Department of Labor Report 1977 examined some of the dif-

ferences which exist between black women and white women in their work behavior. The results indicated that black women started their careers in lower status jobs with the exception of teaching and in most other cases were in less attractive jobs. The differences that exist between black women and white women in the nonjob areas were that approximately thirty-three percent of the black women had their first child before the age of eighteen and twenty-five percent had six or more children which compared with one out of eleven in each case for white women. In addition eighty-six percent as opposed to sixty-seven percent of the white women were married and living with their husbands. Black women were also more likely to value salaries over any other quality of the job and would be more inclined to want a job at a higher salary. Sexton (1977)

Bias in Counseling

The researcher reviewed the literature in the area of alleged race and sex biases that are reported to exist in the counseling relationship. These data are of particular importance as we explore the bias that may exist in some of our counseling tools, i.e., Vocational Interest Inventories. These biases in counseling may have an influence on the counseling relationship to a degree that the career choices of women and minorities could be limited.

Diamond (1976) commented that:

> Societal expectations have created an environment that has seriously limited the early learning experiences of both boys and girls should be obvious to the most casual observer. Early play and exploration experiences, parental expectations, differ-

> ences in the ways boys' and girls' questions are handled by parents, and differences in access to certain experiences in the school curricular and extracurricular activities have helped to extend and perpetuate sex-role typing (pp. 29-30).

Chesler (1972) comments in her book titled Women and Madness that:

> ...many clinicians think their patients are "crazy" but think their female patients are "crazier" yet. Many double standards of mental health and treatment exist: one for blacks, another for whites, one for the poor, another for the wealthy, and, of course, one for women and another for men... (p. 67).

Thomas and Stewart (1971) in their investigation of possible biases introduced by the counselors found that counselors working with female clients described typically feminine career goals as more appropriate for these persons than typically masculine goals; and saw a greater need for further counseling of women who had indicated a preference for the traditional masculine goal.

Bingham and House (1973) investigating counselor attitudes about women and work concluded as a result of their study that male counselors were not supportive of women who work and that women should not be trained for high level jobs because it is not productive.

Hill (1975) found that female clients who were paired with female counselors yielded more discussion of feelings than other sex determined pairings.

Hawley (1971), in an investigation of how men's views affected the career choices of women, suggested that their is a relationship between

women's career choices and how they perceived significant men's view of the feminine ideal. The subjects in the study were eighty-six women who were divided into three groups. The first was homemakers who were not employed, the second group were women in traditionally feminine occupations and the third group were women in male-dominated occupations. The eighty-six subjects were instructed to respond to eighty statements in the same way that significant men in their lives would respond.

The women who were in the homemakers group and the traditionally feminine occupations were significantly influenced by significant men's views of the feminine ideal.

It would appear that a large percentage of women make career choices based on what significant men view as being an acceptable or not acceptable career for women.

Vontress (1971) stated that:

> Racial differences constitute impediments to establishing and maintaining rapport in counseling, especially when the counselor is white and the counselee a person of African descent. The difficulties stem not so much from race, per se, but from the implications of being black in a society that assigns secondary status to American Negroes. The separate status, in turn, causes blacks and whites to develop unique perceptions of and approaches to coming to grips with their environments. In sum, separatism causes members of the black and white races to meet and great each other with perceptual distortions, anxiety, and hostility, all of which constitute barriers in the

counseling relationship (pp. 12-13).

Bayer and Boruch (1969) showed that black freshmen were more likely to choose majors in business, social science, education, or health related fields than nonblacks, who more often chose engineering, biological and agricultural science majors.

Grantham (1973) examined the hypothesis that greater counselor-client compatability in race, sex, and language resulted in greater client depth of exploration and reported satisfaction. The results of the study suggest that the thirty-seven black clients preferred Black counselors to white counselors and to a significantly greater degree; that they self-explored more deeply with female counselors, and that language was not a significant factor in either outcome.

Robinson and Zytowski (1977) investigated the extent to which the counselor may introduce bias into the occupations a hypothetical client was suggested to consider through the counselor's interpretation of a Kuder Occupational Interest Survey. The results of their study suggest that the effect of the counselor in transmitting the results of the interest inventory to the client is relatively uniform, regardless of the race, gender, age, and geographic residence in the client.

Griffith (1978) has stated:

> Counseling minorities involves the adoption of general counseling techniques to the needs of minorities through the sensitivity of minority counselors. New culture-specific techniques are being conceptualized that will adopt African culture, folklore, and art to the counseling of Blacks ... Psychology is a

> relatively new profession and its Euro-American form is still in the process of becoming. Black psychology is presently in its infancy but promises to be able to contribute most to the counseling of minorities. The profession as a whole is likely to benefit from these and other efforts (p. 253).

The following section represents a general review of the literature emphasizing the issues of sex bias; sex fairness and race bias in interest measurement/ intelligence testing. In the first section of the review, the writer discusses current research efforts in the areas of sex bias and sex fairness and some of the recommendations which have been made to improve interest inventories. In the next section, the writer discusses the limited research efforts in the area of race and interest measurement and suggested recommendations for further research. The final section of the literature review specifically focuses on the research efforts being made in the area of race and intelligence testing and the relationship to interest testing.

Sex Bias and Sex Fairness in Interest Measurement

Counselors, test developers, and professional organizations have become increasingly more aware of the problems that exits in the area of vocational interest measurement as it relates to the appropriateness of using combined sex scales or separated normed scales in some cases where some general scales are not available and with minority groups who were not represented in the samples used to norm scales.

The National Institute of Education Career Education Program studied the specific issues of sex bias and sex fairness in interest measurement

and recommended that specific guidelines should be followed which should minimize sex bias.

These guidelines were divided into three categories: a) The Inventory Itself; b) Technical Information; and c) Interpretative Information.

Some of the proposed guidelines which are of particular interest to this study are as follows:

1. It will be necessary to show empirically that separate forms of an interest inventory are more effective in minimizing sex bias. If it cannot be proved the same interest inventory should be used for both sexes.

2. Interest inventories should have gender neutral terms in their occupational titles.

3. The generic he or whe should be removed throughout the inventory.

4. Steps should be taken to examine the validity of interest inventories for minority groups differentiated by sex.

5. If differences occur between dominant and minority groups differentiated by sex, separate interpretive procedures and materials should be provided which account for those differences (Diamond, 1975).

The American Psychological Association and other professional and federal organizations have also seen the need to have guidelines or standards which test developers and users should adhere to in the interest of minimizing sex bias.

It would appear that Strong (1943) examined the issue of combined sex scales by scoring each gender on both scales and suggested that in some cases male and female scales could be combined but he recommended

that it would be better to score each sex on their own scale.

Hornaday and Kuder (1961) in an article titled "A Study of Male Occupational Interest Scales Applied to Women" investigated the feasibility of separate norms for the Kuder OIS for men and women. The results suggest that for nine of the ten occupations examined, the scales which were developed for males differentiated as well for females; however, they further noted that it is difficult to determine prior to testing which occupations could use the same key and norms.

Further research by Johnansson and Harmon (1972) in the area of using separate forms of the Strong Vocational Interest Blank for men and women specific to 14 occupations and 229 items which the two forms shared in common resulted in the following statement:

> The best way to avoid sexual bias in the SVIB is to design one form of the inventory that controls for sex differences. Unfortunately since occupational sex differences still exist in the real world some intermediate steps are necessary. Developing male and female scales based on a totally common item pool and developing one scale for each occupation with both male and female norms would be a beginning. These steps would facilitate the study of sexual differences in vocational interest (p. 410).

The Kuder OIS fares well on the problem of gender. The male and female occupations are absent from the stimulus items, as well as personal pronouns which plague other educational materials. Although the pro-

file has been criticized for having separate norms for men and women (a necessity defended by the Association for Measurement and Evaluation in Guidance Commission report (1973)) a number of the scales have been identified as being equivalent for either sex.

Munley, Fretz and Mills (1973) administered male and female forms of the Strong Vocational Interest Blank to 90 undergraduate women in an introductory Psychology class and concluded that the male form of the SVIB was appropriate for use with females. They also recommended that the male form be administered to females in addition to the female form if it would be helpful to women in exploring career options. They further comment that:

> It is most appropriate to allow women, at least college women, to compare their interests with those of men as well women and consequently recommend the administration of both forms of the SVIB to college women requesting vocational counseling. Only if such a practice is adopted will college female clients be assured a complete picture of their interests (p. 289).

