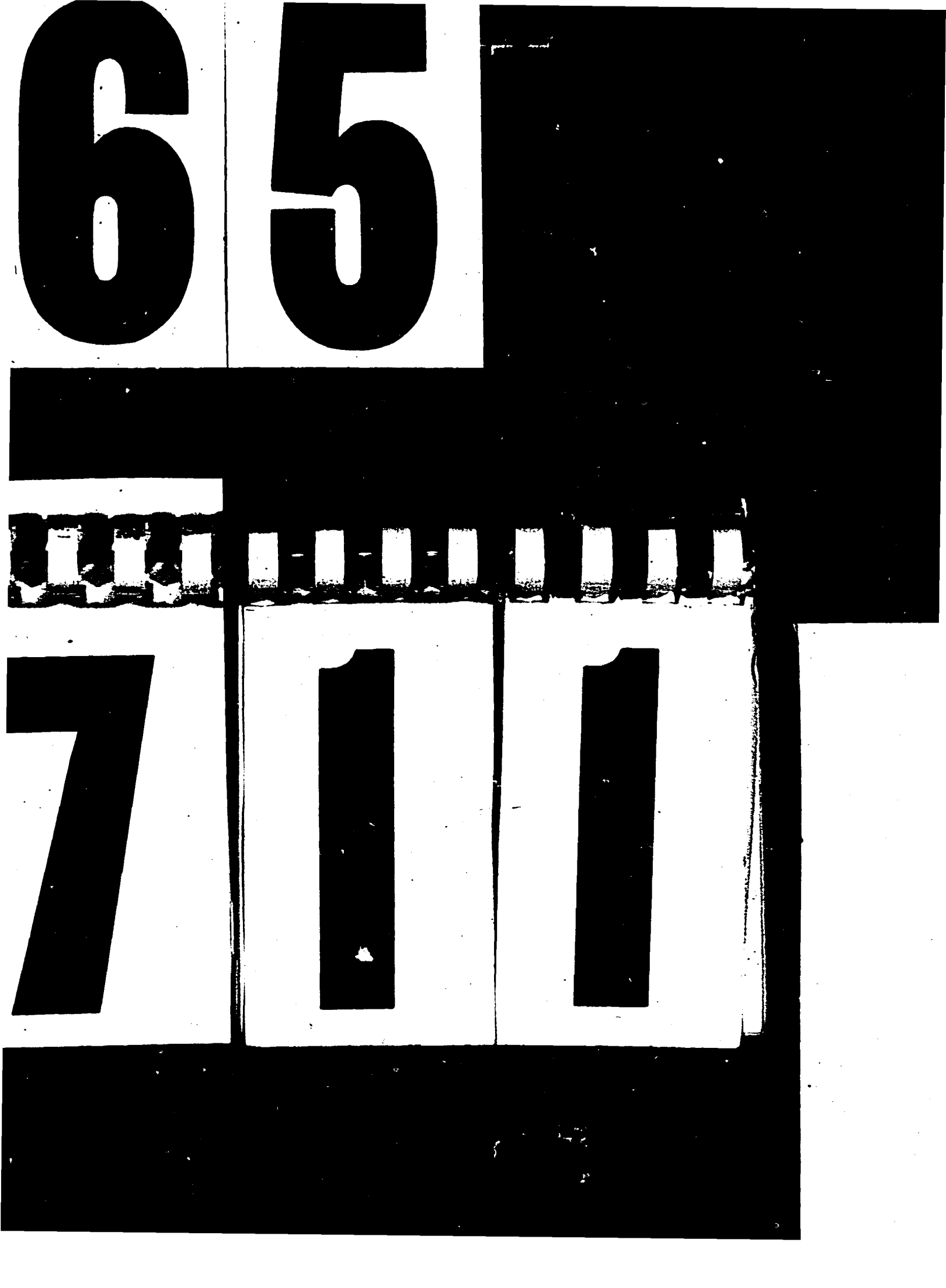
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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE COMPARISON-REFERENCE PROCESS AS IT RELATES TO NINTH GRADE INDIAN AND NON-INDIAN BOYS OF LOW SOCIO-ECONOMIC STATUS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF EDUCATION

BY

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Bemidji, Minnesota

1965

THE COMPARISON-REFERENCE PROCESS AS IT RELATES TO

NINTH GRADE INDIAN AND NON-INDIAN BOYS

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APPROVED BY

DISSERTATION COMMITTEE

ACKNOWLEDGMENTS

It is with sincere appreciation that the writer acknowledges the cooperation and assistance of many people in the conduct of this study. Especially high in the writer's esteem are the Red Lake and Bagley counselors, administrators, and students who gave such conscientious cooperation.

Many debts of gratitude are owed to Dr. Harry J. Parker, the writer's advisor, and Dr. Omer J. Rupiper, a member of the writer's advisory committee, for their interest and encouragement which made the difficulties encountered easier to resolve and progress more satisfying to achieve.

The writer is especially grateful to his wife whose encouragement and understanding were present in every phase of the study.

This research is dedicated to the writer's parents who instilled in the writer the awareness that the key to life's fulfillment is education.

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CHAPTER I

INTRODUCTION

Statement of the Problem

An area of concern for educators has been the influence of student self-perception on academic achievement in school. The following study grew out of a concern and interest in the cultural, social and racial aspects of student self-perception.

The primary problem in this study was to determine the applicability of Festinger's[1] theory of comparison-reference choices[2] as it related to ninth-grade Indian and non-Indian boys of low socio-economic status.[3] The secondary problem of the study was concerned

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[1] Leon Festinger, "A Theory of Social Comparison Processes," Human Relations, VII, No. 2 (1954), pp. 117-40.

[2] Comparison-reference choices: those individuals selected by the subject for use as reference points for evaluating their own performance.

[3] W. Lloyd Warner, Marchia Meeker, and Kenneth Eells, Social Class in America (Chicago: Science Research Associates, Inc., 1957).

with the relationship between these comparison-reference choices and near-sociometric choices.[1]

Significance of the Study

Of major interest in social psychology is self-perception and the influence of reference groups upon the individual's self-perceptions and upon his perception of the environment. This reference group concept has contributed both to theories of social behavior and to a large body of empirical research dealing with the selectivity exercised by the individual in his interactions with his environment.

Measures of scholastic ability alone are found to be of limited usefulness in predicting academic success. Ilza da Cunha Pereira[2] has shown that there are primarily two types of factors of great importance in determining the level of aspiration which in part help to determine academic success. These two factors are the situational and the general cultural. Among the situational, one would consider the order of presentation of tasks, the frequency of success and the frequency of failure. Among the general cultural, the level reached by the group or the social class to which the individual belongs tends to be the factor of primary influence. Chickering[3] also

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[1]Near-sociometric choices: those individual selected by the subject when asked to name the students whom they like the best.

[2]Ilza da Cunha Pereira, "The Level of Aspiration Concept in Modern Psychology," Boletim do Instituto de Psicologia, VI (January, 1956), pp. 13-19.

[3]Arthur W. Chickering, "Self Concept, Ideal Self Concept, and Achievement," Dissertation Abstracts, XIX (1958), p. 164.

found that there is an inverse relationship between achievement and any discrepancy between the actual and ideal self.

Since educators and counselors tend to put a great deal of emphasis on measures of scholastic ability it would seem that these measures would be useful in many cases only when the individual belongs to the culture on which the measure was standardized. If the individual does not belong to this group there could be reason to suspect that the test results could be unreliable.

Need for the Study

There have been some attempts to investigate the possibility that perceptions of one's own ability may differ significantly from objective measures of this same ability and may strongly influence the development and utilization of those abilities which an individual does possess. If this is true, then it would seem that it should be necessary to determine if these discrepancies are present and, if so, to what degree and in what manner they affect or influence academic achievement.

Procedure of the Study

This study was concerned with the relationship of certain types of reference groups to the self-perceptions and academic achievement of ninth-grade Indian and non-Indian boys of low socio-economic status. Ninth-grade boys were selected for this investigation because this grade represents one of the major points in school progress at which students make important decisions regarding their educational and vocational futures. In Minnesota this is also the time when the first

occupations unit is usually taught and the time when extensive testing programs are begun in most public schools through cooperation with the State-Wide Testing Program of Minnesota.[1]

The experimental phase of the study was constructed to test Festinger's theory which states that individuals assess their abilities by comparing themselves with others in a group which are selected because their abilities are similar to those of the individual.[2] The applicability of Festinger's theory will be tested by determining whether or not a statistically significant relationship at the .01 or .05 level of confidence exists between the subjects and their comparison-reference choices; between the subjects and their near-sociometric choices; and between the subjects and their self-estimates of ability. The secondary problem in the study will be tested to see if such a statistical relationship exists between the subjects' comparison-reference and near-sociometric choices. These statistical relationships will be tested for both the Indian and the non-Indian samples through ten specific null hypotheses.

