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AUTHOR	Lombard, John W.
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ABSTRACT

A study was conducted using a sample of 13,000 urban high school juniors tested in 1968-69 with both the Kuder Occupational Interest Survey (KOIS) and the National Merit Scholarship Qualifying Test (NMSQT). Students were grouped on the basis of high scores on the various college major scales reported on the KOIS and on the self-expressed interest in college majors reported on their NMSQT answer sheets. Means and standard deviations of NMSQT scores of each group were calculated and compared. Both statistically and practically significant differences were found in the mean NMSQT scores of groups showing interests in common college majors. Students choosing or having high interest scores in majors such as mathematics, English and physical science showed consistently higher scores than those in agriculture and physical education. There was evidence that self-perception of ability influences choice of college major, and that tables could be developed showing the academic competition likely to be encountered in various fields. (Author)

COMBINING APTITUDE AND INTEREST TEST RESULTS FOR COUNSELING

John W. Lombard
Science Research Associates, Inc.
259 E. Erie Street
Chicago, Illinois 60611

Paper presented at
APGA - San Diego
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Jack Lombard
Director, Guidance Programs
SRA
Relation of Tested Interests & Abilities

A study was conducted using a sample of 13,000 urban high school juniors tested in 1968-69 with both the Kuder Occupational Interest Survey (KOIS) and the National Merit Scholarship Qualifying Test (NMSQT). Students were grouped on the basis of high scores on the various college major scales reported on the KOIS and on the self-expressed interest in college majors reported on their NMSQT answer sheets. Means and standard deviations of NMSQT scores of each group were calculated and compared. Both statistically and practically significant differences were found in the mean NMSQT scores of groups showing interests in common college majors. Students choosing or having high interest scores in majors such as mathematics, English, and physical science showed consistently higher scores than those in agriculture and physical education. There was evidence that self perception of ability influences choice of college major, and that tables could be developed showing the academic competition likely to be encountered in various fields.

Many studies have been made separately of the relation of ability and interest measures to career choice. However, few have attempted to draw the two measures together to form a baseline for an integrated discussion of the range of abilities related to interest in specific careers. Such a study would be relevant to the task of helping a student select a college major field of study, given measures of his abilities and interests.

Stability of Career Plans

> Although it is unnecessary that the student plan his specific career during high school, he must at least choose some broad field if he is to lose no time in preparing for his ultimate career. As the data... have shown, however, the plans made in high school are unrealistic and unstable. The schools, therefore, must develop a better program for helping the student to understand both himself and the various roles for which he might prepare himself. [1]

The comment above both summarizes the research and embodies the concern of several investigators who have studied the stability of educational and vocational plans of high school and college students. In the Project Talent studies, for example, only thirty-one percent of males and forty-one percent of females had the same career plan in the twelfth grade and one year after graduation.[2]

In a study of more than 5,000 students assessed in the American College Testing Program in their senior year of high school and again

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[1] John C. Flanagan and William W. Cooley, Project Talent One-Year Follow-Up Studies (Pittsburgh: University of Pittsburgh, 1966), p. 179.

[2] Ibid., p. 177

as college freshmen, Lutz found that "about half the students selected the same class or groups of majors after one year."[1] In his classic study, Davis concluded that about half of the more than 38,000 college graduates responding to his questionnaire had shifted their career plans between ten major groups of occupations since their freshman year.[2]

In an academic setting, such instability is reflected by large scale changing of college major fields of study, which is often very inconvenient or difficult for the student and contributes to a general inefficiency in the college program. However, it may be possible that a well-founded guidance program could reduce this instability by providing students more accurate information as input for their decision-making processes. For example, Wolfe states:

> There is general agreement in educational circles that a well-conducted program of student counseling can cut down the number of educational mistakes, can help students arrive at realistic objectives, can help them to discover possibilities and potentialities which they had not recognized before, and through these means can increase the number of pupils who develop the wish to enter fields which they might not otherwise have considered. The cost of such a program is only a few dollars per pupil. Some schools already have such services and others undoubtedly will, for a school which takes responsibility for preparing its graduates for their later careers must attempt to help each student to find the career which is most appropriate for him.[3]

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[1] Sandra W. Lutz, Do They Do What They Say They Will Do?, ACT Research Report No. 24 (Iowa City: American College Testing Program, 1968), p. 6.

[2] James A. Davis, Undergraduate Career Decisions (Chicago: Aldene Publishing Co., 1965), p. 75.

[3] Dael Wolfle, America's Resources of Specialized Talent (New York: Harper & Brothers, 1954), p. 251.

> Improved programs of student guidance, founded upon better manpower information and better methods of appraising an individual's aptitudes will enable more young people to make choices which are best for them, and for the nation, and thus constitute an important element in a total effort to secure better use of the nation's intellectual resources.[1]

Abilities and Interests

While there may indeed be agreement on the need for student counseling, there is considerable discussion over what constitutes sufficient appraisal. However, in the case of counseling a student in the choice of a college major, consideration of his abilities and interests are surely warranted.[2] Cooley stated that:

> ...planning for the immediate educational experiences of a student should be conducted in an information-environment which allows the plans to be joint functions of the long-range purposes and goals of the student, the known requirements for achievement of those goals, the appraised educational aptitudes and attainments of the student, the appraised interests and other relevant learning sets of the student, the appropriateness of the students long-range goals in the light of the above and other considerations, and the curriculum and staff resources of the school.[3]

Scope and Nature of the Study

This study was concerned with the relations of measured abilities and both expressed and measured interests in certain college major fields of

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[1] Dael Wolfle, America's Resources of Specialized Talent (New York: Harper & Brothers, 1954), p. 280.

[2] See, for example, Shirley A. Hamrin and Blanche B. Paulson, Counseling Adolescents (Chicago: Science Research Associates, 1950), p. 194.

[3] Flanagan and Cooley, Project Talent, p. 232.

study. It is these two areas, ability and interest, that are usually mentioned first when strategies for counseling students for educational planning are discussed. Thorndike and Hagen, for example, discuss the relative independence of these measures and conclude: "Both types of information are needed for any sound evaluation of an individual's suitability for a particular program of study or plan for work."[1]

Measured, or inventoried, interests will be used as well as expressed interests. The question of which has greater reliability or validity is a complex one which is not a part of this study. However, Cronbach and others have pointed out that expressed interests frequently do not give adequate information for guidance because they are based on irrelevant influences, stereotypes or incomplete understandings.[2] Concluding a review of the literature, Super and Crites state:

> The relatively low correlations between expressed preferences and inventoried interests in high school, the tendency of the less able students to prefer fields in which they lack measured interests, and the superiority of inventories to the expressed preferences of college freshmen in the dominant middle class culture, suggest that inventories can improve the quality of counseling and prediction.[3]

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[1] Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Psychology and Education (New York: John Wiley and Sons, Inc., 1955), p. 382.