Holland (1975) in an article titled "The Use and Evaluation of Interest Inventories and Simulations" stated the following in answer to the question -- should single norms or separate norms for male and female be used?

> A single set of norms used with either sex has not been tried; one can only speculate about such norms. Separate norms for men and women are a mixed bag. They reduce a major factor, sexual socialization, but they can be misleading to the user....In ad-

> dition, experience with sex norms for the same occupation indicates that some small proportion of men and women will be distressed because they get higher scores on the opposite sex norms than on the same-sex norms (p. 32-33).

Holland goes on to say in the question of whether the content of interest inventories should be revised to minimize the age, race, and social class bias with the following comment:

> If adjustments are made to eliminate alleged sex bias, then similar adjustments should be made for the other major forces of socialization. The reconstruction of inventories to eliminate the influence of sex, race, age, and social class would probably lead to an inventory with lowered validity, and an inventory that assessed largely a person's innate potential or heredity (p. 36).

Johansson (1975) offered some of the following recommendations in regard to sex bias at the item level:

1. The same set of questions on the interest inventory should be asked of both sexes at the item level as one way that the issue of sex bias could possibly be avoided.

2. In all cases where it would be difficult to eliminate gender from the item both possibilities should be present (i.e., tailor/seamstress).

3. The easiest way to avoid sex bias in the development of the interest inventory is to write items which do not have a tendency to favor one gender over the other.

4. Scores should be interpreted to both sexes so as not to limit any career opportunities on all scales with consideration given to the gender of the client. Sexual stereotypes should be considered in the interpretation of opposite gender scores with consideration given to the potential effect on scores in mind (pp. 69-79).

Cole and Hanson (1975) in an article titled "Impact of Interest Inventories on Career Choice" offered the following comment for broadening the options suggested by vocational interest inventories:

1. Interest inventory scores should suggest occupations that broaden the options of both sexes throughout the full range of career areas.

2. For a given group, it is desirable that there be some variation between original occupational preferences and inventoried occupational preferences and inventoried occupational suggestions and that an inventory produce several occupational options for each person.

3. Interest inventories should produce approximately equal distributions of scores for men and women throughout the full range of possible general scale and occupational scale scores (p. 13).

Birk (1975) states that the use of female-normed scales may be useful to males who may wish to pursue occupations dominated by females but note that the use of female-normed scales in this manner has not been empirically tested or validated.

Tanney (1975) observed that even the language utilized in interest inventories may have an imput on sex bias but as yet as not been tested;

1. No empirical test of the influence of labeling occupations, interests, or activities as "gender specific" has been reported in the field of occupational interest measurement.

2. Investigation in other disciplines strongly suggests that this variable may have an impact, though a subtle one, on the responses people make to questions about their vocational or vocationally related interests.

3. The potential hazards of gender specification would suggest that every caution should be taken in the construction of interest measures and related materials to insure that no "sex appropriateness" is conveyed (pp. 92-93).

Bowlsbey (1975) in an article titled "Sex Bias and Computer-Based Guidance Systems" commented on interest inventories:

> To the extent that such instruments are sex biased when used independently, any computer-based guidance system in which they are used to guide exploration of occupations will also be sex biased. Indeed, any sex bias that such instruments have may be magnified in a computer-based system because of the kind of power the computer has as a delivery system (p. 188).

Bowlsbey also recommends that the interest inventories which provides the respondent with a computer-printed interpretation sheet is an area which warrants further study.

Fitzgerald and Fisher (1975) examined the legal aspects of sex bias in interest inventories and made the following recommendations:

1. Interest instruments utilizing a single or dual inventory for-

mat should be normed on the basis of populations that are comparable to the environmental, cultural, and psychological background of the test taken.

2. In instruments with separate inventory forms onthe basis of sex, the same vocational scales, clusterings, and occupational choices should be provided.

3. In instruments with separate inventory forms on the basis of sex and with some scales, the norming of the scales should be based on sex.

4. The language used in the instrument should be nonsexist.

5. The use of sex-biased interest inventories in the educational setting should be illegal.

6. Publishers of interest inventories could revise manuals and reference materials provided for individuals who purchase, administer, and interpret interest assessment instruments to insure that areas of potential sex bias (differentiated scaling by sex, normative populations... (pp. 197-198).

Campbell (1977) concluded in reference to male-female response difference on the Strong Vocational Interest Blank that:

1. Men and women, on the average, respond differently to about half of the inventory items.

2. The size of the differences is considerable.

3. The differences do not disappear when only men and women who have made the same occupational choices are compared.

4. The differences have not lessened since 1930.

5. Empirical scales constructed using same-sex criterion and reference samples work better than scales based on other-sex samples.

6. The most technically accurate way to report empirical scale scores is to present those for the appropriate sex (p. 76).

The researcher concluded as a result of literature reviewed on sex bias and sex fairness in interest measurement that bias does intrude into the counseling process via variables such as gender of the counselor, gender of the counselee; the interest inventory iteself, the technical information provided by interest inventory publishers, and the interpretation of interest inventory results.

Race and Interest Measurement

Race as a variable in vocational interest measurement has received limited attention in the literature. The current emphasis of minimizing sex bias and sex fairness in vocational interest measurement has not concerned itself to any great degree with race as a variable. Strong (1943) compared the responses of twenty-five black female nursing students at Meharry Medical College with a criterion group of white nurses and found that their responses were not significantly different.

Harmon (1970) administered the Strong Vocational Interest Blank to twenty-five women who were special program participants and reports that the profile was useful in recognizing the individuality of the disadvantaged women but few high scores were reported in professional occupations.

Borgen and Harper (1973) administered the SVIB to 147 black men and 1455 white men who were national merit scholars with the intent of de-

termining whether SVIB profiles have the same predictive validity for blacks and whites. They concluded that interest inventories are valid for some blacks and predict as well for some blacks as they do for whites.

> "In light of this evidence that the established validity of measured interests generalizes to black men, counselors can place renewed confidence in the use of interest inventories with black students. The result should be increased equality of opportunity as career decision making and satisfaction are enhanced for both black and white youth" (p. 26).

The statement made by Borgen and Harper (1973) that the blacks and whites in their sample tended to come from more advantaged cultural and family backgrounds raises the further question of the predictive validity of interest inventories with the culturally and educationally disadvantaged. Kimball, Sedlacek and Brooks (1971) administered the Holland's Self Directed Search for Educational and Vocational Planning to a group of 143 black freshmen at the University of Maryland and compared their pattern of vocational choice and satisfaction with SDS and a comparable group of white students. The results showed that blacks tended to select more social service occupations than whites and that whites selected the more realistic and investigative choices. Similar findings were also reported by Bayer and Boruch (1969).

Hanson (1974) suggested that future research should be undertaken which would examine the issue of the validity of the ACT Interest Inventory for minority students.

The use of the interest inventories with ethnic minority stu-

> dents has received little attention. As with many assessment instruments, there is concern that possible cultural bias of interest inventories may reduce the accuracy with which the interests of individuals who are not from the white middle class are measured (p. 52).

Gump and Rivers (1975) examined the need for sex fairness efforts to consider women as a nonhomogeneous group with specific concern for the variables of age, race and socio-economic class. One of the conclusions reached in the paper was that black women were not included in the women-in-general or the criterion groups used to revise the Strong Vocational Interest Blank and as a result any black female student who would use this particular instrument would be at a disadvantage.

Gump and Rivers (1975) also reported that none of the revisions of the Strong Vocational Interest Blank since 1943 include data in reference to black women for any occupation.

As a result of their findings Gump and Rivers developed guidelines which are similar to The National Institute for Educations Guidelines for Assessment of Sex Bias and Sex Fairness in Career Interest Inventories with specific emphasis on minority groups. They are as follows:

1. Efforts directed at amelioration of sex bias should be extended as strenously toward members of minority groups as toward whites.

2. Given the tendency of black women to make early career decisions within a limited array of occupations, to the extent that interest inventories may be used as sources of stimulation their early administration is though to be particularly important for the minority student.

3. Student handbooks should include accurate information about the proportions of minority men and women in various occupational roles, so that occupational planning may include realistic knowledge of group participation.

4. Counselor manuals should also include discussion of group participation in various occupations, and matching situation. For minority females the inventories and the criterion are unfair; i.e., also matching situations. Counselors should be urged to encourage the minority student's broad consideration of occupational choice, even where present numbers of minorities in given roles is low. Low participation has too often been used as a source of discouragement. Where the student's interests and abilities are realistically matched, counselors should be advised to admit their ignorance of "how it would be" for the minority student entering unchartered waters, rather than to "protect" him from comtemplated difficulties.