Hypotheses

1. No statistically significant relationship exists between the scholastic index of subjects and the mean scholastic index of their comparison-reference choices.

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[1]Ralph F. Berdie, et. al., Counseling and the Use of Tests: A Manual for the State-Wide Testing Program of Minnesota; revised (Minneapolis: University of Minnesota Press, 1962).

[2]Festinger, loc. cit.

2. No statistically significant relationship exists between the scholastic index of subjects and the mean scholastic index of their near-sociometric choices.
3. No statistically significant relationship exists between the mean scholastic index of comparison-reference choices and near-sociometric choices.
4. No statistically significant relationship exists between the academic achievement level of subjects and the mean academic achievement level of their comparison-reference choices.
5. No statistically significant relationship exists between the academic achievement level of subjects and the mean academic achievement level of their near-sociometric choices.
6. No statistically significant relationship exists between the academic achievement level of comparison-reference choices and near-sociometric choices.
7. There is no statistically significant relationship between the measured academic ability of subjects and the subjects' self-estimates of ability.
8. There is no statistically significant relationship between the academic achievement level of subjects and the subjects' self-estimate of ability.
9. There is no statistically significant greater tendency for individuals to select others who possess a level of academic ability similar to their own when making comparison-reference choices than when making near-sociometric choices.

10. There is no statistically significant greater tendency for individuals to select others who possess a level of academic achievement similar to their own when making comparison-reference choices than when making near-sociometric choices.

A "Questionnaire" designed by Rubin[1] was used to obtain comparison-reference choices, self-estimates of ability and near-sociometric choices. The "Composite Score" of the Iowa Tests of Educational Development[2] was used to obtain a measure of academic achievement, and the "Index of Scholastic Ability" obtained from the Differential Aptitude Tests[3] was used to obtain a measure of general academic ability. The "Index of Scholastic Ability"[4] is a measure of future academic achievement and is designed to be used as a measure of intelligence or academic ability.

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[1] Rosalyn Aaron Rubin, "Social Comparison Processes of Superior Ninth Grade Pupils," (unpublished Ph.D. dissertation, Department of Psychology, University of Minnesota, 1961).

[2] E. F. Lindquist, Iowa Tests of Educational Development (Chicago: Science Research Associates, Inc., 1959).

[3] George K. Bennett, Harold G. Seashore, and Alexander G. Wesman, Differential Aptitude Tests, 3rd edition (New York: The Psychological Corporation, 1959).

[4] George K. Bennett, Harold G. Seashore, and Alexander G. Wesman, Manual for the Differential Aptitude Tests (New York: The Psychological Corporation, 1959), p. 77.

Summary

The purposes of this study were to determine the applicability of Festinger's theory of comparison-reference choice to ninth-grade Indian and non-Indian boys of low socio-economic status, and to investigate the relationship between these comparison-reference choices and near-sociometric choices.

The hypotheses were based to a large degree on Festinger's theory of social comparison processes. He postulates that individuals assess their abilities by comparing themselves with others who possess abilities similar to their own.

Data were obtained from standardized tests of scholastic ability and achievement and a questionnaire employing sociometric techniques. A statistical analysis was made to test the null hypotheses by using correlational techniques and tests of the significance of the difference between these correlation coefficients.

CHAPTER II

BACKGROUND THEORY AND RESEARCH

The Reference Group

Many of the hypotheses to be tested were derived from a theory of social comparison processes proposed by Festinger.[1] He postulated that all people have a need to evaluate their own abilities and that all individuals arrive at a subjective assessment of their abilities by comparing themselves to others in a group who are selected for this purpose because their abilities are similar to those of the individual. As such, the range of abilities within the group selected for comparison is narrower than the range of these abilities in the general population available for comparison. Festinger also suggests that the more the individual is similar to the group in several criteria, the more accurate an individual will be in his self-evaluation. Festinger further states that individuals are more strongly attracted to situations in which others are close to him in level of ability than to situations where the abilities of others are divergent from his own.[2]

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[1]Festinger, loc. cit.

[2]Leon Festinger, J. Torrey, and B. Willerman, "Self-Evaluation as a Function of Attraction to the Group," Human Relations, VII, No. 2 (1954), pp. 161-74.

Sherif[1] states that personal goals and standards should be analyzed in terms of one's reference groups, and not in terms of society as a whole. He defines a reference group as a group to which the individual wants to relate himself psychologically and these groups furnish the anchoring points which determine the effective frames of reference in which the individual's social life rotates.

One of the significant problems of reference-group research is that of individual group relationship. The major contrast here with the individualistic relationship is the realization that group situations generate differential effects of significant consequence. Group interaction is seen as the major determinant in attitude formation and attitude change. It has also been shown that the groups to which the individual relates himself need not always be the group in which the individual is actually moving. Therefore, reference groups can be characterized simply as those groups to which the individual relates as a member or to which he aspires to relate psychologically.

Newcomb[2] introduced the notions of positive and negative reference groups. A positive reference group is one in which a person is motivated to be accepted and treated as a member whereas a negative reference group is one which the person is motivated to oppose or one

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[1]Muzafer Sherif, "The Concept of Reference Groups in Human Relations," Group Relations at the Crossroads, ed. Muzafer Sherif and M. O. Wilson (New York: Harper, 1953), pp. 203-31.

[2]T. M. Newcomb, Social Psychology (New York: Dryden, 1950), p. 232.

which he does not want to be treated as a member. Newcomb also says that the group can at the same moment be both a positive and a negative reference group for the same person in the sense that he may conform to some of its standards and not to others. This state of marginality is usually found where there is a lack of stability in reference group ties. Sherif[1] found that the most common example of marginality is that of individuals belonging to an ethnic group, religious group, or color group in a minority position. Because of their inability to be accepted in a larger society and their tendency to reject standards or position of their own group, they feel insecure in their reference group affiliations. One should consider the norms of society as not necessarily being the norms of an individual's reference group and hence not the individual's norms. This would imply that one would have to analyze goals and standards of the individual in relation to those of the individual's reference group.

To further substantiate this position, Festinger[2] theorizes on the conditions under which public compliance with and without private acceptance is obtained: Public compliance without private acceptance will occur if the person is restrained from leaving the situation and if there is a threat of punishment for noncompliance. Public compliance with private acceptance will occur if there is a desire on the part of the individual to remain in the existing relationship with

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[1]Sherif, loc. cit.

[2]Leon Festinger, "An Analysis of Compliant Behavior," Group Relations at the Crossroads, ed. Muzafer Sherif and M. O. Wilson (New York: Harper, 1953), pp. 232-56.

those attempting to influence him. These two major theoretical points are then broken down into the following variables: the driving force acting upon the group member to remain a member of the group; the restraining force which acts to prevent a person from leaving the group; negative valences outside the group which the person must inevitably endure if he leaves the group; and the strength of the influence being exerted.

The Self-Concept

The self-concept evolves when individuals evaluate themselves by making reference to a series of beliefs and attitudes about themselves and their relationship to the world about them. Allport,[1] in defining the individual's perception of himself, emphasizes the influence of the social environment on the development of self-awareness. Other definitions of the individual's perception of himself (which are similar to Allport's) have also been proposed by Symonds[2] and Murphy.[3]

The influence of the self-concept on educational development has had increased emphasis in recent years. The 1951 Yearbook of the Association for Supervision and Curriculum Development[4] stated that

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[1]Gordon W. Allport, Pattern and Growth in Personality (New York: Holt, Rinehart and Winston, 1961).

[2]Percival M. Symonds, The Ego and the Self (New York: Appleton-Century-Crofts, Inc., 1951).

[3]Gardner Murphy, Personality: A Biosocial Approach to Origins and Structure (New York: Harper and Brothers, 1947).

[4]Association for Supervision and Curriculum Development, Action for Curriculum Improvement (Washington, D. C.: National Education Association, 1951 Yearbook).

one of the basic aims of curriculum development is to help students to grow in their ability to "understand and appraise" themselves.

The role of guidance in schools is also one which is concerned with the self-concept. Donald Super, one of the outstanding authors in the field of occupational information states that "Guidance is the process of helping a person to develop and accept an integrated and adequate picture of himself and his role in the world of work, to test this concept against reality, and to convert it into a reality with satisfaction to himself and benefit to society."[1]

Cohen,[2] in his studies of level of aspiration, found that goal-level setting was not necessarily related to feelings of adequacy, but that both very high and very low goal setting were related to self-rejection. He further stated that only those individuals who realistically accepted themselves were able to use low positive goal settings. In investigating the relationship between self-concept and achievement, Roth[3] revealed a direct relationship between a tendency to be defensive about self-concept and achievement.

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[1]Donald E. Super, "Vocational Adjustment: Implementing a Self-Concept," Occupations, XXX (November, 1951), pp. 88-92.