[2] Lee J. Cronbach, Essentials of Psychological Testing (New York: Harper and Row, 1960), p. 405.

[3] Donald E. Super and John O. Crites, Appraising Vocational Fitness (New York: Harper & Brothers, 1962), p. 441.

The study centers on eleventh grade students since that is frequently when college planning begins, and as Davis states: "...our guess is that the last two years of high school are the most strategic period of all for vocational choice,...."[1]

Purpose of the Study

It was hoped that this study would yield information from two well-known measures of ability and interest (the National Merit Scholarship Qualifying Test and the Kuder Occupational Interest Survey, Form DD) that, when taken together, will provide high school counselors and students with useful data relevant to college educational plans. Specifically, the purpose of this study was to investigate certain questions concerning the relation of measured ability and interest in various college majors using a sample of eleventh-grade students. The questions were:

1. What is the distribution of ability of students having high measured interest in each of various college majors?
2. Do high ability students show a consistent pattern of measured interests in certain college majors?
3. Do low ability students show a consistent pattern of measured interests in certain college majors?

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[1] Davis. Undergraduate Career Decisions, p. 32.

4. If the patterns described in 2 and 3 above do exist, are they the same for both groups?
5. What is the distribution of ability of students expressing interest on each of various college majors?
6. What relations exist between the measured and expressed interests in college majors for the samples studied?

The questions were investigated separately for males and females.

RELATED RESEARCH

Many studies have examined aspects of the relations between ability, interest, and scholarship, but none has dealt specifically with the instruments used in this study.

Early Studies

In a comprehensive review of the literature on interests published prior to 1931, Fryer credited E. L. Thorndike with being the pioneer investigator of the relation between educational interests and abilities.[1] Thorndike found, in 1912, that the median correlation was .89 between the individual's rank of abilities and his rank of interests in school subjects.[2] He considered expressed interest to be "almost as symptomatic of present and future capacity or ability as of itself."[3]

In spite of this promising beginning, Fryer's review of related studies led him to conclude that:

> ...the prediction of educational abilities from estimated interests or from inventoried interests is not high, although it may add slightly to measures of intelligence in the prediction of

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[1] Douglas Fryer, The Measurement of Interests, (New York: Henry Holt and Company, 1931), p. 182.

[2] Edward L. Thorndike, "The Permance of Interest and their Relation to Abilities," The Popular Science Monthly, 81 (1912) pp. 449-456.

[3] Ibid., p. 455.

> achievement or scholarship. Educational interests have only a slight relation to abilities, or achievement, in the field of education."[1]

The general conclusion based on the early research was that "interests and abilities are different qualities in mental life. Neither can be predicted from the other."[2]

Strong's Review

Strong's review of studies related to the Vocational Interest Blank led him to a similar conclusion regarding the relationship between interests and achievement: "The reported correlations between our occupational interests and scholarships in general or in the related field are all low, the highest being .34 with engineering."[3]

Strong, however, saw a relation between abilities, interests, and achievement, and likened them to a motor boat and rudder.

> The motor (abilities) determines how fast the boat can go, the rudder (interests) determines which way the boat goes. Achievement might be thought of as the distance traveled in a straight line in a given interval of time, resulting from operation of both motor and rudder.[4]

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[1] Fryer, The Measurement of Interests, p. 256.

[2] Ibid., p. 209.

[3] Edward K. Strong, Jr., Vocational Interests of Men and Women (Stanford, California: Stanford University Press, 1943), p. 521.

[4] Ibid., p. 17.

It was Strong's belief that interests would be more likely to correlate with job turnover or educational shifts from major fields than with achievement within a particular job task or academic course. For example, in one study he found that ninety-two percent of freshmen rated A or B+ in dental interest finally graduated, as compared with only twenty-five percent of C students.[1] It was his belief that once a given course was chosen, ability and effort were the real determinants of achievement, but that interests would determine whether the student would subsequently elect a similar course.[2]

Strong drew two other conclusions relevant to this study: first, "First class educational (interest) scales might prove to be of value in calling attention to those students whose interests are out of harmony with the curricula in which they are enrolled;" and second, "Counseling that considers both abilities and interests is distinctly superior to that based on either alone, for it puts us in a position to estimate both what the man can do and what he wants to do."[3]

Other Studies

In a later review of the literature on vocational interest measurement, Darley and Hagenah reached the same conclusion of earlier reviewers:

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[1] Ibid., p. 524.

[2] Ibid., p. 529.

[3] Ibid., p. 535 and p. 19.

> As a special case of the general problem of prediction of success, we are willing to read the evidence to indicate that the Strong Vocational Interest scores simply do not correlate in any significant degree with school grades and similar measures of curricular success. Counselors need not worry about this correlation; it is for their purposes nonexistent.[1]

Thus, the overwhelming evidence of the literature is low relationship between interest inventory scores and scholastic achievement. However, it should be noted that these were primarily zero-order correlation studies and provide little evidence as to whether the addition of interest variables to measures of scholastic ability would increase the validity of predictions. The point of major concern for this study was expressed by Super when he asserted:

> It is true, as the data imply, that a relationship expressed by a validity coefficient of less than .45 is so slight as to be of little practical value by itself. The fallacy is the assumption that it is used by itself.... Experience with batteries of well-constructed and varied tests has shown that measures with validity coefficients as low as .20 may be useful (provided the correlation is statistically significant).... If this test measures some trait or aptitude which is unrelated to other factors measured by a battery of tests, it will add appreciably to the validity of the battery.[2]

Several multiple correlation studies have been conducted in which interest variables were combined with other personality variables in the

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[1] John G. Darley and Theda Hagenah, Vocational Interest Measurement (Minneapolis: The University of Minnesota Press, 1955), p. 286.