5. Publishers should establish response rates on homogeneous scales for minority men and women. Should substantial differences in response be found, separate norms should be presented for different minority groups. Should differences not be found, publishers should indicate clearly that differences were evaluated, and that groups have been combined due to similarity of response.

6. Normative groups for occupational scales should be examined to determine if minority groups are included, and where minorities are included their response patterns should be compared with the majority, and item modifications made were necessary.

7. Minority group psychologists should seek federal, state and private support for the purpose of developing new instruments which are appropriate for use with minority group women (pp. 137-138).

Race and Intelligence Testing

The major emphasis of researchers in the area of race and testing has been primarily in the area of examining the use of intelligence tests to systematically label black children inappropriately by using white middle class norms with the assumption that all persons are equal.

Professional groups such as the National Association for the Advancement of Colored People; Association of Black Psychologists and the American Personnel and Guidance Association have recognized the critical need for change in this area to a degree that they recommended that a moratorium on intelligence/ability testing of black children be put into effect until adequate ability measures could be developed which do not place minorities at a severe disadvantage (Samuda, 1975).

Williams (1972), one of the major forces in this movement, developed a test which he titled the Black Intelligence Test of Cultural Homogeneity using items which were taken from the black experience which are geared toward measuring the sensitivity of whites to blacks. Dove (1966) developed a general intelligence test which is designed with disadvantaged blacks having an advantage over middle class whites. The test was designed to show that disadvantaged blacks are more intelligent than middle class.

The literature shows very little effort being made in the area of blacks and intelligence testing and the two tests mentioned above are ex-

tremely limited, in the writer's opinion, as to their usage. Samuda (1975) summarizes the need for change in this area as follows:

> We need to look at our purposes for testing. If testing is to serve selective and sorting function and if, indeed, psychometric technology is intended to preserve an elite, then it follows that traditional procedures for measuring intelligence and scholastic aptitude, tied to a set of middle-class ethnocentric norms, will serve the function very well. However if it is our purpose to serve the mass of citizens and if it is our goal to use measurement to facilitate the education of the poor, of the minority student, and of the atypical individual, then we will need to explain our research endeavors (p. 156).

Summary

It is apparent that testing practioneers and researchers have become more aware of the racism and sexism institutionalized in some of the tools of our counseling profession; most notably in intelligence tests and interest inventories.

The literature has detailed some of the ways that sexism and racism variables affect the counseling relationship to a degree that it is not difficult to envision the same injunction being extended to tests and inventories which are used for guidance purposes alone.

Samuda's remarks were specific to intelligence testing, however, the research feels that they are just as valid for interest measurement.

CHAPTER III. METHODOLOGY

This chapter describes the methods employed including sampling procedures, description of the sample, methods utilized in data collection and analyses; and hypotheses to be tested.

Sampling Procedures - Sample Description

The subjects in this study were elementary teachers who were obtained from a representative list of 5000 subscribers to the Grade Teacher, published by Macmillan Company.

There were three conditions similar to those used by Kuder which had to be met for a subject to be included in this study:

1. Being satisfied with their current occupation as measured by a job satisfaction questionnaire (Appendix A).

2. Having at least three years of full-time work experience as an elementary teacher.

3. Have no other responsibilities assigned to their position, e.g. administrative, etc.

Kuder Occupational Interest Surveys (KOIS) and job satisfaction questionnaires were distributed to 800 elementary teachers with the intent of obtaining a subsample of approximately 100 S's in each race and gender group.

The materials distributed to each subject included an explanatory letter; a KOIS; a job satisfaction questionnaire; an addressed postage-paid envelope; and a pencil. The cover letter (see Appendix B) explained to the subjects the purpose of the study; how their names were obtained; the importance of the study and the willingness of the researcher to pro-

vide them with the results of their inventory scored to show their similarities with a larger number of occupations.

The explanatory letters bears the signature of Don Zytowski due to two reasons. The first is that this study was a part of a major project of Don Zytowski and second, it was hoped that by having his signature appear on the letter it would increase the response to the survey.

Of the 800 KOIS's distributed 421 were returned. Further application of the previously mentioned selection criteria reduced the sample to 323 S's, which represented 93 black female, 119 white male, and 113 white female elementary teachers. The black male elementary teachers totaled 19 which was insufficient for inclusion in this study.

The cost involved in mailing and the scoring of the KOIS profiles did not allow for additional sampling of all groups but did allow for additional sampling of racial groups for the purposes of increasing the sample size in that group. Phone calls were also made to racial group subjects to encourage their participation in the study. These additional efforts did not yield a significant increase in the sample size.

Instruments

In describing the instrument used in this study the researcher will first make a necessary distinction between interest inventories. Interest Inventories may be divided into two categories. The first are normative inventories in which items are internally consistent only for the occupational group which they differentiate. The second are homogeneous scales which are more specific to areas of interest. The items in the latter case are assembled because they are more closely related to each

other and are strongly intercorrelated.

In the reporting of interest inventory results the normative profile reports the degree to which the respondent has interests similar to persons in a given occupation. The homogeneous scale results are reported specific to the person's dominant types of interest. (Zytowski, 1973).

The instrument selected for this study is normative and is described in the KOIS General Manual (Kuder, 1974) as having a total of 171 scales representing both college majors and occupations. The scales were normed using groups of men (77 occupations groups; and 29 college majors). Scales normed utilizing groups of women total 37 for occupations and 19 for college majors. Also included were 8 experimental scales developed for the purpose of providing data for studies in masculinity-feminity, maturation of interests and faking. A Validity (V) scale is included to determine the sincerity of the respondent.

The KOIS has 100 triads in which the respondent indicates the "most" preferred and "least" preferred activity. There are six possible patterns of responses for each triad generating a total of 600 possible pattern configurations.

The predictive validity of the KOIS was investigated by Zytowski (1976) in a study titled "Predictive Validity of the Kuder Occupational Interest Survey: A 12 to 19 Year Follow-Up". Zytowski followed up 882 subjects who had taken an earlier form of the KOIS and found that fifty-one percent were employed in occupations which would have been suggested to them if their inventory results had been interpreted. Zytowski noted that this percentage compares favorably with the findings of other vali-

dation studies for occupationally-scaled interest inventories and represents ninety percent of the possibly validity derived from concurrent validity figures. The scales for college majors correctly predicted fifty-five percent from a high school level administration. Subjects who were in occupations consistent with their early interest profiles did not report a greater degree of success or job satisfaction, but showed a greater degree of continuance in their occupational career. It was also suggested that improved prediction would result if the inventoried subjects graduated from college, chose occupations that were normed on the profile or entered a scientific technical occupation.

Zytowski (1976) as a result of conducting a 12 to 19 year predictive validity study, was able to measure the test-retest reliability over a 12 to 19 year interval. In this study Zytowski examined 729 subjects by computing rank order correlations between the sets of scales on the two profiles obtained 12 to 19 years apart. The first administration was at five different ages ranging from 13 to 20. The median of the rho statistics generated varied from .40 for the youngest to approximately .80 for the oldest age group at the time of the administration. Reliabilities were reported to be better for male-normed scales than female-normed scales. Slight differences were also reported between the 12 to 19 year intervals. These findings were similar to the reliabilities reported for the Strong Vocational Interest Blank (Strong, 1955).

Kuder (1966) demonstrated satisfactory test-retest reliability of the instrument but over a much shorter interval than Zytowski.

Based on these studies the researcher concluded the KOIS was a re-

liable instrument to use in this study.

Statistical Procedures Used to Analyze the Data

Kuder used several methods to analyze the discriminant validity of scales on the KOIS. The first method found the percent of each criterion group (occupation or college major) which scores highest on their own scale (or of a cross validation group). In the Kuder General Manual 1974 data is reported for each of 30 core scales, showing a range from only twenty percent (Electrical Engineers) to ninety-four percent (Fine Arts Majors).

Another approach to the same index is to calculate the distribution of ranks of a criterion group on its own scale, (see p. 35, Kuder General Manual, 1974), for the 30 core groups. This table gives the number of persons in each group whose score on their own scale places them first, second, third, etc., among all their scales's scores. The average rank for each group is not given (and can't be calculated since the last category is "greater than sixth"), but Kuder reports that ninety percent of the persons in the core groups had a score on their own scale which was no less than .06 lambda points from the score of their highest ranking scale.