[2]Louis D. Cohen, "Level-of-Aspiration Behavior and Feelings of Adequacy and Self-Acceptance," Journal of Abnormal and Social Psychology, XLIX (January, 1954), pp. 84-86.

[3]Robert M. Roth, "The Role of Self-Concept in Achievement," Journal of Experimental Education, XXVII (June, 1959), pp. 265-81.

Since the population samples to be used in this study have definite cultural differences, the research of Sinha[1] should be included. In his survey of the works of Boyd, Fales, Anderson, Jucknat, Escalona, Lewin, Gould, Brunner, Potter, Flugel, and Hyman he found that all indicated that the reference group is important in determining both self-concept and level of aspiration. Bochow's[2] research also shows than an individual's self-concepts, when related to level of aspiration, are determined by the interrelationship of various factors. Among these, the factors of culture and personality were the greatest determinants of self-concept.

Dai,[3] in developing a socio-psychological theory of personality, recognized the central importance of self-concepts. He theorized that self-concepts have socio-cultural referents and that the self-concept developed by the individual in his primary reference group is at the base of a hierarchy of selves, and that personality integration represents an integration of this primary reference group with the secondary reference groups.

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[1] Shashilata Sinha, "Level of Aspiration and Culture," Indian Journal of Psychology, XXVIII, No. 1 (1953), pp. 55-58.

[2] R. Bochow, "Education and Level of Aspiration," Praxis der Kinderpsychologie und Kinderpsychiatrie, VII (February, 1956), pp. 174-78.

[3] Binghan Dai, "A Socio-Psychiatric Approach to Personality Organization," American Sociology Review, XVII (February, 1952), pp. 44-49.

Sociometric Techniques

According to Moreno,[1] a sociometric test is designed to measure the dynamic organization of a social group. Techniques of this type require an individual to select his companions for any group of which he is, or might become, a member. This relatively simple technique has been extended in a number of ways through the research of McCandless and Marshall,[2] Clark and McGuire,[3] Dunnington,[4] and Thompson and Powell.[5]

Studies relating sociometric measures to performance measures were summarized by Mouton, Blake and Fruchter.[6] These authors indicate that the consistency in the findings that have been reported by different investigators can be taken as evidence that the sociometric

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[1] J. L. Moreno, Who Shall Survive? (New York: Beacon House, 1953).

[2] B. R. McCandless and H. R. Marshall, "A Picture Sociometric Technique for Preschool Children and Its Relation to Teacher Judgments of Friendships," Child Development, XXVIII (June, 1957), pp. 139-48.

[3] R. A. Clark and C. McGuire, "Sociographic Analysis of Sociometric Valuations," Child Development, XXIII (June, 1952), pp. 129-40.

[4] M. J. Dunnington, "Investigation of Areas of Disagreement in Sociometric Measurement of Preschool Children," Child Development, XXVIII (March, 1957), pp. 93-102.

[5] G. G. Thompson and M. Powell, "An Investigation of the Rating-Scale Approach to the Measurement of Social Status," Educational and Psychological Measurement, XI, No. 3 (1951), pp. 440-55.

[6] J. S. Mouton, R. R. Blake, and B. Fruchter, "The Validity of Sociometric Responses," Sociometry, XVIII (August, 1955), pp. 181-206.

choice provides a valuable method of measuring personal and group characteristics. Criswell's[1] findings show that the practical aspects of sociometric procedures and new research contributions are increasing the usefulness of sociometry through better group assessment and interaction. These are achieved through the use of measures of social transparency, role discrepancy, assumed similarity, need satisfaction, social status and compatibility.

The practicality of the use of sociometric devices is supported by Murphy who states: "Over the past twenty years sociometry has proven to be not simply a technical device but a new way of viewing human relationships having significance for society at large as well as for small group theory."[2]

Summary

The review of the literature reveals the importance of the social and cultural determinants in the development of the individual's self-concept, the need for consistency in one's self-evaluations and the function which reference groups serve of providing a frame of reference for these self-perceptions and evaluations. Also shown is the effect of the reference group on the individual's social life and the effect of group interaction on attitude formation and attitude change.

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[1] J. H. Criswell, "Sociometric Measurements: Some Practical Advantages and New Developments," Sociometry, XVIII, No. 4 (1956), pp. 639-47.

[2] G. Murphy, "New Evaluation of Sociometry," Sociometry, XVIII, No. 4 (1956), pp. 293-94.

The increasing emphasis on self-concept is reflected through curriculum change and guidance services geared to helping the student to grow in his ability to better understand his own potentialities. Sociometric techniques are shown to be a valuable method of measuring personal and group characteristics and are increasing in usefulness because of their ability to assess group characteristics and interactions.

CHAPTER III

RESEARCH DESIGN AND COLLECTION OF DATA

Sampling Procedure

The groups of ninth-grade boys for this study were drawn from two sources. The first source was Red Lake Schools, Independent School District 38, Beltrami County, Red Lake Indian Reservation, Redlake, Minnesota. This district is made up of three villages: Redby, Redlake and Ponemah, all of which are on the Red Lake Indian Reservation located in northern Minnesota. These boys are all a quarter or more Indian and are predominately Chippewa with a scattering of Sioux and French Canadians. All of these boys reside on Red Lake Indian Reservation. The second source was Bagley Junior High School, Independent School District 162, Clearwater County, Bagley, Minnesota. These boys are all non-Indian and are residing in an area that is considered to be an economically depressed and low income area.[1]

The Indian group consists of the total male ninth grade population from Red Lake Schools. Due to a very high dropout rate and poor school attendance, the total group on which complete test data

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[1] U. S. Bureau of the Census, Characteristics of the Population: Minnesota: 1960, I, p. 191.

could be obtained was twenty-two. The non-Indian group was selected by taking a random sample of the total male ninth grade population of Bagley Junior High School with randomness being insured by using Diamond's[1] method. Numerically equivalent samples of Indian and non-Indian boys were obtained in order to simplify statistical treatment of the data.

Ninth grade boys were chosen for this study because at this age level an individual begins to explore future occupations.[2] It is also at this age level when most Minnesota schools offer their first unit or course in occupations.[3] Since students should have all the help they need in planning their high school programs in such a way that they will be prepared for their future vocation, the teaching of the occupations unit or course is usually done during the last term of the junior high school or during the first year in high school.

The placement of this unit or course depends primarily on the organization of the school system. The schools used in the present study operate a four year high school and, therefore, teach the unit during the first year of high school.

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[1]Solomon Diamond, Information and Error (New York: Basic Books, Inc., 1959), p. 286.

[2]Donald E. Super, The Psychology of Careers (New York: Harper and Brothers, 1957), pp. 71-79.

[3]Suggested Unit in Self-Analysis and Vocational Planning, Section of Guidance Services, Minnesota State Department of Education, Vocational Division, Revised, 1957.

The Measuring Instruments

All subjects in both samples were administered the Differential Aptitude Tests, the Iowa Tests of Educational Development, and the "Questionnaire." The Index of Status Characteristics was applied to all subjects to obtain social class position. From these instruments the desired measures were obtained. The Differential Aptitude Tests and the Iowa Tests of Educational Development are a part of the State-Wide Testing Program of Minnesota,[1] and were utilized with the other two instruments in the procedure presented in Figure 1.

Instrument	Measure
Differential Aptitude Tests: Verbal Reasoning plus Numerical Ability	Index of Scholastic Ability
Iowa Tests of Educational Development: Composite Score	Academic Achievement
Questionnaire	
Item 1	Comparison-Reference Choices
Item 2	Self-Estimate of Ability
Item 3	Near-Sociometric Choices
Index of Status Characteristics	Socio-Economic Status

Figure 1 -- List of Measuring Instruments and Measures Obtained

The Differential Aptitude Tests were developed to provide an integrated, scientific and well-standardized procedure for measuring the abilities of boys and girls in grades eight through twelve for purposes of educational and vocational guidance. Since the study has no need for the various aptitude areas, but is concerned with a measure

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[1] Berdie, loc. cit.

of scholastic aptitude, only the "Verbal Reasoning" and "Numerical Ability" tests were used.

The "Verbal Reasoning" test is a measure of ability to understand concepts framed in words. It is aimed at the evaluation of the student's ability to abstract or generalize and to think constructively, rather than at simple fluency on vocabulary recognition. This test may be expected to predict, with reasonable accuracy, success in fields where complex verbal relationships and concepts are important. Academic success in most fields would certainly tend to come under this classification.

The "Numerical Ability" test is designed to measure understanding of numerical relationships and facility in handling numerical concepts. It is a measure of the student's ability to reason with numbers, to manipulate numerical relationships and to deal intelligently with quantitative materials. When teamed with the "Verbal Reasoning" test it then becomes a measure of general learning ability.