[2] Donald E. Super, Vocational Development: A Framework for Research, (New York: Teachers College, Columbia University, 1957). p. ?.

prediction of academic success, the first being published by Kelley in 1914.[1] Studies conducted prior to 1957 were reviewed by Maier in his dissertation, in which he sought to determine whether "interest test scores, if combined with the predictors currently being used at the University of Washington, would result in an increase of prediction efficiency for thirty-three criteria of academic success.[2] Maier found the results of prior studies "encouraging" and recommended the inclusion of an interest test in the Washington battery on the basis of his own study.[3]

The Academic Achievement Scale

In 1962, Academic Achievement scales for men and women were added to the Strong Vocational Interest Blank.[4] The construction, validation, and suggested uses for the scales are fully described in the inventory manual.[5] Since the purposes of the AACH are similar to those of the scale proposed for this study, an examination of the AACH is warranted. The AACH scale

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[1] Truman L. Kelley, "Educational Guidance, An Experimental Study in Analyses and Prediction of Ability of High School Pupils," in Teachers College Contributions to Education, No. 71 (New York: Teachers College, Columbia University, 1914).

[2] Glen E. Maier, "The Contribution of Interest Test Scores to Differential Academic Prediction" (unpublished doctoral dissertation, University of Washington, Seattle, 1957), p. 128.

[3] Ibid., p. 42 and p. 128.

[4] This scale is hereinafter referred to as AACH.

[5] Edward K. Strong, revised by David Campbell, Manual for the Strong Vocational Interest Blanks, (Stanford, California: Stanford University Press, 1966), pp. 19-24.

was developed by scoring those items that were differentially "liked" or "disliked" by high and low achievers as ranked by an equally weighted combination of high school rank and first-year college grade point average. For the men's scale, the validation and cross validation groups consisted of 462 and 250 men, respectively, all of whom entered the University of Minnesota in 1961. The scale is designed to distinguish between good and poor students and is moderately effective in predicting grades and eventual educational level.[1] Scores are reported on a scale with a mean of fifty and a standard deviation of ten. Data in Table 1 show the intercorrelation and selected multiple correlation of the high school rank (HSR), grade point average (GPA), and scores on the Minnesota Scholastic Aptitude Test (MSAT) for the freshmen validation groups and for retrodictive cross-validation group composed of 283 men tested in 1962 as part of a twenty-five year follow-up study.[2]

The data indicate that in the cross-validation samples, high school rank and test scores are better predictors than the AACH, though the AACH scale has moderate validity of its own. When AACH scores are added to either high school rank or test scores, correlations with grade point average increase about .06. The gain if AACH is added to the combined prediction of the other two variables is negligible.[3]

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[1] Ibid., p. 19

[2] Ibid., p. 19

[3] Ibid., p. 20

TABLE 1

Intercorrelations Between Men's Academic Achievement (AACH) Scale, High School Rank, Minnesota Scholastic Aptitude Test, and Grade Point Average

	MSAT	HSR	GPA	Mean	S.D.	Multiple Correlations with Grade Point Average	
1961 Validation Freshmen (N = 462)							
AACH	.38	.48	.52	0.6	14.4	AACH, MSAT	.55
MSAT		.24	.37	43.4	11.8	HSR, MSAT	.55
HSR			.48	71.6	19.4	AACH, HSR	.59
GPA				1.9	.8	AACH, HSR, MSAT	.61
1961 Cross-Validation Freshmen (N = 250)							
AACH	.23	.32	.36	2.8	12.5	AACH, MSAT.....	.49
MSAT		.27	.41	43.8	11.3	HSR, MSAT	.62
HSR			.55	70.6	20.9	AACH, HSR	.59
GPA				1.9	.9	AACH, HSR, MSAT	.63
25-Year Follow-up Cross-Validation Sample (N = 283)							
AACH	.30	.24	.35	7.7	12.2	AACH, MSAT	.50
MSAT		.29	.44	57.7	11.3	HSR, MSAT	.56
HSR			.46	69.9	23.2	AACH, HSR	.52
GPA				2.1	.8	AACH, HSR, MSAT.....	.59

In a further study of the validity of the AACH, the mean scores were calculated of groups in the twenty-five year follow-up study who had earned different college degrees. Table 2 shows the progression of AACH scores from low to high degree level; the same progression is seen in undergraduate grade point average.[1]

TABLE 2

Men's Academic Achievement (AACH) Scale and Undergraduate Point Average: Means for Different Degree Levels in Minnesota 25-Year Follow-Up Sample

Degree Level	N	AACH Mean	Undergraduate GPA (A = 4.0)
Ph.D.	16	58	2.9
M.A.	27	52	2.5
B.A.	101	47	2.4
None	85	42	1.7

The relation of mean AACH scores to different occupations, reported in Table 12 of the manual, show wide differences, from a high of 62 for biologists to a low of 32 for real estate salesmen.[2] The data support an earlier observation of Strong concerning the relation of intelligence and interests:

> On the whole, intelligence is positively correlated with occupational interests in Groups I, II, VII, and X (i.e., the average correlation between Thorndike Aptitude scores and Biological Science Occupations = .23, Physical Science Occupation = .33, CPA = .22, and Linguistic Occupations = .11); negatively correlated with Groups V, VII, and IX (r between Thorndike Aptitude scores and Social Welfare Occupations= -.11, Business Detail Occupations = -.22, and Business Contact Occupations = -.24); and unrelated to Groups III, IV, VI, and XI (r between

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1 Ibid., p. 20.

2 Ibid., pp. 40-41.

> Aptitude and Production Manager = +.04, Technical Occupations = -.01, Musician = -.02, and President = -.03). This means that men of high intelligence are more likely to have the interests of scientists, public accountants, lawyers, and writers and less likely to have the interests of men dealing with office procedure and with people--selling and serving them.[1]

This would suggest that there may indeed be patterns of interests in college majors that would be different for students of high and low academic aptitude or ability. A combination of test scores, interest scores in college majors, and a score on a scale similar to the AACH could be potentially useful for students and counselors. The statement made concerning the uses of the Strong AACH scale is appropriate:

> But if an interest inventory scale related to grades is not to be routinely used for selection, what then is its function? First, to serve as a research tool to better understand the educational process. Second, as an aid to counselors who need the best possible data about their clients. Counselors have little enough information about why some students succeed and others don't; anything that can be put into their hands to help them give more individualized attention to that student setting across the desk from them will be welcome.[2]

While these findings are encouraging, it remains to be seen whether a widely used standardized test and an interest inventory yielding scores on college majors could serve these and the other purpose of this study.

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1 Strong, Vocational Interests of Men and Women, p. 334.

2 Strong and Campbell, Manual, p. 24.

INSTRUMENTS USED

Each student involved in this study has taken both the Kuder Occupational Interest Survey, Form DD and the National Merit Scholarship Qualifying Test in Kuder Occupational Interest Survey, Form DD.[1]

The Kuder OIS was chosen for this study because it reports, in addition to occupational interest scores, scores showing the degree of relation between an individual's interest pattern and the patterns characteristic of students satisfied in various college majors.