In another method Kuder counts "errors-of-classification" on a scale developed from the criterion group. They are obtained by comparing the members of a criterion group's score on their own scale each with their scores on all other scales available. The mean number of errors of classification (persons who score higher on another scale than their own) may be calculated for any given criterion group; a measure of discriminant

validity for the scale.

The Kuder General Manual (1974) pp. 32-33 shows the findings for the 30 core groups. No means or standard deviations are given, but the range of errors of classification is from one percent (many cases, such as Primary School Teachers compared with Banker scale scores) to twenty-nine percent (Electrical Engineers with Chemist scale, and Premed Major and Bio Science scale).

In each of the three methods, it is important to realize that a criterion group is needed to obtain scores on their own scale, which are then compared with their scores on other scales. Thus a new scale was constructed for each sample for their own responses.

Homogeneity

Kuder's procedure for assessing the homogeneity of each group (as outlined in Kuder 1977) was used to compare the homogeneity of each group. Homogeneity figures were generated from each race and gender group, which were compared singly and in every combination, to determine whether any group or combination is significantly different from any other.

The homogeneity of an occupational group is reflected by the size of the proportion sum, when each S of an occupation is scored on the general reference group key. When all responses have received one-third of the group each, then it can be said that no homogeneity is associated with the occupation. When all of the members of an occupational group mark exactly the same responses there would be perfect homogeneity.

The homogeneity figures of each combination of groups were examined i.e., B-W have no less than the total group, then it would be appropri-

ate to use Black or White keys and there would be no need to use separate keys.

The proportion score for a nonhomogeneous group is 66.67 and for perfectly homogeneous groups is 200. The lowest $\overline{X}$ for any group on the KOIS is .87 and the highest is .99. These $\overline{X}$s tend to run higher for women (Kuder, 1977).

As a further check on validity, the subjects' scores on the present KOIS primary teachers scale were compared to determine if a male scale was necessary.

Campbell (1974) and Kuder (1977) agree that inferential statistics alone are necessary but not sufficient to describe the development of their inventories. Instead, they call for practical differences; differences much larger than might be found by sensitive tests with large population samples.

The chi-square goodness of fit test was used in all cases where data could be classified into categories and treated as frequencies.

The specific hypotheses which were tested for significance using this statistic were three, six and eight.

This particular statistic requires that the expected cell frequencies be five or more but in some cases the cell frequencies were less than five. The significance level was determined at .01.

The chi-square test was used with hypotheses one and four with the significance level increased to .001 to control for a violation of the one of the assumptions covering the use of the chi-square statistic; independence. Significance levels were therefore adjusted to minimize the

chances of making a type I or type II error (Mendenhall, Ott and Larson, 1974).

Hypothesis

As indicated in chapter one of this study, the two major hypotheses to be tested are:

A. There will be statistically significant differences in the interests of male and female elementary teachers, as measured by the KOIS.

B. There will be statistically significant differences in the interests of black and white elementary teachers, as measured by the KOIS.

These hypothesis are listed with the null hypothesis first, followed by the alternative hypothesis. The specific hypotheses related to each statistical method to be tested for general hypotheses A and B are:

Hypothesis 1

H_0: There will be no significant differences between male and female elementary teachers in their response frequencies on the KOIS.

H_A: There will be significant differences between male and female elementary teachers in their response frequencies on the KOIS.

Hypothesis 2

H_0: There will be no significant differences in the errors-of-classification between scales formed for white male and white female elementary teachers on the KOIS.

H_A: There will be a significant difference in the errors-of-classification between male and female elementary teachers on the KOIS.

Hypothesis 3

H_0: There will be no significant differences in the ranks of black female, white female and white male elementary teachers on the KOIS Primary

Teachers Scale.

H_A: There will be a significant difference in the ranks of black female, white female and white male elementary teachers on the KOIS Primary Teachers Scale.

Hypothesis 4

H_0: There will be no significant differences between black and white female elementary teachers in their response frequencies on the KOIS.

H_A: There will be a significant difference between black and white female elementary teachers in their response frequencies on the KOIS.

Hypothesis 5

H_0: There will be no significant difference in the errors-of-classification between scales formed for black females and white females elementary teachers on the KOIS.

H_A: There will be significant difference in the errors-of-classification between black and white elementary teachers on the KOIS.

Hypothesis 6

H_0: There will be no significant differences in the ranks of white male and white female elementary teachers on the KOIS Primary Teachers Scale.

H_A: There will be significant differences in the ranks of white male and white female elementary teachers on the KOIS Primary Teacher Scale.

Hypothesis 7

H_0: There will be no significant difference in the errors-in classification between scales formed for white male and black female elementary teachers on the KOIS.

H_A: There will be a significant difference in the errors-in-classification between white male and black female elementary teachers on the KOIS.

between white male and black female elementary teachers on the KOIS.

Hypothesis 8

H_0: There will be no significant differences in the ranks of black female and white female elementary teachers on the KOIS Primary Teachers Scale.

H_A: There will be significant differences in the ranks of black female and white female elementary teachers on the KOIS Primary Teachers Scale.

Analysis of these data was completed by an IBM 360 computer using the Statistical Package for the Social Services (SPSS) (Nie, Hull, Jenkins, Steinbrenner, Brent, 1975).

The statistical significance for data which is presented in tables as frequencies was tested by computing chi-squares.

Kuder's method of determining the differences between groups mentioned earlier in this chapter was used to examine the errors-in-classification.

CHAPTER IV. FINDINGS

Overview

The purpose of this study was to investigate the extent to which members of a single occupation (Elementary Teacher) show different or identical interests depending on whether they are male or female or members of black or caucasian racial groups.

Based upon an extensive literature review of occupational choice and vocational theory the following hypotheses were generated:

A. There will be statistically significant differences in the response patterns among male and female elementary teachers, as measured by individual interests on the KOIS.

B. There will be statistically significant differences in the response patterns among black and white elementary teachers, as measured by individual interests on the KOIS.

The research instruments used to investigate the hypotheses were the Kuder Occupational Interest Survey Form DD (Kuder, 1974) and a job satisfaction questionnaire (see Appendix A).

The subjects were 323 elementary school teachers obtained from a representative list of subscribers to the Grade Teacher, published by Macmillan Company.

The findings of the investigation are presented herein.

Results

Sex

In Table 1 represents the comparison of the response frequencies of white male and white female elementary teachers considering the in-

dependent variable of sex without the effects of race. The chi-square test was employed in the analysis of the data. The following hypothesis was then tested. Hypothesis 1, there will be no significant differences between male and female elementary teachers in their response frequencies of the KOIS. Seventy-four percent of the 100 items were statistically significant. A chi-square of 20.52 was obtained with 5 degrees of freedom and 74 out of 100 items were statistically significant at the .001 level. The null hypothesis was therefore rejected.

Table 2 shows the percent of errors of classification for white male and white female elementary teachers. Kuder's method of counting the "errors-of-classification" which were obtained by comparing the members of a criterion group's score on their own scale each with their scores on all other scales available was used. The following hypothesis was then tested; Hypothesis 2, there will be no significant differences in the errors-of-classification between scales found for male and female elementary teachers on the KOIS. Twenty-one white male elementary teachers scored higher on the white female scale than on their own, and four white females scored higher on the male scale than on their own. Of the 232 cases, there were 119 white males in one cell and 113 white females in the other. The number classified incorrectly was 25, which represents .10775 percent. This percent is represented in Table 2 as eleven percent rounded. The percent of errors-in-classification were within the acceptable range that Kuder considered for the instrument, therefore, hypothesis 2 was accepted.