A supplement to the manual of the Differential Aptitude Tests,[1] published in 1958, presents the results of a number of studies which led to the conclusion that the sum of the raw scores of the "Verbal Reasoning" and the "Numerical Ability" tests provides a very effective single prediction of academic success. The sum of these scores is termed an "Index of Scholastic Ability," and it is this index which is used in this study as the measure of intellectual ability. Norms are provided for both boys and girls, for grades eight through twelve.

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[1] Bennett, Seashore, and Wesman, loc. cit.

Norms being used in the present study are based on the original standardization population which, at the ninth grade level, consisted of 6,900 boys.

The Iowa Tests of Educational Development are a battery of nine objective tests designed to provide a comprehensive and dependable description of the general educational development of the high school pupil. The battery consists of nine individual tests, the first eight of which are combined into a composite score for a total of ten scores. The specific tests are: "Understanding Basic Social Concepts," "General Background in the Natural Sciences," "Correctness and Appropriateness of Expression," "Ability to do Quantitative Thinking," "Interpretation of Reading Materials in the Social Studies, Natural Sciences, and Literature," "General Vocabulary," and "Use of Sources of Information." The tests are concerned not so much with what the pupil has learned, in the sense of specific information, but rather how well he can use whatever he has learned in acquiring, interpreting and evaluating new ideas, in relating new ideas to old, and in applying broad concepts and generalizations to new situations or to the solution of problems. These, it is hoped, are the lasting and ultimate outcomes -- not only of an effective course of formal school instruction, but also of any other genuinely educational experience, whether formal or informal, direct or incidental, in-school or out-of-school.[1]

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[1] Iowa Tests of Educational Development, How to Use the Test Results: A Manual for Teachers and Counselors, 7th Revision (Chicago: Science Research Associates, Inc., 1959), pp. 5-6.

The "Composite Score" is an indicator of the general level of the individual's educational development or achievement. This score is based on the standard scores obtained on tests one through eight. It is not an arithmetic average of these scores, but is derived by converting the sums of the standard scores on tests one through eight into a new standard score system in the same fashion that the raw scores on each subtest were originally converted to standard scores. Test number nine is not included in the computation of the "Composite Score" as it is more specific and shows less relation to general educational development than do the other tests.[1] For the purposes of this study it was decided that the "Composite Score" would serve as the best indicator of level of academic achievement.

The validities of the tests tend to range from .46 to .79, and reliabilities run from .81 to .94 on the individual tests. The "Composite Score" is more reliable than any individual test. The reliability coefficient for the composite could be computed from the reliabilities of the tests and their intercorrelations, with the expected value to exceed .95.[2]

The "Questionnaire" designed by Rubin[3] calls for the subjects to make sociometric choices among their classmates on the basis of two different criteria, as well as making self-estimates of their own

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[1] Ibid., p. 17.

[2] Iowa Tests of Educational Development, Manual for School Administrators, 6th Revision (Chicago: Science Research Associates, Inc., 1958).

[3] Rubin, loc. cit.

intellectual rank. The first question is designed to elicit responses which are termed "comparison-reference" choices. A hypothetical situation is proposed in which the subjects are asked to imagine that they had received their scores on a test of intelligence which had also been administered to their classmates. They were then asked to name four of their fellow ninth grade students whose test scores they would like to know in order to determine how well they themselves had done on the test. They were thus required to select other individuals for comparison purposes in order to arrive at an assessment of their own ability. They were also asked to name the four classmates that they "liked the most." The primary purpose of this question was to determine if the students named as comparison-reference choices would also be named as near-sociometric choices, and if the individual would choose individuals of near-equal intelligence and achievement in both instances. The question involving self-estimates of ability required the subjects to assign themselves percentile ranks on the basis of estimated intelligence test scores compared with national norms for ninth-grade students.

The Index of Status Characteristics as a measurement of social class is based on two propositions: that economic and other prestige factors are highly important and closely related to social class; and that these social and economic factors, such as talent, income, and money, if their potentialities for rank are to be realized, must be translated into social-class behavior acceptable to the members of any given level of the community. This method is designed to provide an

objective method of establishing the social level of everyone in a given community.[1]

The Index of Status Characteristics is primarily an index of socioeconomic factors, but it can be used with a considerable degree of confidence as an index of social-class position.[2] The four status characteristics used in the "Index" were chosen because they correlated highly with class and because they are easily obtainable and capable of exact comparison. They are: Occupation, Source of Income, House Type, and Dwelling Area.

All individuals used for the present study will fall into categories from upper-lower class to lower-lower class. Occupationally, parents of the boys in both samples vary from skilled laborers to unskilled workmen. All persons are living in depressed areas, and tend to be on or near the bottom of the income scale. They work for wages rather than salaries, and wear "work clothes" to work. In some instances the upper-lowers may possess more complicated skills than the average middle-class worker and they may also earn more money. Each of the four characteristics of the "Index" reflect how society as a whole feels and thinks about the relative worth of each job, the sources of income which support them, and the evaluation of their houses and the neighborhoods in which they live.

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[1] W. Lloyd Warner, Marchia Meeker, and Kenneth Eells, loc. cit.

[2] Ibid.

Experimentation

All subjects were administered the "Questionnaire" under conditions as similar as possible. In item one, the subjects listed four comparison-reference choices, and in item three they listed four near-sociometric choices. The "Index for Scholastic Ability" from the Differential Aptitude Tests and the "Composite Score" from the Iowa Tests of Educational Development for the subjects, their comparison-reference choices and their near-sociometric choices were then obtained from school records. On item two of the "Questionnaire" the subjects assigned themselves percentile ranks on the basis of estimated intelligence test scores compared with national norms for ninth-grade students. Since the scores obtained from these instruments were not comparable in their present form, they were transformed into T-scores.[1] These T-score transformations are presented in Appendix B through Appendix M.

Since complete data were not available on the Differential Aptitude Tests and the Iowa Tests of Educational Development, due to absences on the days when the group tests were administered, students transferring to the schools late in the school year and other reasons, it was expected that some students would have to be discarded from the study because of lack of data on these individuals.

It was decided at the beginning of the study that three names in each group would be sufficient for analysis,[2] so in instances where

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[1]Henry E. Garrett, Elementary Statistics (New York: David McKay Company, Inc., 1962, 2d ed.), p. 186.

[2]Rubin, op. cit., p. 47.

complete test data was not available for one of the four choices, that one was omitted and the remaining three were used. In cases where complete data was available for all four of those selected, only the first three choices were used.

According to Festinger, the range of abilities within a group selected as comparison-reference choices tends to be relatively narrow. In his discussion of this aspect of his theory he presents the assumption that the ability of the individual doing the selecting would tend to fall within the range of the abilities of those whom he has chosen. This, however, may not necessarily be the case. In the present study the following problem arose. In some cases an individual would list a set of comparison-reference choices which were very close, if not identical, to each other. However, his own score might be quite different from all of those he chose. Another individual might select such a wide range of comparison-reference choices that his own score would almost have to fall within the range. In order to take into account the subject's own position relative to the position of his choices it was decided to compare comparison-reference and near-sociometric choices to the subject's scores through the use of the mean. This was accomplished by computing the means of comparison-reference and near-sociometric choices by using four scores, that of the person doing the selecting compared with those of his group of three scores.

Method of Analysis

Two basic statistical methods were used in this study: the Pearson Product-Moment Coefficient of Correlation and the Hotelling

Exact Test of the significance of the difference between two correlation coefficients based on the same sample.

The most important requirement for the use of the Pearson r is that the trend of relationship between Y and X be rectilinear, but there is nothing to demand that the Pearson r be computed only with normal distributions.[1] The forms of distributions may be various, so long as they are fairly symmetrical and unimodal.[2] Since the Indian sample is a total population sample and the non-Indian sample is a random sample of the total population, one can assume reasonable normality of distribution. "When the sample is less than about sixty, there are no satisfactory ways to determine whether the sample departs sufficiently from normality to discredit the assumption that its parent population is normal."[3]

The Hotelling test requires the same underlying assumptions as the Pearson r, namely homoscedasticity and a normal distribution.[4] Since these assumptions are already satisfied for the Pearson r, they must also be assumed to be satisfied for the Hotelling test.

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[1] J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, Inc., 1956), p. 149.

[2] Ibid., p. 159.

[3] Merle W. Tate, Statistics in Education (New York: The Macmillan Company, 1955), p. 446.

[4] Ibid., p. 467.

Pearson Product-Moment correlation coefficients were obtained between subjects' scores and the mean scores of their comparison-reference choices; between subjects' scores and the mean scores of their near-sociometric choices; and between subjects' scores and their self-estimates of ability. The significance of these correlation coefficients was determined by the use of the t ratio. Where applicable, the significance of the difference between these correlation coefficients was tested by using Hotelling's Exact Test[1] of the significance of the difference between two correlation coefficients based on the same sample.

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[1] Ibid.