The Kuder OIS consists of one-hundred items in forced-choice triad form. Each triad consists of three activities for which the student marks a most-preferred and least-preferred activity; the unmarked activity thus ranks second. There are six possible patterns of choice per triad, as illustrated in Figure 1.

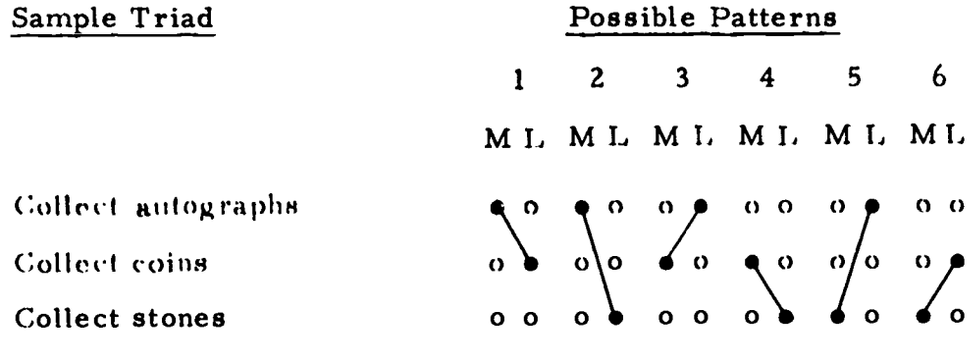

Fig. 1.--Sample Triad and Possible Patterns of Response.

[1] Hereinafter referred to as the Kuder OIS

The activities (items) have been found to evoke highly differential marking of responses by students in different college majors or by people in a variety of occupational groups.[1] Items were developed to constitute a representative sampling of as many relatively independent and relevant interest areas as possible. Items were considered relevant if they sampled areas that had already been found, in past research, to be related to occupational choice or job satisfaction. Table 3 shows hypothetical proportions of three college major groups marking each position to a sample Kuder OIS Triad.

TABLE 3

HYPOTHETICAL PERCENTAGES OF THREE COLLEGE MAJOR GROUPS SELECTING EACH POSITION FOR A SAMPLE KUDER OIS TRIAD

Kuder OIS Triad	Criterion Group					
	Economics		Forestry		Sociology	
	Most	Least	Most	Least	Most	Least
Collect autographs	11	31	7	80	58	12
Collect coins	81	2	20	16	23	46
Collect stones	8	67	73	4	19	42

[1] G. Frederic Kuder, General Manual, Occupational Interest Survey, Form DD (Chicago: Science Research Associates, Inc., 1966) p. 3ff.

The method of scale development for the Kuder OIS is a departure from the traditional method of comparing the interests of specific groups with those of a general reference group.[1] In essence, an individual's score on a given Kuder OIS scale represents the sum of the proportions of the criterion group marking the same responses that he marked.[2] For technical reasons, however, scores are reported using the lambda correlation coefficient suggested by Clemans.[3] The lambda coeff.cient is the ratio of the obtained r point biserial to the maximum r point biserial; it expresses the correlation between a subject's responses and those of members of a defined group. The upper limit is 1.00 for all scales; if the subject consistently chose the same answer positions marked by the highest proportion of a criterion group, he would obtain a score of 1.00, or unity, on the scale based on that group. Conversely, the smaller the proportion of the criterion groups choosing his responses, the lower the subject's score on that scale.

There are 162 Kuder OIS scales, including eight experimental scales and a Verification (V) scale, designed to check the sincerity and

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[1] The Strong Vocational Interest Blank, for example, uses a general reference group.

[2] See Kuder, General Manual, pp. 18-21 for a thorough discussion of the scoring procedures.

[3] William V. Clemans, "An Index of Item-Criterion Relationship." Educational and Psychological Measurement, 18 (1958), 167-172.

reliability of a subject's responses. Of these scales, twenty-nine are college major scales for men, nineteen are college major scales for women. In addition, women receive scores on eight of the men's college major scales.[1] (These scores were not used in this study.) Members of the criterion groups, which ranged in size from 152 to 1125, were in the second semester of their senior year in college and met criteria of satisfaction with their college major comparable to those described by Kuder in the General Manual.[2] All of the criterion groups were randomly selected and the fields selected were based on the number of degrees granted in various fields of specialization in 1960. Table 4 shows the college major scales reported for men and women; the men's scales marked with an asterisk are also reported for women.

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[1] The appropriateness of such a practice has been supported by several studies. See, in particular, Esther E. Diamond, "Occupational Level Versus Sex Group as a System of Classification on the Basis of an Occupational Interest Survey." Unpublished doctoral dissertation, Loyola University, Chicago, 1968.

[2] Kuder, General Manual, pp. 43-44.

TABLE 4

COLLEGE MAJOR SCALES

Men	Women
Agriculture*	Art and Art Education
Animal Husbandry	Biological Sciences
Architecture*	Business Ed. and Commerce
Art and Art Education	Drama
Biological Sciences	Elementary Education
Business: Acct. & Finance	English
Business and Marketing	Foreign Languages
Business Management	General Social Sciences
Economics*	Health Professions
Elementary Education	History
Engineering, Chemical*	Home Economics Education
Engineering, Civil*	Mathematics
Engineering, Electrical*	Music and Music Education
Engineering, Mechanical*	Nursing
English	Physical Education
Forestry	Political Science
Foreign Languages	Psychology
History	Sociology
Law (Grad. School)	Teaching Sister
Mathematics	
Music and Music Ed.	
Physical Education	
Physical Sciences*	
Political Science & Govt.	
Premed, Pharm. and Dentistry	
Psychology	
Sociology	
U.S. Air Force Cadet	
U.S. Military Acad. Cadet	

The National Merit Scholarship Qualifying Test[1]

In 1969 the NMSQT was a two-hour, ten minute test of a student's educational development in four broad academic areas: English usage, mathematics, social studies and natural sciences reading, and word usage.[2]

Each of the four tests in the battery is separately timed, and a separate score is given for each. The tests are not designed to conform to any specific course content or curriculum.

Scores reported for each student include a scaled score for each subtest, a selection score--an overall indicator of performance--and percentiles based upon college-bound students who took the test the preceding year.

Table 5 presents the means, standard deviations (S. D.) and errors of measurement (SEM) for college-bound participants who took the NMSQT in 1969. It is this group which forms the basis for the norms reported for students in this study.