Table 1. Comparison of the Response Frequencies of White Male and Female Elementary Teachers (Sex without the Effects of Race)

Kuder Item No.	Chi-Square Value	df	Significant Level	Signif-icant	Missing Observation
1	66.20427	5	0.0000	X	1
2	24.50261	5	0.0000	X	1
3	17.18022	5	0.0042	-	-
4	11.10429	5	0.0494	-	1
5	114.59111	5	0.0000	X	1
6	19.81638	5	0.0014	-	-
7	21.19264	5	0.0000	X	1
8	6.07912	5	0.2986	-	1
9	51.21948	5	0.0000	X	-
10	28.99017	5	0.0000	X	1
11	36.59467	5	0.0000	X	1
12	3.27157	5	0.6582	-	-
13	24.93179	5	0.0001	X	-
14	15.63487	5	0.0080	-	2
15	50.25427	5	0.0000	X	-
16	39.37784	5	0.0000	X	-
17	19.25386	5	0.0017	-	2
18	35.66075	5	0.0000	X	1
19	50.88771	5	0.0000	X	-
20	26.47861	5	0.0001	X	1
21	70.92574	5	0.0000	X	-
22	41.25589	5	0.0000	X	1
23	19.96516	5	0.0013	-	1
24	71.45238	5	0.0000	X	1
25	55.04892	5	0.0000	X	-
26	40.95079	5	0.0000	X	2
27	100.27534	5	0.0000	X	1
28	11.14664	5	0.0486	-	2
29	29.31807	5	0.0000	X	6
30	98.14825	5	0.0000	X	4
31	39.00781	5	0.0000	X	1
32	17.83644	5	0.0032	-	1
33	83.53038	5	0.0000	X	5
34	32.12396	5	0.0000	X	4
35	49.77875	5	0.0000	X	5
36	100.09792	5	0.0000	X	2
37	29.97188	5	0.0003	X	3
38	26.51855	5	0.0001	X	-
39	18.60448	5	0.0023	-	3
40	65.58648	5	0.0000	X	1

Table 1. Continued

Kuder Item No.	Chi-Square Value	df	Significant Level	Signif-icant	Missing Observation
41	16.68221	5	0.0051	X	2
42	8.84916	5	0.1152	-	-
43	45.63019	5	0.0000	X	2
44	5.30642	4	0.2573	-	-
45	119.23741	5	0.0000	X	1
46	44.28271	5	0.0000	X	-
47	16.13609	5	0.0065	-	2
48	46.30028	5	0.0000	X	2
49	84.10577	5	0.0000	X	1
50	13.50130	5	0.0191	-	1
51	67.59486	5	0.0000	X	-
52	41.97765	5	0.0000	X	-
53	24.43309	5	0.0002	X	2
54	15.74712	5	0.0076	-	2
55	114.15932	5	0.0000	X	2
56	24.23462	5	0.0002	X	1
57	7.66422	5	0.1757	-	3
58	6.20342	5	0.2869	-	2
59	46.56587	5	0.0000	X	1
60	29.20345	5	0.0000	X	-
61	53.54401	5	0.0000	X	2
62	29.93188	5	0.0000	X	1
63	72.64275	5	0.0000	X	1
64	20.25719	5	0.0011	-	3
65	39.45276	5	0.0000	X	2
66	23.03732	5	0.0003	X	3
67	3.77229	5	0.5826	-	2
68	41.08832	5	0.0000	X	4
69	104.52306	5	0.0000	X	1
70	11.80185	5	0.0376	-	1
71	33.06364	5	0.0000	X	1
72	47.83235	5	0.0000	X	3
73	22.00999	5	0.0005	-	-
74	79.17070	5	0.0000	X	2
75	93.53163	5	0.0000	X	-
76	26.01410	5	0.0001	X	-
77	68.98386	5	0.0000	X	-
78	39.76991	5	0.0000	X	-
79	54.64751	5	0.0000	X	1
80	71.84396	4	0.0000	X	-
81	17.18469	5	0.0042	-	-
82	47.49469	5	0.0000	X	2
83	60.32738	5	0.0000	X	2

Table 1. Continued.

Kuder Item No.	Chi-Square Value	df	Significant Level	Signif-icant	Missing Observation
84	74.76248	5	0.0000	X	-
85	15.48700	5	0.0085	-	-
86	51.32735	5	0.0000	X	-
87	29.73251	5	0.0000	X	1
88	18.49335	5	0.0024	-	-
89	30.19411	5	0.0000	X	2
90	42.70911	5	0.0000	X	-
91	36.13512	5	0.0000	X	1
92	103.41063	5	0.0000	X	-
93	27.45091	5	0.0000	X	1
94	21.37025	3	0.0001	X	-
95	67.32330	5	0.0000	X	1
96	39.76447	5	0.0000	X	-
97	29.95822	5	0.0000	X	1
98	73.33968	5	0.0000	X	1
99	97.72836	4	0.0000	X	-
100	16.94527	4	0.0020	-	-

Tabular Chi-Square = 20.52 5 degrees of freedom

X = significant at .001

NOTE: There are six possible answer patterns for each item on the KOIS which accounts for the degrees of freedom being determined at 5. (See Appendix D)

Table 2. Percent of Errors of Classification for White Male and White Female Elementary Teachers.

Group	N	errors	% of errors
White male	119	21	-
White female	113	4	-
Total	232	25	11%

Of the 232 cases there were 119 white males in one cell and 113 white females in the other. The number classified incorrectly was 25, which is represented in the table as 11%.

Table 3 presents the rank order positions for all groups which had primary school teacher indicated on the KOIS profiles in the first through ten plus position. The percent of black female elementary teachers who had primary teacher in the first position was twenty percent which compared with one percent for white males and twelve percent for white females. The black female elementary teachers also had twenty-two percent which did not have primary teacher suggested on their profiles which compared with eighty-one percent for white males and thirty-four percent for white females.

Table 4a represents the chi-square goodness of fit test for the overall comparisons of elementary teachers (Black Female, White Males, White Females) on the KOIS Primary Teachers Scale ranks 1 - 10+. The significance level was determined at .01. The following hypothesis were then tested. Hypothesis 3, there will be no significant differences in the ranks of black female, white female and white male elementary teachers on the KOIS Primary Teachers Scale.

The tabular chi-square at 20 degrees of freedom, .01 level of significance was 8.2604. The calculated chi-square at 20 degrees of freedom .01 level of significance was 117.155. Since 117.155 exceeds 8.2604 the null hypothesis was rejected.

Table 4b represents the chi-square test for comparisons of white male and white female elementary teachers on the KOIS Primary Teachers Scale ranks 1 - 10+. The significance level was determined at .01. The following hypothesis was then tested. Hypothesis 6, there will be no significant differences in the ranks of white male and white female ele-

mentary teachers on the KOIS Primary Teachers Scale.

The tabular chi-square at 10 degrees of freedom, .01 level of significance was 2.55821. The calculated chi-square at 10 degrees of freedom .01 level of significance was 69.35. Since 69.35 exceeds 2.55821 the null hypothesis was rejected.

Table 4c represents the chi-square test for comparisons of black female and white female elementary teachers on the KOIS Primary Teachers Scale ranks 1 - 10+. The significance level was determined at .01. The following hypothesis was then tested. Hypothesis 8, there will be no significant differences in the ranks of black female and white female elementary teachers on the KOIS Primary Teachers Scale.

The tabular chi-square at 10 degrees of freedom, .01 level of significance was 2.55821. The calculated chi-square at 10 degrees of freedom .01 level of significance was 15.85. Since 15.85 exceeds 2.55821 the null hypothesis was rejected.

The raw score frequencies for the black female and white female elementary teachers on the KOIS Primary Teachers scale were more closely distributed than the raw score frequencies for white male elementary teachers.

The white female elementary had thirty-four percent of the respondents who ranked primary teacher in the 10+ category which compared with twenty-two percent of the black female elementary teachers who had primary teacher ranked 10+.

Twelve percent of the white female elementary teachers had primary teacher ranked in the first position which compared with twenty percent for black females.

Table 3. Rank Order Positions for all Groups which had Primary School Teacher Indicated on their KOIS Profiles (1-10+ ranks listed)

Rank	Black Females %* N = 91**	White Males %* N = 119	White Females %* N = 113
1	.20	.01	.12
2	.12	.02	.10
3	.07	.02	.11
4	.08	-	.09
5	.08	.04	.06
6	.04	.03	.08
7	.07	.03	.04
8	.03	.04	.01
9	.08	.02	.05
10	.01	-	.01
10+	.22	.81	.34

*Percents do not equal 1.00 due to rounding error.

**Due to late returns there were 2 missing observations.

Table 4a. Chi-Square for all Comparisons by Rank Order of Score on the Primary School Teacher Scale (Black Female, White Male, White Female)

Rank	Black Female N = 91*	White Male N = 119	White Female N = 113
1	17	1	14
2	11	2	11
3	6	2	12
4	8	-	10
5	7	5	7
6	4	3	9
7	6	3	4
8	3	5	1
9	8	2	6
10	1	-	1
10+	20	96	38

Calculated chi-square = 117.155 degrees of freedom 20

a = .01

Tabular chi-square = 8.2604 degrees of freedom 20

a = .01

*Due to late returns there were 2 missing observations.