CHAPTER IV

ANALYSIS OF DATA AND FINDINGS

Analysis of Data

The ten null hypotheses were tested using the procedures outlined in the previous chapter. Each null hypothesis will be presented individually with interpretation.

Hypothesis One

The first hypothesis stated that no statistically significant relationship exists between the scholastic index of subjects and the mean scholastic index of their comparison-reference choices. The Pearson r correlation coefficients were computed between the scholastic index of subjects and the mean scholastic index scores for their comparison-reference choices. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

Table 1 shows that the hypothesis is accepted for the Indian sample and rejected for the non-Indian sample. Therefore, it is evident from the data that no statistically significant relationship exists between the scholastic index of Indian subjects and the mean scholastic index of their comparison-reference choices. It is also

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[1]Guilford, op. cit., p. 538.

evident from Table 1 that there is a statistical relationship at the .01 level of confidence between the scholastic index of non-Indian subjects and the mean scholastic index of their comparison-reference choices.

TABLE 1

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE SCHOLASTIC INDEX OF SUBJECTS AND THE MEAN SCHOLASTIC INDEX OF COMPARISON-REFERENCE CHOICES

Sample	r	P
Indian	.4088	NS
Non-Indian	.7783	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Hypothesis Two

The second hypothesis stated that no statistically significant relationship exists between the scholastic index of subjects and the mean scholastic index of their near-sociometric choices. The Pearson r correlation coefficients were computed between the scholastic index of subjects and the mean scholastic index of their near-sociometric choices. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

[1] Ibid.

TABLE 2

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE SCHOLASTIC INDEX OF SUBJECTS AND THE MEAN SCHOLASTIC INDEX OF THEIR NEAR-SOCIOMETRIC CHOICES

Sample	r	P
Indian	.2917	NS
Non-Indian	.6399	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Table 2 shows that the hypothesis is accepted for the Indian sample and rejected for the non-Indian sample. Therefore, it is evident that no statistically significant relationship exists between the scholastic index of Indian subjects and the mean scholastic index of their near-sociometric choices. It is also evident from Table 2 that there is a statistical relationship at the .01 level of confidence between the scholastic index of non-Indian subjects and the mean scholastic index of their near-sociometric choices.

Hypothesis Three

The third hypothesis stated that no statistically significant relationship exists between the mean scholastic index of comparison-reference choices and near-sociometric choices. Pearson r correlation coefficients were computed between the mean scholastic index of comparison-reference choices and near-sociometric choices. The signifi-

cance of the correlation coefficients was determined by using Table D in Guilford.[1]

TABLE 3

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE MEAN SCHOLASTIC INDEX OF COMPARISON-REFERENCE CHOICES AND NEAR-SOCIOMETRIC CHOICES

Sample	r	P
Indian	.6510	.01
Non-Indian	.8110	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Table 3 shows that the hypothesis is rejected by both the Indian and the non-Indian samples. Therefore, it is evident from the data that in both samples there is a statistical relationship at the .01 level of confidence between the scholastic index scores of comparison-reference choices and near-sociometric choices.

Hypothesis Four

The fourth hypothesis stated that no statistically significant relationship exists between the academic achievement level of subjects and the mean academic achievement level of their comparison-reference choices. Pearson r correlation coefficients were computed between the

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[1] Ibid.

composite scores on the Iowa Tests of Educational Development of subjects and the mean composite scores on the Iowa Tests of Educational Development of their comparison-reference choices. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

TABLE 4

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE ACADEMIC ACHIEVEMENT LEVEL OF SUBJECTS AND THE MEAN ACADEMIC ACHIEVEMENT LEVEL OF THEIR COMPARISON-REFERENCE CHOICES

Sample	r	P
Indian	.2857	NS
Non-Indian	.7921	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Table 4 shows that the hypothesis is accepted for the Indian sample and rejected for the non-Indian sample. Therefore, it is evident from the data that no statistically significant relationship exists between the academic achievement level of Indian subjects and the mean academic achievement-level of their comparison-reference choices. It is also evident from Table 4 that there is a statistical relationship at the .01 level of confidence between the academic achievement level

[1] Ibid.

of non-Indian subjects and the mean academic achievement level of their comparison-reference choices.

Hypothesis Five

The fifth hypothesis stated that no statistically significant relationship exists between the academic achievement level of subjects and the mean academic achievement level of their near-sociometric choices. Pearson r correlation coefficients were computed between the composite scores on the Iowa Tests of Educational Development of subjects and the mean composite scores on the Iowa Tests of Educational Development of their near-sociometric choices. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

TABLE 5

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE ACADEMIC ACHIEVEMENT LEVEL OF SUBJECTS AND THE MEAN ACADEMIC ACHIEVEMENT LEVEL OF THEIR NEAR-SOCIOMETRIC CHOICES

Sample	r	P
Indian	.1126	NS
Non-Indian	.6935	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

[1] Ibid.

Table 5 shows that the hypothesis is accepted for the Indian sample and rejected for the non-Indian sample. Therefore, it is evident from the data that no statistically significant relationship exists between the academic achievement level of Indian subjects and the mean academic achievement level of their near-sociometric choices. It is also evident from the data presented in Table 5 that there is a statistical relationship at the .01 level of confidence between the academic achievement level of non-Indian subjects and the mean academic achievement level of their near-sociometric choices.

Hypothesis Six

The sixth hypothesis stated that no statistically significant relationship exists between the academic achievement level of comparison-reference choices and near-sociometric choices. Pearson r correlation coefficients were computed between the mean academic achievement levels of comparison-reference choices and near-sociometric choices. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

Table 6 shows that the hypothesis is rejected for both the Indian and the non-Indian samples. Therefore, it is evident from the data that in both samples there is a statistical relationship at the .01 level of confidence between the academic achievement levels of comparison-reference choices and near-sociometric choices.

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[1] Ibid.

TABLE 6

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE MEAN ACADEMIC ACHIEVEMENT LEVELS OF COMPARISON-REFERENCE CHOICES AND NEAR-SOCIOMETRIC CHOICES

Sample	r	P
Indian	.6267	.01
Non-Indian	.7321	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Hypothesis Seven

The seventh hypothesis stated that there is no statistically significant relationship between the measured academic ability of subjects and the subjects' self-estimates of ability. Pearson r correlation coefficients were computed between the scholastic index of subjects and the subjects' self-estimates of ability. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

Table 7 shows that the hypothesis is rejected for both the Indian and the non-Indian samples. Therefore, it is evident that there is a statistical relationship at the .05 level of confidence between the measured academic ability of Indian subjects and the subjects' self-estimates of ability. It is also evident that this relationship exists for the non-Indian subjects, but at the .01 level of confidence.

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[1] Ibid.

TABLE 7

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE SCHOLASTIC INDEX OF SUBJECTS AND THE SUBJECTS' SELF-ESTIMATES OF ABILITY

Sample	r	P
Indian	.5180	.05
Non-Indian	.8716	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Hypothesis Eight

The eighth hypothesis stated that there is no statistically significant relationship between the academic achievement level of subjects and the subjects' self-estimates of ability. Pearson r correlation coefficients were computed between the composite scores of the Iowa Tests of Educational Development of subjects and the subjects' self-estimates of ability. The significance of the correlation coefficients was determined by using Table D in Guilford.[1]

Table 8 shows that the hypothesis is accepted by the Indian sample and rejected for the non-Indian sample. Therefore, it is evident that no statistically significant relationship exists between the academic achievement level of Indian subjects and the subjects' self-estimates of ability. It is also evident from the data presented in

[1] Ibid.

Table 8 that there is a statistically significant relationship at the .01 level of confidence between the academic achievement level of non-Indian subjects and the subjects' self-estimates of ability.

TABLE 8

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE ACADEMIC ACHIEVEMENT LEVEL OF SUBJECTS AND THE SUBJECTS' SELF-ESTIMATES OF ABILITY

Sample	r	P
Indian	.1321	NS
Non-Indian	.8319	.01

Criterion value at .05 = .423

Criterion value at .01 = .537

Hypothesis Nine

The ninth hypothesis stated that there is no statistically significant greater tendency for individuals to select others who possess a level of academic ability similar to their own when making comparison-reference choices than when making near-sociometric choices. Pearson r correlation coefficients were computed between the scholastic index of subjects and the mean scholastic index of their comparison-reference choices (see Table 2), and between the scholastic index of subjects and the mean scholastic index of their near-sociometric choices (see Table 3). The significance of the difference between these Pearson r correlation coefficients was determined by using Hotelling's test of

the significance of the difference between correlation coefficients based on the same sample.[1]

TABLE 9

SIGNIFICANCE OF THE DIFFERENCE BETWEEN CORRELATION COEFFICIENTS OF COMPARISON-REFERENCE CHOICES AND NEAR-SOCIOMETRIC CHOICES ON THE SCHOLASTIC INDEX

Sample	r_{12}	r_{13}	r_{23}	$t_{r_{12}\ r_{13}}$	P
Indian	.41	.29	.65	.69	NS
Non-Indian	.78	.64	.81	1.61	NS

Criterion value at .05 = 2.09

Criterion value at .01 = 2.86

r_{12} = Pearson r between subjects and comparison-reference choices.

r_{13} = Pearson r between subjects and near-sociometric choices.

r_{23} = Pearson r between comparison-reference choices and near-sociometric choices.