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[1] Hereinafter referred to as the NMSQT

[2] Interpretive Manual for the National Merit Scholarship Qualifying Test (Chicago: Science Research Associates, Inc., 1969) p. 29.

TABLE 5

SCALED SCORE MEANS, STANDARD DEVIATIONS, AND STANDARD ERRORS OF MEASUREMENT OF COLLEGE-BOUND PARTICIPANTS ON THE 1969 NMSQT

Test	Male (N=336,888) mean	s.d.	Fem. (N=359,317) mean	s.d.	Total (N=696,205) mean	s.d.	sem[a]
English Usage	20.23	5.40	21.79	5.26	21.04	5.38	1.36
Mathematics Usage	22.34	5.14	20.63	5.01	21.46	5.15	1.86
Social Studies-Natural Sciences Reading Comprehension	21.36	5.36	20.13	5.15	20.72	5.29	1.52
Word Usage	20.64	5.00	20.76	5.03	20.70	5.01	1.16
Selection Score	104.01	22.14	102.17	21.20	103.06	21.68	3.43

[a] sem's are based on a sample of 2000 cases.

SAMPLE MEANS AND STANDARD DEVIATIONS ON NMSQT

	Male mean	s.d.	Female mean	s.d.
English Usage	19.25	5.55	20.13	5.63
Mathematics Usage	20.93	5.23	19.37	4.93
Social Studies-Natural Sciences Reading Comprehension	20.33	5.50	18.77	5.26
Word Usage	20.34	4.96	19.81	5.11
Selection Score	98.88	23.30	96.21	22.53
N =	1075		1159	

In addition to test data, each student is asked at the time of testing to indicate on his answer sheet his two tentative college choices, his probable college major (selected from a list of eighty possibilities) and his probable career choice (from a list of eighty-five). These choices, along with the test scores, are reported for all students in a given school on the NMSQT List Report of Participants' Scores and Plans. It is these lists that were used as a source of data for the present study.

Many studies of the reliability and validity of the NMSQT have been conducted. The reliabilities of the subtests are all above .85 (Kuder-Richardson 20), and the selection score has a reliability of about .97.[1]

[1] NMSQT Technical Data, (Chicago: Science Research Associates, 1967), p. 3.

PROCEDURES

The data for this study are derived from an October, 1968 administration of the Kuder Occupational Interest Survey, Form DD, to about 15,000 eleventh-grade students in eighteen urban public high schools, and a subsequent administration, in February, 1969, of the National Merit Scholarship Qualifying Test, in which about half of the original sample participated.

From the Kuder OIS reports, the scores representing correlations of each person's inventoried interests with those of a criterion group for various college major fields of study were used. From the NMSQT list reports, the student's scaled scores from the four subtests - English, mathematics, social studies and natural sciences reading, vocabulary - his selection score, and his expressed choice of a probable college major were used.

It was necessary to eliminate some students from the study even if they had taken both the Kuder OIS and the NMSQT. This was done if any of the following conditions prevailed:

1. Sex code not reported in either administration, and name not indicative of sex.

2. One or more subtests on NMSQT not attempted. Each year a very small percentage ($\sim$ 1%) of NMSQT participants do not attempt any items on one or more subtests for reasons such as tardiness to the test session,

illness, or lack of motivation. Since the resulting selection scores do not reflect the "normal" ability of these students, they were omitted from the study sample.

3. Low verification (V) score on the Kuder OIS. The V score is reported in a box in the lower right-hand corner of the individual profiles. It is based on certain responses in forty-one items and "is designed to provide a check on the sincerity and reliability of a subject's responses."[1] In accordance with recommendations in the General Manual, all students with V scores of less than 45 were dropped from the study.[2]

4. No college major scale scores above .31. Some students do not attain any high scores, and since this seems to be related to factors such as immaturity, insincerity, or misunderstanding of directions, such students were omitted from the study.[3]

The General Manual for the Kuder OIS recommends that the student give primary consideration to all college majors that fall within .06 of his highest score.[4] For this study, all such scores for each student were considered as high interests. This means that most students were considered a part of several different groups, each having a measured

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[1] Kuder, General Manual, p. 6.

[2] Ibid., p. 6.

[3] Ibid., pp. 7-8.

[4] Ibid., pp. 9-11.

interest in a different college major.

In developing the interest profiles of high and low scoring students on the NMSQT, a student will be considered high-scoring if his selection score is at or above the seventy-fifth percentile on the college-bound norms group; conversely, he will be considered low-scoring if his selection score is below the twenty-fifth percentile.[1]

Analyses

All analyses were done separately for males and females. The following were done:

1. For each college major, obtain the mean, standard deviation, frequency distribution and percentile distribution of NMSQT subtest and selection scores of students having a high measured interest in that major.

2. Repeat for the expressed interest in college majors indicated on NMSQT answer sheets.

3. Separately for the defined groups of high and low scoring NMSQT college-bound participants, determine the frequency of interest in each college major. Subsequent study will be made of the frequency of occurrence of various combinations of these interests.

4. Determine the percentage of students in the sample who marked a probable college major on their NMSQT answer sheet that was the same as one of their high interest scores on Kuder OIS.

[1] NMSQT Interpretive Manual, pp. 26-29.