Table 4b. Chi-Square for Comparisons by Rank Order of Score on the KOIS Primary Teachers Scale (White Male and White Females)

Rank	White Male N = 119	White Female N = 113
1	1	14
2	2	11
3	2	12
4	-	10
5	5	7
6	3	9
7	3	4
8	5	1
9	2	6
10	-	1
10+	96	38

Calculated chi-square = 69.35 degrees of freedom 10

a = .01

Tabular chi-square = 2.55821 degrees of freedom 10

a = .01

Table 4c. Chi-Square for Comparison by Rank Order of Score on the KOIS Primary Teachers Scale (Black Female and White Female)

Rank	Black Female N = 91*	White Female N = 113
1	17	14
2	11	11
3	6	12
4	8	10
5	7	7
6	4	9
7	6	4
8	3	1
9	8	6
10	1	1
10+	20	38

Calculated chi-square = 15.85 degrees of freedom 10

a = .01

Tabular chi-square = 2.55821 degrees of freedom 10

a = .01

*Due to late returns there were 2 missing observations.

The column totals do not equal 100 percent due to rounding error.

Table 5 represents the comparison of the response frequencies of black female and white female elementary teachers considering the dependent variable of race (without the effects of sex). The chi-square test was employed in the analysis of the data. The following hypothesis was then tested. Hypothesis 4, there will be no significant differences between black and white female elementary teachers in their response frequencies on the KOIS. Thirty-eight percent of the 100 items were statistically significant. A chi-square of 20.52 was obtained with 5 degrees of freedom and 38 out of 100 items were statistically significant at the .001 level. The null hypothesis was therefore rejected.

Table 6 shows the percent of errors-of-classification for black female and white female elementary teachers. The following hypothesis was tested, hypothesis 5, there will be no significant differences in the errors-of-classification between black female and white female elementary teachers on the KOIS. Ten black females elementary teachers scored higher on the white female scale than on their own, and four white female elementary teachers scored higher on the black female elementary teachers scale than on their own. Of the 207 cases, there were 93 black females in one cell and 113 white females in the other. The number classified incorrectly was 14, which represents .0676 percent. This percent is represented in table 6 as 7 percent rounded.

The percent of errors-of-classification were within the acceptable range of 1-29% that Kuder considered for the instrument, therefore hypothesis 5 was accepted.

Table 5. Comparison of the Response Frequencies of White Female and Black Female Elementary Teachers (Race Without the Effects of Sex)

Kuder Item No.	Chi-Square Value	df	Significant Level	Signif-icant	Missing Observation
1	11.82892	5	0.0372	-	5
2	32.79051	5	0.0000	X	1
3	45.46889	5	0.0000	X	-
4	2.17000	5	0.8252	-	1
5	14.28253	5	0.0139	-	2
6	15.74846	5	0.0076	-	1
7	2.97856	5	0.7033	-	1
8	39.17433	5	0.0000	X	2
9	22.90469	5	0.0004	X	1
10	5.81117	5	0.3250	-	-
11	4.66654	5	0.4579	-	-
12	4.97849	5	0.4185	-	1
13	17.55409	5	0.0036	-	-
14	7.34333	5	0.1963	-	2
15	8.13512	5	0.1489	-	-
16	24.51569	5	0.0002	X	1
17	8.91717	5	0.1124	-	1
18	21.14479	5	0.0008	X	1
19	19.28880	5	0.0017	-	-
20	7.02999	5	0.2184	-	-
21	15.04000	5	0.0102	-	1
22	14.46851	5	0.0129	-	1
23	17.31665	5	0.0039	-	-
24	15.33772	5	0.0090	-	1
25	18.30032	5	0.0026	-	-
26	11.38996	5	0.0442	-	2
27	52.13579	5	0.0000	X	1
28	19.09077	5	0.0019	-	2
29	5.00825	5	0.4149	-	6
30	65.29048	5	0.0000	X	4
31	38.17435	5	0.0000	X	1
32	5.77587	5	0.3286	-	3
33	27.71620	5	0.0000	X	5
34	9.62485	5	0.0866	-	4
35	21.72177	5	0.0006	X	5
36	39.36244	2	0.0000	X	2
37	19.41890	5	0.0016	-	3

Table 5. Continued.

Kuder Item No.	Chi-Square Value	df	Significant Level	Signif-icant	Missing Observation
38	7.79337	5	0.1680	-	-
39	20.74893	5	0.0009	X	3
40	56.34962	5	0.0000	X	1
41	10.80978	5	0.0553	-	2
42	12.59327	5	0.0275	-	-
43	37.66393	5	0.0000	X	2
44	43.19125	5	0.0000	X	-
45	77.02303	5	0.0000	X	1
46	16.45755	5	0.0057	-	-
47	10.38373	5	0.0651	-	2
48	34.29395	5	0.0000	X	2
49	129.87973	5	0.0000	X	-
50	9.87067	5	0.0790	-	1
51	51.86684	5	0.0000	X	-
52	13.13086	5	0.0222	-	-
53	15.86297	5	0.0072	-	2
54	14.04014	5	0.0154	-	2
55	81.29642	5	0.0000	X	2
56	12.17434	5	0.0325	-	1
57	7.52262	5	0.1846	-	3
58	11.80118	5	0.0375	-	2
59	26.63385	5	0.0001	X	1
60	42.71295	5	0.0000	X	-
61	15.66828	5	0.0079	-	2
62	32.25250	5	0.0000	X	1
63	54.29437	5	0.0000	X	1
64	17.57732	5	0.0035	-	3
65	38.92088	5	0.0000	X	2
66	15.34129	5	0.0090	-	3
67	7.86385	5	0.1639	-	2
68	2.66280	5	0.0000	-	4
69	43.99631	5	0.0000	X	1
70	0.53034	5	0.9910	-	1
71	21.58946	5	0.0006	X	1
72	28.99786	5	0.0000	X	3
73	15.99246	5	0.0069	-	-
74	57.32797	5	0.0000	X	2
75	54.07065	5	0.0000	X	-
76	23.26610	5	0.0003	X	3
77	14.08356	5	0.0152	-	-
78	2.40788	5	0.7903	-	-

Table 5. Continued.

Kuder Item No.	Chi-Square Value	df	Significant Level	Signif-icant	Missing Observation
79	5.80616	5	0.3255	-	3
80	23.26610	4	0.0001	X	1
81	5.82845	5	0.3233	-	-
82	22.85997	5	0.0004	X	2
83	7.91363	5	0.1611	-	-
84	22.76526	5	0.0004	X	-
85	25.22447	5	0.0001	X	-
86	2.94093	5	0.7091	-	2
87	10.39389	5	0.0648	-	-
88	14.84546	5	0.0110	-	-
89	7.97363	5	0.1577	-	1
90	8.45376	5	0.1329	-	-
91	9.01496	5	0.1085	-	-
92	13.63920	5	0.0181	-	1
93	9.41818	5	0.0935	-	1
94	5.31163	3	0.1504	-	2
95	24.44685	5	0.0002	X	-
96	10.03688	5	0.0742	-	-
97	14.03531	5	0.0154	-	-
98	23.43222	5	0.0003	X	-
99	12.58939	5	0.0275	-	-
100	13.24518	5	0.0212	-	-

Tabular Chi-Square = 20.52 5 degrees of freedom

X = significant at .001

NOTE: There are six possible answer patterns for each item on the KOIS which accounts for the degrees of freedom being determined at 5. (See Appendix D)

Table 6. Percent of Errors of Classification for Black Female and White Female Elementary Teachers

Group	N	errors	% of errors
Black Female	93*	10	-
White Female	113	4	-
Total	206	14	7

Of the 206 cases there were 93 black females in one cell and 113 white females in the other. The number classified incorrectly was 14, which is represented in the table as 7% rounded.

*There were 2 missing observations added to black females due to late returns.

Sex and race confounded

Table 7 represents the percent of errors-of-classification for white male and black female elementary teachers. The following hypothesis was tested, hypothesis 7, there will be no significant differences in the errors-of-classification between white male and black female elementary teachers on the KOIS. Eleven white male elementary teachers scored higher on the black female elementary teachers scale than on their own, and one black female elementary teacher scored higher on the white male elementary teachers scale than on her own. Of the 212 cases, there were 119 white males in one cell and 93 black females in the other, the number classified incorrectly was 12, which represents .0566 percent. This percent is represented in Table 7 as 6 percent rounded. The percent of errors-of-classification were within the acceptable range that Kuder considered for the instrument, therefore hypothesis 7 was accepted.