Table 9 shows that the hypothesis is rejected for both the Indian and the non-Indian samples. Therefore, it is evident from the data that for both the Indian and the non-Indian subjects there is a statistically significant greater tendency for individuals to select others who possess a level of academic ability similar to their own when making comparison-reference choices than when making near-sociometric choices.

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[1] Tate, loc. cit., p. 467.

Hypothesis Ten

The tenth hypothesis stated that there is no statistically significant greater tendency for individuals to select others who possess a level of academic achievement similar to their own when making comparison-reference choices than when making near-sociometric choices. Pearson r correlation coefficients were computed between the subjects' composite scores on the Iowa Tests of Educational Development and the mean composite scores on the Iowa Tests of Educational Development of their comparison-reference choices (see Table 5), and between the composite scores on the Iowa Tests of Educational Development of subjects and the mean composite scores on the Iowa Tests of Educational Development of their near-sociometric choices (see Table 6). The significance of the difference between these Pearson r correlation coefficients was determined by using Hotelling's test of the significance of the difference between correlation coefficients based on the same sample.[1]

Table 10 shows that the hypothesis is rejected for both the Indian and the non-Indian samples. Therefore, it is evident from the data that for both the Indian and the non-Indian subjects there is a statistically significant greater tendency for individuals to select others who possess a level of academic achievement similar to their own when making comparison-reference choices than when making near-sociometric choices.

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[1] Ibid.

TABLE 10

SIGNIFICANCE OF THE DIFFERENCE BETWEEN CORRELATION COEFFICIENTS OF COMPARISON-REFERENCE CHOICES AND NEAR-SOCIOMETRIC CHOICES ON ACADEMIC ACHIEVEMENT LEVEL

Sample	r_{12}	r_{13}	r_{23}	$t_{r_{12}\ r_{13}}$	P
Indian	.29	.11	.63	.96	NS
Non-Indian	.79	.69	.73	.98	NS

Criterion value at .05 = 2.09

Criterion value at .01 = 2.86

r_{12} = Pearson r between subjects and comparison-reference choices.

r_{13} = Pearson r between subjects and near-sociometric choices.

r_{23} = Pearson r between comparison-reference choices and near-sociometric choices.

Findings

The experimental null hypotheses are presented in two primary groups. The analysis of the first group is summarized in Table 11, with the analysis of the second group being summarized in Table 12.

All of the null hypotheses summarized in Table 11 were rejected for the non-Indian sample at the .01 level of confidence. Therefore, the data supports the findings that there is a statistically significant relationship at the .01 level of confidence between the scholastic index of non-Indian subjects and the mean scholastic index of their comparison-reference choices; between the scholastic index of non-Indian subjects and the mean scholastic index of their near-

sociometric choices; between the mean scholastic index of comparison-reference choices and near-sociometric choices of non-Indian subjects; between the academic achievement level of non-Indian subjects and the mean academic achievement level of their comparison-reference choices; between the academic achievement level of non-Indian subjects and the mean academic achievement level of their near-sociometric choices; between the academic achievement level of comparison-reference choices and near-sociometric choices of non-Indian subjects; between the measured academic ability of non-Indian subjects and the subjects' self-estimates of ability; and between the academic achievement level of non-Indian subjects and the subjects' self-estimates of ability.

Two of the null hypotheses summarized in Table 11 are rejected for the Indian sample at the .01 level of confidence and one hypothesis is rejected at the .05 level of confidence. The other five null hypotheses are accepted for the Indian sample.

The five null hypotheses accepted for the Indian sample show that the statistical relationship which exists between the scholastic index of Indian subjects and the mean scholastic index of their comparison-reference choices; between the scholastic index of Indian subjects and the mean scholastic index of their near-sociometric choices; between the academic achievement level of Indian subjects and the mean academic achievement level of their comparison-reference choices; between the academic achievement level of Indian subjects and the mean academic achievement level of their near-sociometric choices; and between the academic achievement level of Indian subjects and the subjects' self-estimates of ability is not significant at either the

SUMMARY OF NULL HYPOTHESES ONE THROUGH EIGHT

Hypothesis Number	Relationship Tested in the Hypothesis	Pearson Product-Moment Correlation	
		Indian	Non-Indian
1	Scholastic Index of Subjects and the Scholastic Index of their Comparison-Reference Choices	.41	.78[a]
2	Scholastic Index of Subjects and the Scholastic Index of their Near-Sociometric Choices	.29	.64[a]
3	Scholastic Index of Comparison-Reference and Near-Sociometric Choices	.65[a]	.81[a]
4	Achievement Level of Subjects and the Achievement Level of their Comparison-Reference Choices	.29	.79[a]
5	Achievement Level of Subjects and the Achievement Level of their Near-Sociometric Choices	.11	.69[a]
6	Achievement Level of Comparison-Reference and Near-Sociometric Choices	.62[a]	.73[a]
7	Scholastic Index of Subjects and the Subjects' Self-Estimates of Ability	.52[b]	.87[a]
8	Achievement Level of Subjects and the Subjects' Self-Estimates of Ability	.13	.83[a]

[a]Significant at the .01 level of confidence

[b]Significant at the .05 level of confidence

Criterion value at .01 = .537

Criterion value at .05 = .423

.01 or the .05 level of confidence. There are positive correlations on all of the above relationships but these correlations are not significant at the desired level.

The two hypotheses rejected for the Indian sample at the .01 level of confidence show that there is a statistically significant relationship at the .01 level of confidence between the academic ability of comparison-reference choices and near-sociometric choices, and between the academic achievement level of comparison-reference choices and near-sociometric choices of Indian subjects. Therefore, even though the scholastic index and the academic achievement level of the Indian subjects do not correlate significantly with the mean scholastic index and the mean academic achievement level of their comparison-reference and near-sociometric choices, the Indian subjects do select comparison-reference and near-sociometric choices that correlate at the .01 level of confidence.

The two null hypotheses presented in Table 12 are rejected for both the Indian and the non-Indian samples at the .01 level of confidence. Therefore, there is a significantly greater tendency for Indian and non-Indian individuals to select others who possess academic ability similar to their own when making comparison-reference choices than when making near-sociometric choices. It is also evident from the data that there is a significantly greater tendency for both Indian and non-Indian individuals to select others who possess a level of academic achievement similar to their own when making comparison-reference choices than when making near-sociometric choices.

TABLE 12

SUMMARY OF NULL HYPOTHESES NINE AND TEN

Hypothesis Number	Significance of the Difference Tested in the Hypothesis	t	
		Indian	Non-Indian
9	Correlation Coefficients of Comparison-Reference Choices and Near-Sociometric Choices on the Scholastic Index	.69	1.61
10	Correlation Coefficients of Comparison-Reference Choices and Near-Sociometric Choices on Academic Achievement Level	.96	.98

Criterion value at .01 = 2.86

Criterion value at .05 = 2.09

Even though the two hypotheses presented in Table 12 are rejected for Indian subjects, it seems evident that some explanation must be made. The data in Table 12 shows that there is a greater tendency for the comparison-reference choices to be more like the subjects than the near-sociometric choices, but the data presented in Table 11 shows that the relationships between subjects and their comparison-reference and near-sociometric choices are not significant. This can best be interpreted by noting that the correlations between the subjects and their comparison-reference choices are greater than the correlations between the subjects and their near-sociometric choices. Therefore, even though these correlations are not significant at the .01 or .05 level of confidence, the Indian subjects do have a tendency to select others who possess a level of academic ability and academic achievement

closer to their own when making comparison-reference choices than when making near-sociometric choices.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The primary problem of this study was to determine the applicability of Festinger's theory of comparison-reference to ninth-grade Indian and non-Indian boys of low socioeconomic status. The secondary problem of this study was to determine the relationship between these comparison-reference choices and near-sociometric choices.

The relevance of the results of this research would apply to both positive and negative findings. If the results would indicate that one's perceptions of his ability differ significantly from objective measures of this same ability and influence the development and utilization of those abilities which the individual does possess, then it would seem that it should be necessary to determine if these discrepancies are present and to what degree and in what manner they affect or influence academic achievement. Conversely, if the results would indicate that one's perceptions of his ability do not differ significantly from objective measures of this same ability which the individual does possess, then it would seem that the individual had a fairly realistic self-concept.