TABLE 6

Boys N = 1075 NMS Subtest Scores

Kuder Scales - Highest & Ties	N	English Test 1 Mean = 19.257 S.D. = 5.551 Mean	S.D.	Math Test 2 Mean = 20.434 S.D. = 5.234 Mean	S.D.	Reading Test 3 Mean = 20.329 S.D. = 5.504 Mean	S.D.	Vocabulary Test 4 Mean = 20.336 S.D. = 4.960 Mean	S.D.
Agriculture	18	15.945	5.286	19.056	6.494	18.112	5.322	19.056	4.871
Animal Husbandry	15	14.000	4.321	17.467	2.849	16.067	2.576	17.134	3.384
Architecture	11	22.819	4.802	24.273	3.387	20.819	4.988	21.546	4.659
Art & Art Education	39	20.180	6.148	19.821	4.518	19.744	5.108	21.257	4.824
Biological Sciences	28	20.679	4.767	21.822	4.812	21.393	4.887	22.108	4.632
Business: Acc't & Finance	87	18.173	5.607	21.368	4.723	18.460	5.151	18.552	3.871
Business: Marketing	72	17.556	5.231	18.209	4.862	17.778	5.516	19.153	4.475
Business: Management	46	17.066	5.546	19.848	4.723	18.544	5.536	18.327	3.863
Economics	24	20.042	5.120	21.815	4.127	22.459	5.025	22.084	5.050
Elementary Education	51	19.785	5.652	21.824	4.445	21.157	4.869	20.746	4.895
Engineering: Chemical	30	19.134	4.603	22.834	4.663	20.934	4.705	19.134	3.223
Engineering: Civil	36	19.084	4.646	20.473	4.964	20.084	5.085	19.889	4.864
Engineering: Electrical	92	18.653	5.405	20.892	4.951	19.892	5.437	19.131	4.684
Engineering: Mechanical	82	17.500	4.794	20.403	4.450	18.135	5.344	17.891	3.797
English	18	23.223	5.340	20.334	5.706	21.445	6.785	22.778	5.614
Foreign Languages	41	22.830	5.428	21.683	5.299	23.098	4.982	23.805	5.139
Forestry	47	18.618	4.988	19.788	4.524	20.937	5.393	19.596	4.698
History	27	21.556	4.887	21.556	5.224	23.075	4.269	24.000	4.074
Law	8	21.875	7.236	22.125	5.302	21.125	6.393	22.125	6.470
Mathematics	103	21.253	5.442	23.243	5.269	21.806	5.451	21.748	5.045
Music & Music Education	51	21.197	5.855	21.216	5.812	21.157	6.096	21.981	5.645
Physical Education	134	16.471	4.780	18.836	4.745	17.784	4.789	18.127	4.240
Physical Sciences	49	21.511	4.717	22.531	4.590	23.062	4.452	22.307	5.040
Political Science & Gov't	26	23.385	5.555	22.885	4.636	24.308	4.445	24.500	4.782
Premed, Phar. & Dentistry	86	19.675	5.132	21.175	5.472	20.582	5.625	20.163	4.777
Psychology	52	20.750	5.054	22.193	5.066	22.847	4.921	22.654	4.887
Sociology	19	21.737	5.067	23.422	5.500	24.158	3.732	23.948	3.967
U.S. Air Force Cadet	32	18.719	5.222	21.594	5.684	20.875	5.129	21.157	5.869
U.S. Military Cadet	22	18.728	5.259	21.500	5.426	20.910	5.419	20.182	5.228

TABLE 7

Girls N = 1159 NMS Subtest Scores

Kuder Scales - Highest & Ties	N	English Test 1 Mean = 20.134 S.D. = 5.637		Math Test 2 Mean = 19.371 S.D. = 4.927		Reading Test 3 Mean = 18.774 S.D. = 5.255		Vocabulary Test 4 Mean = 19.813 S.D. = 5.118	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Art & Art Education	72	20.764	5.071	19.070	4.797	19.820	4.855	21.306	4.624
Biological Sciences	74	22.649	4.732	20.987	5.015	22.203	4.717	23.324	4.944
Business Ed. & Commerce	174	18.863	5.579	18.857	4.845	16.891	4.769	17.943	4.565
Drama	87	21.012	5.638	19.518	4.890	19.196	5.437	20.449	5.031
Elementary Education	190	19.069	5.751	18.990	5.011	17.890	5.001	18.900	4.628
English	48	23.542	5.534	20.959	4.651	22.334	4.639	23.605	5.143
Foreign Languages	40	22.900	5.229	20.400	4.604	20.875	5.159	23.050	4.450
General Social Sciences	65	21.939	4.902	20.831	4.838	20.462	4.701	20.816	4.239
Health Professions	60	21.267	4.687	21.017	4.237	19.817	4.955	20.867	4.437
History	27	22.778	4.289	20.630	4.048	21.704	4.294	23.408	4.763
Home Economics Education	88	18.648	6.220	18.819	5.308	18.137	5.544	18.637	5.470
Mathematics	57	21.685	5.592	22.825	4.688	20.281	5.625	20.457	5.811
Music & Music Education	54	20.723	5.530	19.241	5.070	17.760	5.302	19.556	5.231
Nursing	168	18.114	5.202	17.679	4.482	16.542	4.432	17.816	4.392
Physical Education	90	19.278	5.049	18.778	4.512	18.012	4.296	18.812	3.771
Political Sciences	22	22.319	4.695	22.091	3.397	23.091	4.963	23.864	4.536
Psychology	3?	23.819	4.884	21.849	4.561	21.667	4.176	22.546	4.265
Sociology	5	23.200	3.430	22.200	2.926	24.200	3.545	23.400	3.499
Teaching Sister - Catholic	69	18.102	6.275	17.769	4.626	16.189	5.285	17.667	5.081

TABLE 8

BOYS N = 1075 NMSQT SELECTION SCORES

	Kuder Scales (Highest and Ties) Mean = 99.875 S.D. = 23.299			Kuder Scales All-High Mean = 99.874 S.D. = 23.2	
	N	Mean	S.D.	N	Mean	S.D.
Agriculture	18	89.389	20.581	162	90.019	21.716
Animal Husbandry	15	79.667	12.104	124	89.017	20.975
Architecture	11	110.546	19.663	100	93.870	22.206
Art & Art Education	39	100.283	23.159	115	97.687	23.301
Biological Sciences	28	106.608	20.926	239	103.473	22.913
Business: Accounting & Finance	87	94.794	20.956	361	96.546	22.614
Business: Marketing	72	89.889	21.234	345	93.560	21.445
Business: Management	46	90.740	21.513	410	94.298	21.696
Economics	24	107.125	21.460	321	99.340	21.964
Elementary Education	51	103.608	21.594	387	98.615	22.957
Engineering: Chemical	30	101.734	19.533	435	98.794	22.786
Engineering: Civil	36	97.806	21.582	379	94.006	22.426
Engineering: Electrical	92	96.696	22.692	461	97.267	23.340
Engineering: Mechanical	82	90.854	20.604	417	94.514	22.589
English	18	108.223	26.880	105	109.467	22.777
Foreign Languages	41	112.903	23.131	181	109.343	23.055
Forestry	47	96.383	20.856	241	92.262	21.691
History	27	111.408	19.776	189	108.842	22.141
Law	8	109.250	27.477	139	108.389	21.400
Mathematics	103	108.797	23.052	523	102.111	23.208
Music & Music Education	51	105.314	26.702	167	102.743	25.840
Physical Education	134	87.553	19.251	479	91.389	20.852
Physical Sciences	49	110.327	20.523	332	104.522	22.580
Political Science & Government	26	117.924	19.834	184	107.560	22.187
Premed, Phar. & Dentistry	86	100.780	24.184	376	101.857	22.910
Psychology	52	109.270	21.283	320	105.538	22.904
Sociology	19	115.158	21.294	245	108.164	22.532
U.S. Air Force Cadet	32	101.688	23.830	316	97.871	22.734
U.S. Military Cadet	22	100.591	22.950	249	97.908	22.155