Table 8, shows the percent errors-of-classification for pairs of elementary teachers, each group scored on race and sex is presented in this table. The results indicated that there were eleven percent of the white male elementary teachers incorrectly classified when scored on the white female scale. There was six percent of the white males incorrectly classified when scored on the black female scale. Eleven percent of the white female elementary teachers were incorrectly classified when scored on the white male scale and seven percent were incorrectly classified when scored on the black female scale. The last group of black female elementary teachers yielded six percent incorrectly classified when scored on the white male scale and seven percent incorrectly classified

Table 7. Percent of Errors of Classification for White Male and Black Female Elementary Teachers

Group	N	errors	% of errors
White Male	119	11	-
Black Female	93*	1	-
Total	212	12	6

Of the 212 cases there were 119 white males in one cell and 93 black females in the other. The number classified incorrectly was 12, which is represented in the table as 6%.

*There were 2 missing observations added to black females due to late returns.

Table 8. Percent of Errors of Classification for Pairs of Elementary Teachers, Each Group Scored on Race and Sex

Group	White Male % N = 119	White Female % N = 113	Black Female % N = 91*
White Male	-	11	6
White Female	11	-	7
Black Female	6	7	-

*Due to late returns there were 2 missing observations.

when scored on the white female scale.

Table 9 shows the homogeneity figures reported in highest possible proportion scores (HPPS) for all groups of elementary teachers. The (HPPS) for white females was 116.648346, black females was 115.619949 and white females was 112.629487. These (HPPS) values were compared with (HPPS) reported by Kuder 1977 for the 217 occupational groups. The lowest HPPS value for male occupational groups was 107.215 and 109.060 for females.

It would appear that all three groups are homogeneous which indicates that their answers to the KOIS were in agreement.

The conclusions indicated by this research were as follows:

1. Male and female elementary teachers respond differently to the 100 items on the KOIS. There were statistically significant sex differences to a degree that the alternative hypothesis was accepted.

2. Black and white female elementary teachers respond differently to the 100 items on the KOIS. There were statistically significant race differences to a degree that the alternative hypothesis was accepted.

3. The errors-of-classification for all groups each scored on its own scale and in every combination was clearly within the range reported by Kuder (1974) for the 30 core groups. The null hypotheses in all three cases was accepted which indicated that all three groups are distinctly different from each other.

4. The chi-square Goodness of Fit test indicated that ranks 1 - 10+ for the overall comparison between white male, white female and black female elementary teachers was significant.

5. The chi-square Goodness of Fit test between white male and white female elementary teachers was significant indicating significant sex differences in the rank order of Primary School Teachers on the present KOIS scale.

6. The chi-square Goodness of Fit test between black female and white female elementary teachers was significant indicating significant race differences in the rank order of Primary School Teachers on the present KOIS scale.

7. All three groups (white male, white female, and black female) are homogeneous when Highest Possible Proportion scores are compared with 217 occupational groups included on the KOIS.

Table 9. Homogeneity Figures Reported in Highest Possible Proportion Scores (HPPS) for all Groups of Elementary Teachers

Group	N	HPPS
White Female	113	116.648346
Black Female	93*	115.619949
White Males	119	112.629487

Note: The lowest HPPS value reported by Kuder for the 217 male and female occupational groups is 107.215 for male department store salesman and 109.060 for female keypunch operators.

*There were 2 missing observations added to black females due to late returns.

CHAPTER V. DISCUSSION AND RECOMMENDATIONS

An investigation of the extent to which members of a single occupation (Elementary Teacher) show different or identical interests depending on whether they are male or female or members of black or caucasian racial groups was undertaken in this study. The growing awareness among interest inventory developers and users to ways that sexism and racism intrudes into some of our tools of counseling suggested a need for this investigation. A discussion of the findings of this study; recommendations for improving the research; and recommendations for future research are presented in this chapter.

Discussion

Hypothesis 1, there will be no significant differences between male and female elementary teachers in their response frequencies on the KOIS was rejected due to seventy-four out of 100 items being statistically significant at the .001 level of significance. It is apparent that male and female elementary teachers differ in the way in which they respond to the KOIS which was an anticipated outcome.

Campbell (1977) reported that males and females on the average will respond differently to approximately half of the inventory items, the magnitude of the differences is great, and that these differences do not decrease when men and women who have selected the same occupational group are compared.

In addition to the comments of Campbell it would be beneficial to explore variables which may have contributed to this outcome i.e., socio-economic level, age, marital status, and early socialization by parents.

Diamond (1976) adds that societal expectations have created an environment which has limited the early learning experiences for both sexes.

It is difficult to label any single variable as accounting for these differences, however, societal expectations, in the writers opinion, would be one of the major causes.

Hypothesis 4, there will be no significant differences between black and white female elementary teachers in their response frequencies on the KOIS was rejected due to thirty-eight out of 100 items being statistically significant at the .001 level of significance.

This hypothesis was rejected with reservations because of the number of items which were statistically significant. There is no clear cut criteria to follow in making a decision to reject or accept however, in that differences do exist the decision was made to reject.

Factors which may have contributed to the differences may have been, as in hypothesis 1, socio-economic level, social class, age, parental aspirations, socialization, or marital status.

Sexton (1977) in a U.S. Department of Labor report mentioned earlier in this study indicated some of the differences which exist between black women and white women.

Teaching was reported to be the exception to the rule when comparing the status of jobs for black and white women. Black women were reported to have started their careers in much lower status jobs than white women however, black women had more favorable attitudes about working mothers.

The presence of more children in the home and more households which are headed by black women than white women could potentially cause differences in attitude about work, interests and activities. It would seem that the black female would have interest more consistent with males who are the heads of their households.

The educational process of the black female in that she would have been educated in a college environment may have been a factor due to being exposed in some cases to white middle class attitudes and behaviors regardless of whether the training institution was predominantly black or white.

As stated earlier in this discussion the differences which were realized at the item level may not be considered by some to be large enough for the two groups to be considered different.

Hypotheses 2, there will be no significant differences in the errors-of-classification between scales formed for male and female elementary teachers on the KOIS, Hypothesis 5, there will be no significant difference in the errors-of-classification between scales formed for black females and white females elementary teachers on the KOIS, and Hypothesis 7, there will be no significant differences in the errors-of-classification between scales formed for white male and black female elementary teachers on the KOIS were accepted because the errors-of-classification (the frequency with which members of an occupational group obtained a higher score on a scale other than their own) was within the range that Kuder (1974) determined was acceptable for the instrument. Kuder's criteria was used to determine whether the three groups which were compared

in every combination were statistically significant. The necessity to use this criteria is an acceptable procedure specific to interest measurement.

Hypotheses 3, there will be no significant differences in the ranks of black female, white female and white male elementary teachers on the KOIS Primary Teachers Scale was rejected primarily due to 81 percent of white males who did not have primary teacher suggested on their profiles. Eighty-one percent of the distribution were ranked in 10+ category.

Factors which may have contributed to this outcome may have been the sample size which may not have been large enought to avoid sampling error. The male and female differences explained earlier in this discussion apply to all comparisons of this group with any of the other groups examined in this study.

The sample, although random, contained a high percentage of elementary teachers from the state of Iowa which may have also been a contributing factor. Kuder (1977) reports that one factor which may account for sex differences is that the duties of males and females in the same occupation may not be quite the same.

Even though a specific selection criteria for inclusion in this study was employed, the male elementary teachers may be performing different duties.

Hypothesis 6, there will be no significant differences in the ranks of white male and white female elementary teachers on the KOIS Primary Teachers Scale and Hypotheses 8, there will be no significant differences in the ranks of black female and white female elementary teachers on the

KOIS Primary Teachers Scale were rejected due to differences realized from the chi-square goodness of fit test at the .01 level of significance. The large difference reported for male elementary teachers upon examination was the major cause for the difference in the comparisons. The scores for black females and white females were closer to being evenly distributed through the ranks 1 - 10+ which would indicate that the two groups would not be that different in their rankings.

Factors which may have contributed to the outcome of these hypotheses have been presented earlier in this discussion as we examined differences which exist between black women and white women (Kuder 1977; Campbell 1977; Sexton 1977).