The two problems explored in the present study were tested by the following null hypotheses:

1. No statistically significant relationship exists between the scholastic index of subjects and the mean scholastic index of their comparison-reference choices.
2. No statistically significant relationship exists between the scholastic index of subjects and the mean scholastic index of their near-sociometric choices.
3. No statistically significant relationship exists between the mean scholastic index of comparison-reference choices and near sociometric choices.
4. No statistically significant relationship exists between the academic achievement level of subjects and the mean academic achievement level of their comparison-reference choices.
5. No statistically significant relationship exists between the academic achievement level of subjects and the mean academic achievement level of their near-sociometric choices.
6. No statistically significant relationship exists between the academic achievement level of comparison-reference choices and near-sociometric choices.
7. There is no statistically significant relationship between the measured academic ability of subjects and the subjects' self-estimates of ability.
8. There is no statistically significant relationship between the academic achievement level of subjects and the subjects' self-estimates of ability.

9. There is no statistically significant greater tendency for individuals to select others who possess a level of academic ability similar to their own when making comparison-reference choices than when making near-sociometric choices.
10. There is no statistically significant greater tendency for individuals to select others who possess a level of academic achievement similar to their own when making comparison-reference choices than when making near-sociometric choices.

The background theory and research evidence available at the time of the present investigation revealed the importance of the social and cultural determinants in the development of an individual's self-concept, the need for consistency in one's self-evaluations and the function which reference groups serve by providing a frame of reference for these self-perceptions and self-evaluations. Also shown was the effect of the reference group on the individual's social life and the effect of group interaction on attitude formation and attitude change.

The research also revealed the increasing emphasis being placed on the self-concept by guidance services which are obligated to helping the student to grow in his ability to better understand his own potentialities. The research also showed sociometric techniques to be a valuable method of measuring personal and group characteristics, and that they were increasing in usefulness because of their ability to assess group characteristics and interactions.

The subjects employed in this study were forty-four ninth-grade boys of low socio-economic status. Twenty-two of these boys constituted

the total ninth-grade male population from the Red Lake Schools, Independent School District 38, Beltrami County, Red Lake Indian Reservation, Redlake, Minnesota. These boys were all one-quarter or more Indian and were predominately Chippewa. The remaining twenty-two boys were randomly selected from the Bagley Junior High School, Independent School District 162, Clearwater County, Bagley, Minnesota. These boys were all non-Indian and were residing in an area that is considered to be economically depressed. All of the forty-four boys were from homes that were considered to be low on the socio-economic scale, as determined by the Index of Status Characteristics.[1]

All subjects in both samples were administered the Differential Aptitude Tests, the Iowa Tests of Educational Development, and a "Questionnaire" designed to elicit sociometric choices among their classmates on the basis of two different criteria as well as making self-estimates of their own intellectual rank. The "Verbal Reasoning" plus the "Numerical Ability" scores of the Differential Aptitude Tests were used to obtain the "Index of Scholastic Ability" or "Scholastic Index" which is a measure of intellectual ability. The "Composite Score" of the Iowa Tests of Educational Development was used as a measure of academic achievement and the "Questionnaire" was used to obtain comparison-reference choices, self-estimates of ability and near-sociometric choices. The Index of Status Characteristics was employed to determine socio-economic status.

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[1]W. Lloyd Warner, Marchia Meeker, and Kenneth Eells, loc. cit.

All subjects were administered the "Questionnaire" under conditions as similar as possible. On the "Questionnaire," they were asked to list four comparison-reference choices and four near-sociometric choices. The "Index of Scholastic Ability" from the Differential Aptitude Tests and the "Composite Score" from the Iowa Tests of Educational Development for the subjects, their comparison-reference choices and their near-sociometric choices were then obtained. The "Questionnaire" also required the subjects to assign themselves percentile ranks on the basis of an estimated intelligence test score. Since all of the scores obtained were not comparable in their present form, they were then converted to T-scores. Since complete data were not available on the Differential Aptitude Tests and the Iowa Tests of Educational Development, it was decided that three names in each group would be sufficient for analysis.

Two basic statistical methods were used in this study. The Pearson Product-Moment Correlation Coefficients were obtained between subjects' scores and the mean scores of their comparison-reference choices; between subjects' scores and the mean scores of their near-sociometric choices; and between subjects' scores and their self-estimates of ability. The significance of these correlation coefficients was determined by use of the t ratio. Where applicable, the significance of the difference between these correlation coefficients was tested by using Hotelling's test. Levels of confidence for the rejection of the null hypotheses were set at a probability level of .01 or .05.

All of the null hypotheses were rejected for the non-Indian sample at the .01 level of confidence. Hypotheses three, six, nine and ten were rejected for the Indian sample at the .01 level of confidence with hypothesis seven being rejected for the Indian sample at the .05 level of confidence. Hypotheses one, two, four, five and eight were accepted for the Indian sample, since the relationships obtained were not significant at either of the desired levels of confidence.

Conclusions

The primary problem in this study was to determine the applicability of Festinger's theory of comparison-reference choices to ninth-grade Indian and non-Indian boys of low socio-economic status, with the secondary problem being concerned with the relationship between these comparison-reference choices and near-sociometric choices. By testing the null hypotheses stated earlier, the following conclusions were established:

1. Non-Indian subjects were able to arrive at a subjective assessment of their abilities by comparing themselves with others who were selected by the subjects for this purpose. Therefore, Festinger's theory was substantiated for the non-Indian subjects.
2. Indian subjects were not able to arrive at a subjective assessment of their abilities by comparing themselves with others who were selected by the subjects for this purpose. Therefore, Festinger's theory does not apply to the Indian boys selected for the present study.

3. Those individuals chosen by the Indian subjects as comparison-reference and near-sociometric choices were quite similar both in level of academic achievement and level of academic ability, but they were not similar to the subjects at a statistically significant level. Therefore, the Indian subjects were unrealistic in their self-concept when it was determined or measured by the comparison process.
4. Both the Indian and the non-Indian subjects had a significantly greater tendency to select individuals who possessed both a level of academic achievement and a level of academic ability similar to their own when making comparison-reference choices than when making near-sociometric choices. Therefore, it would seem that the comparison-reference choice would be the better predictor of an individual's self-concept since their comparison-reference choices were more like the subjects than were their near-sociometric choices.
5. The Indian subjects' self-estimates of ability, when correlated with the subjects' scholastic index, were the only criterion on which the Indian subjects showed a fairly realistic self-concept.

All of the conclusions which were drawn should be considered with certain reservations. Perhaps the most significant limitation of this study was the size of the sample. This sample size might affect the statistical analysis of the data, so it should be realized that the conclusions were stated with the reservation that they were true to the extent that all of the statistical assumptions were valid.

Other limitations in this study might include the measuring instruments used and their natural limitations caused by the methods used in standardizing these instruments. Questions might also be raised concerning their reliability and validity when used with individuals who come from other than a normal or average population. The "Questionnaire" was not a standardized instrument and would therefore be open to some question since it was a sociometric device.

Recommendations

Although the present study was concerned only with the application of the comparison-reference process as postulated by Festinger to Indian and non-Indian boys of low socio-economic status, future researchers might profit by making this application to other low socio-economic groups.

A great emphasis, both educational and political in nature, is presently being placed on the culturally deprived youth. Since the research supports the influence of the self-concept on educational development, it would seem that research would be necessary to determine the influence of the self-concept on other groups in our society. Among these might be the negro, children of unemployed parents, children receiving Aid to Dependent Children, and other groups where cultural, social or racial aspects might affect or influence the self-perception of the individual.

APPENDIXES

APPENDIX A

SUBJECTS USED IN THE STUDY

Indian Subjects	Subject Number	Non-Indian Subjects
Michael Branchard	1	Michael Anderson
Bruce Brun	2	Denny Bestul
Ronald Cloud	3	Rowland Brown
Stanley Cobenais	4	Roger Cooper
Ronald Fairbanks	5	Wayne Durant
Richard Hanson	6	Jim Fischer
Milton Hart	7	Roger Gray
Roderick Head	8	Luther Hanson
Tilford Hill	9	Donald Higginbotham
Kenneth Johnson	10	Howard Hoie
Patrick Johnson	11	Vernon Iverson
Rudy Johnson	12	John Johnson
Bruce Jourdain	13	Kenny Johnson
Ronald Long	14	Wayne Larson
Harlan Oakgrove	15	Dale Merschman
Roman Ryan	16	Ed Nelson
Clarence Sayers	17	Warren Netland
Harry Smith	18	Thomas Norgaard
Albert Stately	19	Herold Pond
Duane Strong	20	Mark Riggs
Edward Sumner	21	Dave Tibbetts
Bobby Whitefeather	22	Tom Ysen

APPENDIX B

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF NON-INDIAN SUBJECTS AND MEAN IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF THEIR COMPARISON-REFERENCE CHOICES