TABLE 9

GIRLS N = 1159 NMS SELECTION SCORES

	Kuder Scales (Highest and Ties) Mean = 96.209 S.D. = 22.535			Kuder Scales All-High Mean = 96.209 S.D. = 22.535		
	N	Mean	S D.	N	Mean	S.D.
Art & Art Education	72	100.209	20.729	209	101.455	20.852
Biological Sciences	74	109.582	19.636	298	101.998	21.780
Business Education & Commerce	174	89.161	21.331	444	90.881	22.171
Drama	87	98.863	22.468	340	98.606	22.721
Elementary Education	190	92.111	22.010	774	94.561	21.975
English	48	111.480	20.911	286	103.161	22.065
Foreign Languages	40	107.400	20.822	553	99.621	22.614
General Social Sciences	65	103.985	18.960	534	97.772	22.074
Health Professions	60	101.967	18.813	423	96.883	21.290
History	27	109.408	17.804	266	105.196	21.914
Home Economics Education	88	92.125	24.829	664	92.872	21.750
Mathematics	57	105.281	25.057	335	99.759	21.869
Music & Music Education	54	95.260	21.708	252	96.612	22.101
Nursing	168	86.197	19.027	591	91.579	21.191
Physical Education	90	92.345	18.783	511	92.562	20.917
Political Science	22	112.137	19.504	142	107.796	21.240
Psychology	33	111.304	18.383	290	104.394	21.581
Sociology	5	114.800	13.045	231	100.355	19.679
Teaching Sister - Catholic	69	86.145	23.648	257	88.899	21.511

TABLE 10

NMSQT SELECTION SCORES

Expressed College Major Choice NMSQT Codes		Male N = 1075 Mean = 99.874 S.D. = 23.299			Female N = 1159 Mean = 96.209 S.D. = 22.535	
	N	Mean	S.D.	N	Mean	S.D.
(0) No Specification	160	89.550	20.731	124	86.049	19.808
(10) Engineer (unspecified)	71	99.747	21.787	2	123.500	11.500
(11) Engineer (aeronautical)	15	100.134	16.829	0	-----	----
(12) Engineer (ceramic)	2	120.---	6.---	0	-----	----
(13) Engineer (Chemical)	11	106.546	24.194	3	107.334	26.234
(14) Engineer (Civil Structural)	4	111.500	15.661	0	-----	----
(15) Engineer (Electrical)	31	100.549	16.436	1	93.000	----
(16) Engineer (Industrial)	3	84.000	15.254	0	-----	----
(17) Engineer (Mechanical)	18	101.000	19.511	0	-----	----
(18) Engineer (Metallurgical	3	89.000	19.253	0	-----	----
(19) Engineer (Mining)	0	-----	----	0	-----	----
(20) Sciences	16	115.500	23.930	21	111.143	26.184
(21) Astronomy	5	108.800	22.667	1	78.---	----
(22) Biology	11	106.091	16.189	6	102.334	28.330
(23) Chemistry	14	117.000	17.021	6	100.667	19.006
(24) Geology	1	81.000	----	0	-----	----
(25) Math-Statistics	34	105.442	24.004	41	96.336	24.476
(26) Physics	11	109.000	29.772	2	96.500	2.500
(27) Meteorology	3	99.000	10.231	0	-----	----
(28) Bio Chemistry	6	105.334	21.899	6	99.000	24.570
(29) Bio Physics	1	73.000	----	4	101.500	24.825
(30) Advertising	3	98.334	8.731	1	78.000	----
(31) Premedicine	67	105.180	22.488	22	87.955	24.347
(32) Predentistry	13	102.385	14.162	0	-----	----
(33) Technology (Medical, Lab, Dental)	3	94.000	14.307	25	85.760	18.408
(34) Nursing	0	-----	----	44	85.750	17.852
(35) Occupational Therapy	0	-----	----	1	117.000	----

	Males			Females		
	N	Mean	S.D.	N	Mean	S.D.
(36) Physical Therapy	1	104.000	0.000	10	106.000	14.367
(37) Veterinary Science	11	91.091	20.576	4	100.500	21.314
(38) Pharmacy	8	94.750	21.908	2	82.500	19.500
(39) Preoptometry	0	-----	----	0	-----	----
(40) Liberal Arts	42	110.34	20.640	62	105.210	18.832
(41) Art	3	107.667	23.013	16	100.563	19.666
(42) English	9	105.112	23.178	19	111.158	21.157
(43) Languages (Classical)	0	-----	----	1	72.000	----
(44) Music	6	86.667	17.538	13	101.385	21.967
(45) Philsosphy	2	116.500	8.500	1	103.---	----
(46) History	29	98.069	23.064	17	96.765	21.201
(47) Social Sciences	2	116.000	26.000	13	116.385	11.331
(48) Education	5	100.200	22.543	53	92.416	22.964
(49) Psychology	24	112.042	19.914	48	104.459	19.202
(50) Anthropology (Archaeology)	5	123.400	24.614	7	108.572	20.750
(51)	1	78.000	----	0	----	----
(52) Art (Graphic)	7	103.715	16.568	23	103.609	17.532
(53) Biological Sciences	21	114.143	21.248	17	115.000	20.626
(54) Botany	0	-----	----	0	-----	-----
(55) Drama	1	84.000	----	9	103.445	12.703
(56) Earth Sciences	0	-----	----	3	86.667	3.092
(57) Economics	0	----	----	0	-----	----
(58) Art Education	1	72.000	----	13	97.077	19.716
(59) Elementary Education	2	92.500	26.500	120	93.609	21.131
(60) Business Education	31	92.452	20.388	17	79.412	23.208
(61) Accounting	22	90.728	22.532	3	55.667	12.711
(62) Actuarial Science	0	-----	----	0	-----	----
(63) Banking Finance	4	99.500	22.478	0	-----	-----
(64) Music Education	3	97.667	25.038	13	90.693	17.916