The results of this study can not be compared with any other study which examined the variables of sex and race within the same occupational group, which would be highly desirable. The research encourages further examination of the variables of sex and race and the limiting effect that they may have on the career choices of minorities and women.

Recommendations

Recommendations indicated by this study fall into two categories: (1) to improve the research, and (2) to improve future research.

Recommendations suggested that would improve the research include:

1. Replicate the study utilizing larger, more equal groups which include representative samples of black male elementary teachers so that additional comparisons can be computed. The increase in sample size should serve to reduce or minimize sampling error.

2. Test-retest reliability studies should be conducted on the in-

cluded sample of elementary teachers to determine the reliability and validity of the KOIS when used with elementary teachers.

3. Follow-up studies should be conducted to determine the predictive validity of the KOIS with the included sample of elementary teachers over time.

4. Although this particular study considered the variables of sex and race additional studies should be conducted to determine the effects of variables such as age, socio-economic level, geographic location, longevity in the teaching profession, etc.

The following recommendations are suggested to improve future research:

1. In all occupations where males, females, blacks and whites are represented, there should be additional studies which examine the differences or commonality among persons in the same occupation considering variables such as race, sex, age, social class, etc.

2. Interest inventory publishers should make it possible for new scales to be developed and added to the inventory as research in the area of scale development increases.

3. Women and minority professionals should increase their research efforts in the area of vocational interest measurement.

4. Counseling practitioners should become more aware of the ways that sexism and racism can limit the career choices of women and minorities. Research efforts in this area should be intensified.

5. Counselor training programs should include elements which increase the awareness of their trainees to variables which may have the

effect of limiting the career choices of women and minorities.

6. The language of interest inventories should be examined to determine whether it has a contributing effect to limiting the career choices of minorities.

7. The Department of Health, Education, and Welfare National Institute of Education Career Education Program should establish a research group which would examine the specific area of race bias in interest measurement with primarily minority representation on the planning group.

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APPENDIX A

Kuder OIS Supplementary Questionnaire

KUDER OIS SUPPLEMENTARY QUESTIONNAIRE

The following questions are about your work and what you think of it. Your answers, along with those of others in various kinds of work, will be valuable in helping people discover the occupations for which they are suited in light of their preferences and abilities. Your answers will be kept strictly confidential.

What do you do as a teacher? The following is a list of some usual activities of teachers. Each activity is followed by a scale on which you may check off how often you are responsible for it. For each item, place an X in the column which shows the degree to which you are responsible for it.

	Usually	Occasn'ly	Never		Usually	Occasn'ly	Never
Teach music				Make bulletin boards			
Teach writing/printing				Read stories			
Teach reading				Play games			
Teach phonics				Tape record lessons			
Teach spelling				Show movies			
Teach math				Direct arts and crafts			
Teach English				Confer with parents			
Teach social studies				Attend workshops			
Teach science				Inventory books and equipment			
Teach sex education				Order equipment			
Teach safety				Evaluate teaching programs			
Plan lessons				Prepare report cards			
Supervise play activities				Instruct other teachers			
Tutor individuals				Supervise other teachers			
Supervise lunchroom, halls, busses				Supervise trainees			
Chaperone trips and activities				Participate in national associations			
Grade papers				Belong to teachers' committees			
Prepare tests of subject matter				Keep cumulative records			
Grade tests of subject matter				Discipline students			
Administer tests of subject matter				Other (please write in)			
Give achievement or ability tests							
Score achievement or ability tests							
Evaluate students							

What, if anything, do you dislike about your work? Please check each thing you dislike:

_____ The people you work with
_____ The kind of work you do
_____ The organization you work for
_____ The lack of opportunity for advancement
_____ The person or persons you work for

Anything else? Please write it here:

What, if anything, do you like about your work? Please check each thing you like:

_____ The people you work with
_____ The kind of work you do
_____ The organization you work for
_____ The opportunity for advancement
_____ The person or persons you work for

Anything else? Please write it here:

On the back, too!

If you had your choice, which of the following would you choose, if each paid the same? (Check one)

_____ The job you have now
_____ The same kind of work but with some changes in the working conditions or people you work with
_____ A different kind of work entirely

In general, how well do you like your work? (Check one)

_____ Like it very much
_____ Like it fairly well
_____ Neither like nor dislike it
_____ Dislike it a little
_____ Dislike it very much

How long have you been in your present kind of work? _____ years

Please list here any other occupations you have engaged in. Please underline those you liked:

_____

_____

_____

Suppose you could start over again and could prepare for any kind of work. Would you choose the occupation you are in?

_____Yes _____No

If not, what occupation would you choose?

_____

Please list here your college degree or degrees_____

Other special training_____

_____

_____

What grade(s) do you teach currently?_____

EEOC regulations suggest that we ask the following: (Please check)

_____Caucasian _____Black, Afro-American _____Spanish surname
_____Oriental _____American Indian (including Eskimos and Aleuts)
_____Other_____

Age_____ Sex: Male_____ Female_____

Please print your name below exactly as it appears on the Kuder Occupational Interest Survey and add your address so that we may send you a copy of your results.

Name _____
Address _____
City _____ State_____ Zip_____

Thank you sincerely for your help.

Dan Zytowski

APPENDIX B

Cover Letter

IOWA STATE UNIVERSITY

Student Counseling Service
Ames, Iowa 50011
Telephone: 515-294-5056

Dear Teacher:

I obtained your name from the Iowa Department of Public Instruction under their open records rule. I'm researching the interests of elementary teachers, and need very much for you to fill out the forms with this letter.

Enclosed is a Kuder Occupational Interest Survey which is widely used in helping young people plan their careers. It is important to know the extent to which this and other inventories are subject to various nonoccupational influences. I am investigating the Kuder inventory for biases as it represents the profession of elementary teaching.

Here's what I am asking--use the pencil provided to fill out the name grid and the items of the Kuder inventory. Note the instructions on the front. Also, please fill out the survey of your teaching activities. Return both in the stamped envelope provided.

In return for your help, I will send you the results of your inventory--a profile scored to show your similarity with persons in quite a large number of occupations.

Many thanks,

Donald G. Zytowski, Ed.D.
Counseling Psychologist

bds

P.S. These materials are rather expensive. Would you fill them out immediately and return them so that they are not likely to be lost. But keep the pencil!

APPENDIX C

Follow-up Letter

IOWA STATE UNIVERSITY

Student Counseling Service
Ames, Iowa 50011
Telephone: 515-294-5056

Dear Teacher:

I obtained your name from the Iowa Department of Public Instruction under their open records rule. I'm researching the interests of elementary teachers, and need very much for you to fill out the forms with this letter. And I especially need men teachers to participate.

Enclosed is a Kuder Occupational Interest Survey which is widely used in helping young people plan their careers. It is important to know the extent to which this and other inventories are subject to various non-occupational influences. I am investigating the Kuder inventory for biases as it represents the profession of elementary teaching.

Here's what I am asking--use the pencil provided to fill out the name grid and the items of the Kuder inventory. Note the instructions on the front. Also, please fill out the survey of your teaching activities. Return both in the stamped envelope provided.

In return for your help, I will send you the results of your inventory--a profile scored to show your similarity with persons in quite a large number of occupations.

Many thanks,

Donald G. Zytowski, Ed.D.
Counseling Psychologist

bds

P.S. These materials are rather expensive. Would you fill them out immediately and return them so that they are not likely to be lost. But keep the pencil!

APPENDIX D

KOIS Scoring

The Kuder OIS is a survey of one hundred items which are listed in groups of three. In each group, the inventory taker is asked to choose the activity that they prefer most and least.

In the group of three activities in the example below, the person answering has six possible answer patterns.

item			
	a. eat cake	(M)	(L)
	b. eat steak	(M)	(L)
	c. eat beans	(M)	(L)

1. cake most, steak least
2. cake most, beans least
3. steak most, cake least
4. steak most, beans least
5. beans most, cake least
6. beans most, steak least

It is possible that two groups may endorse one pattern more frequently than another as in the following example:

Frequency of Endorsement

by	tennis players	bridge players
1	10	16
2	0	16
3	25	16
4	15	16
5	50	16
6	0	16

Due to this occurrence the sum of the proportions of a criterion group (people who used the same response pattern as the inventory taker on each item) are divided by the highest possible proportion score. This procedure controls for the large differences and is referred to by Kuder as a lamda score.