Subjects	Subjects' Score	Comparison-Reference Choices' Scores
1	34	40.67
2	58	60.00
3	65	62.33
4	36	38.33
5	61	57.00
6	44	39.67
7	46	43.00
8	54	60.33
9	42	37.00
10	29	44.33
11	48	40.33
12	52	50.67
13	29	36.67
14	49	42.00
15	46	52.33
16	48	38.33
17	39	41.00
18	60	54.67
19	36	37.00
20	48	46.00
21	46	50.33
22	63	53.00
Mean	46.95	46.59

APPENDIX C

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF NON-INDIAN SUBJECTS AND MEAN IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF THEIR NEAR-SOCIOMETRIC CHOICES

Subjects	Subjects' Scores	Near-Sociometric Choices' Scores
1	34	35.00
2	58	59.33
3	65	60.67
4	36	38.33
5	61	49.33
6	44	50.33
7	46	48.67
8	54	60.67
9	42	36.33
10	29	49.33
11	48	37.67
12	52	50.67
13	29	40.67
14	49	51.33
15	46	48.33
16	48	55.33
17	39	35.33
18	60	53.67
19	36	39.67
20	48	50.67
21	46	43.00
22	63	51.67
Mean	46.95	47.54

APPENDIX D

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF NON-INDIAN SUBJECTS AND SUBJECTS' SELF-ESTIMATES OF ABILITY

Subjects	Subjects' Scores	Subjects' Self-Estimates
1	34	49
2	58	63
3	65	55
4	36	50
5	61	59
6	44	50
7	46	50
8	54	58
9	42	50
10	29	50
11	48	50
12	52	57
13	29	43
14	49	53
15	46	53
16	48	50
17	39	50
18	60	60
19	36	50
20	48	55
21	46	57
22	63	63
Mean	46.95	53.41

APPENDIX E

DISTRIBUTION OF T-SCORE TRANSFORMATIONS OF THE SCHOLASTIC INDEX OF NON-INDIAN SUBJECTS AND THE MEAN SCHOLASTIC INDEX OF THEIR COMPARISON-REFERENCE CHOICES

Subjects	Subjects' Scores	Comparison-Reference 'Choices' Scores
1	45	46.00
2	62	59.67
3	54	58.67
4	44	40.33
5	52	56.00
6	40	39.00
7	44	43.33
8	51	60.67
9	44	41.33
10	35	39.33
11	52	36.00
12	48	52.67
13	27	34.67
14	46	43.00
15	42	52.33
16	41	38.67
17	34	37.67
18	62	54.67
19	34	34.67
20	46	45.67
21	52	50.67
22	61	54.33
Mean	46.18	46.33

APPENDIX F

DISTRIBUTION OF T-SCORE TRANSFORMATIONS OF THE SCHOLASTIC INDEX OF NON-INDIAN SUBJECTS AND THE MEAN SCHOLASTIC INDEX OF THEIR NEAR-SOCIOMETRIC CHOICES

Subjects	Subjects' Scores	Near-Sociometric Choices' Scores
1	45	40.33
2	62	58.00
3	54	60.67
4	44	40.33
5	52	57.00
6	40	49.67
7	44	47.33
8	51	62.00
9	44	37.33
10	35	46.00
11	52	40.33
12	48	52.00
13	27	40.67
14	46	49.67
15	42	48.67
16	41	53.33
17	34	33.67
18	62	56.00
19	34	40.67
20	46	51.00
21	52	53.33
22	61	51.00
Mean	46.18	48.59

APPENDIX G

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF THE SCHOLASTIC INDEX OF NON-INDIAN SUBJECTS AND SUBJECTS' SELF-ESTIMATES OF ABILITY

Subjects	Subjects' Scores	Subjects' Self-Estimates
1	45	49
2	62	63
3	54	55
4	44	50
5	52	59
6	40	50
7	44	50
8	51	58
9	44	50
10	35	50
11	52	50
12	48	57
13	27	43
14	46	53
15	42	53
16	41	50
17	34	50
18	62	60
19	34	50
20	46	55
21	52	57
22	61	63
Mean	46.18	53.41

APPENDIX H

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF INDIAN SUBJECTS AND MEAN IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF THEIR COMPARISON-REFERENCE CHOICES

Subjects	Subjects' Scores	Comparison-Reference Choices' Scores
1	33	37.33
2	36	34.00
3	39	36.67
4	34	35.33
5	36	35.67
6	40	39.67
7	39	34.00
8	34	36.00
9	40	37.50
10	40	41.00
11	39	42.50
12	36	38.33
13	34	34.67
14	34	44.67
15	36	39.50
16	40	33.00
17	36	36.33
18	46	39.00
19	29	38.00
20	34	39.00
21	39	34.00
22	48	45.00
Mean	37.36	37.78

APPENDIX I

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF INDIAN SUBJECTS AND MEAN IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF THEIR NEAR-SOCIOMETRIC CHOICES

Subjects	Subjects' Scores	Near-Sociometric Choices' Scores
1	33	36.33
2	36	32.33
3	39	36.67
4	34	35.33
5	36	37.50
6	40	38.00
7	39	34.67
8	34	36.50
9	40	37.00
10	40	41.00
11	39	42.50
12	36	42.33
13	34	34.00
14	34	40.00
15	36	36.50
16	40	34.33
17	36	37.33
18	46	39.00
19	29	35.33
20	34	42.50
21	39	36.67
22	48	36.67
Mean	37.36	37.38

APPENDIX J

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF IOWA TESTS OF EDUCATIONAL DEVELOPMENT COMPOSITE SCORES OF INDIAN SUBJECTS AND SUBJECTS' SELF-ESTIMATES OF ABILITY

Subjects	Subjects' Scores	Subjects' Self-Estimates
1	33	49
2	36	50
3	39	53
4	34	50
5	36	50
6	40	50
7	39	57
8	34	51
9	40	54
10	40	50
11	39	50
12	36	49
13	34	49
14	34	55
15	36	55
16	40	50
17	36	50
18	46	41
19	29	47
20	34	46
21	39	45
22	48	60
Mean	37.36	50.50

APPENDIX K

DISTRIBUTION OF T-SCORE TRANSFORMATIONS OF THE SCHOLASTIC INDEX OF INDIAN SUBJECTS AND THE MEAN SCHOLASTIC INDEX OF THEIR COMPARISON-REFERENCE CHOICES

Subjects	Subjects' Scores	Comparison-Reference Choices' Scores
1	37	38.00
2	35	38.00
3	42	33.33
4	29	35.33
5	34	36.00
6	29	34.00
7	44	42.33
8	42	45.33
9	41	37.50
10	46	30.00
11	37	30.00
12	37	40.33
13	48	40.33
14	42	37.33
15	33	30.33
16	40	36.67
17	34	35.33
18	31	37.00
19	33	33.67
20	27	33.00
21	29	32.33
22	41	48.33
Mean	36.86	36.57

APPENDIX L

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF THE SCHOLASTIC INDEX OF INDIAN SUBJECTS AND THE MEAN SCHOLASTIC INDEX OF THEIR NEAR-SOCIOMETRIC CHOICES

Subjects	Subjects' Scores	Near-Sociometric Choices' Scores
1	37	32.67
2	35	36.33
3	42	40.00
4	29	35.67
5	34	39.50
6	29	33.33
7	44	37.67
8	42	40.50
9	41	38.67
10	46	30.00
11	37	30.00
12	37	43.00
13	48	39.67
14	42	30.00
15	33	33.00
16	40	38.67
17	34	31.00
18	31	37.00
19	33	38.67
20	27	30.00
21	29	33.67
22	41	41.67
Mean	36.86	35.94

APPENDIX M

DISTRIBUTIONS OF T-SCORE TRANSFORMATIONS OF THE SCHOLASTIC INDEX OF INDIAN SUBJECTS AND SUBJECTS' SELF-ESTIMATES OF ABILITY

Subjects	Subjects' Scores	Subjects' Self-Estimates
1	37	49
2	35	50
3	42	53
4	29	50
5	34	50
6	29	50
7	44	57
8	42	51
9	41	54
10	46	50
11	37	50
12	37	49
13	48	49
14	42	55
15	33	55
16	40	50
17	34	50
18	31	41
19	33	47
20	27	46
21	29	45
22	41	60
Mean	36.86	50.50

APPENDIX N

QUESTIONNAIRE

Name _____

1. Imagine that you have just received your score on a test of intelligence which was given to all ninth grade students in Bagley Jr. high school. Write the names of four other students in the ninth grade whose scores you would like to know in order to decide how well you did on the test.

   1. _____
   2. _____
   3. _____
   4. _____

2. If all ninth graders in the country were given a test of intelligence and each student was given a rank from 1 (lowest) to 100 (highest) on the basis of this test, what do you think your rank would be?

   _____

3. Write the names of four students in the ninth grade in Bagley that you like the most.

   1. _____
   2. _____
   3. _____
   4. _____

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