	Males			Females		
	N	Mean	S.D.	N	Mean	S.D.
(65) Transportation Studies	1	96.000	----	0	-----	----
(66) Secondary Education	5	91.600	12.754	32	91.938	21.153
(67) Agricultural Engineering	2	62.500	17.500	0	-----	----
(68) Science Engineering	4	68.250	24.325	1	78.000	----
(69) Geography	1	105.000	----	1	103.---	----
(70) Agriculture	4	77.250	17.824	0	-----	----
(71) Architecture	19	98.106	23.540	2	98.500	5.500
(72) Forestry	4	69.750	10.964	0	-----	----
(73) Home Economics	0	-----	----	14	90.929	21.655
(74) Journalism	10	95.700	17.772	7	93.286	30.518
(75) Library Science	1	116.000	----	3	96.000	26.920
(76) Physical Education	15	79.734	21.956	17	90.942	15.884
(77) Speech	3	106.334	23.300	2	85.500	2.500
(78) Languages	3	110.334	23.472	40	110.450	22.027
(79) Literature (comparative)	0	-----	----	0	-----	----
(80) Oceanography	6	102.---	36.888	2	101.000	3.000
(81) Physical Sciences	6	110.834	19.127	1	101.000	----
(82) Physiology	2	114 --	1 --	3	96.667	4.785
(83) Political Science	19	117.158	17.602	7	114.429	16.239
(84) Pre-law	34	105.236	22.822	9	96.556	24.400
(85) Religious Education	0	-----	---	0	-----	----
(86) Sociology	5	78.400	15.908	27	93.815	23.514
(87) Religion Theology	2	67.500	6.500	0	-----	----
(88) Zoology	2	88.000	12 ---	0	-----	----
(89) Special Education	1	73.000	----	12	100.667	21.523
(90) Undecided	163	101.731	23.258	165	96.128	22.516
(99) Other	14	91.286	24.289	17	97.000	18.887

TABLE 11

Comparison of "Popular" Measured and

Expressed College Major Choices

Males		Females	
Measured	Expressed	Measured	Expressed
Engineering	Undecided	Elementary Educ.	Undecided
Business	Engineering	Bus. Ed. & Comm.	Liberal Arts
Physical Ed.	Premed	Nursing	Languages (Mod.)
Math	Liberal Arts	Physical Ed.	Elementary Educ.
Premed	Math	Home Econ.	Psychology
Psychology	Prelaw	Drama	General Sciences
Music & Music Ed.	Business	Biological Science	Math - stat.
Physical Sciences	History	Art & Art Ed.	Social Sciences
Forestry	Psychology		
Foreign Language	Biological Sciences		

(Some combining of categories had occurred.)

TABLE 12

CAREER CHOICE

Career	Selection Score		Score Rank		N		Popularity	
	M	F	M	F	M	F	M	F
Physicist	127.13	125.77	1	1	4721	392	25	58
Physical Scientist	123.54	112.57	2	21	595	164	64	67
Educator, teacher, col.	122.69	115.10	3	8	2347	1954	36	35
Actuary	121.22	110.75	4	23	367	84	72	77
Scientist (unspecified)	119.55	118.02	5	2	4694	1959	26	34
Biochemist	118.50	114.94	6	10	2250	1682	38	39
Political Scientist	116.87	117.31	7	4	1890	1152	41	43
Engineer, Chemical	116.87	113.91	8	12	4413	197	27	68
Chemist	116.59	116.07	9	5	6791	1574	18	41
Mathematician, statistician	115.93	112.97	10	20	8299	6508	15	15
Physician	115.49	113.74	11	13	18330	6955	5	14
Journalist, Writer	115.47	113.61	12	14	4785	8472	24	11
Social Scientist	114.85	115.45	13	6	487	729	66	52
Government employee	114.68	113.13	14	18	2843	2349	33	31
Astronomer	114.49	115.19	15	7	1231	217	49	67
Lawyer	113.07	107.06	16	32	20607	3055	4	27
Science engineer	112.74	103.44	17	46	1242	240	48	64
Psychologist	111.90	109.76	18	25	3405	8413	32	12
Oceanographer	111.20	113.09	19	19	2712	683	34	53
Linguist, interpreter	111.11	114.95	20	9	1080	9782	51	9
Engineer, Metallurgical	110.97	108.67	21	30	560	9	65	86
Biological Scientist	110.82	113.24	22	15	5971	4896	20	20
Biophysicist	110.81	95.76	23	72	327	147	74	71
Anthropologist	110.66	117.59	24	3	341	406	73	57
Economist	110.03	96.05	25	70	795	782	58	51
Engineer, Aeronautical	109.43	109.60	26	26	8956	244	14	63
Minister, theologian	109.26	105.37	27	38	5398	363	22	59
Educator, teacher, Sec.	109.19	110.26	28	24	9259	28492	12	5
Engineer (unspecified)	108.77	114.28	29	11	24299	522	3	56
Financier, Banker, Broker	107.89	98.84	30	64	2163	230	40	66
City Planner	107.76	103.93	31	44	163	26	81	84
Geologist	107.35	105.48	32	36	984	139	56	72

Career	Selection Score		Score Rank		N		Popularity	
	M	F	M	F	M	F	M	F
Archeologist	106.97	113.14	33	17	1006	914	54	48
Engineer, Electrical	106.83	109.09	34	29	14920	99	6	75
Engineer, Civil, structural	106.70	111.96	35	22	5084	80	23	79
Meteorologist	106.41	113.18	36	16	767	66	59	82
Engineer, Ceramic	105.94	93.85	37	76	124	20	83	85
Actor, Director	105.73	105.74	38	34	995	2235	55	33
Computer Programmer	105.40	105.24	39	40	3503	3450	31	26
Physiologist	105.21	99.64	40	59	423	675	68	54
Military	104.94	90.32	41	81	7026	576	17	55
Health Fields (opt., ost.)	104.83	99.52	42	61	239	362	79	60
Dentist	104.79	96.30	43	68	7506	1073	16	45
Sociologist	104.75	104.79	44	41	406	1335	69	42
Musician (except teacher)	104.06	104.35	45	42	2351	2880	35	28
Engineer, Mining	103.95	73.00	46	87	211	4	80	87
Librarian	103.81	105.27	47	39	125	2455	82	28
Undecided	103.68	102.49	48	49	56527	50166	1	1
Optometrist	103.00	103.28	49	48	656	88	62	76
Veterinarian	101.77	108.58	50	31	4409	2327	28	32
Architect	101.68	109.38	51	27	10668	931	9	47
Educator, teacher, Rel.	101.41	100.97	52	55	847	1670	57	40
Music Teacher	101.35	101.38	53	54	2297	4827	37	22
Advertiser	101.28	105.47	54	37	1485	996	44	46
Pharmacist	101.06	106.54	55	33	3823	1778	29	37
Educator, teacher, (unspec.)	101.02	101.48	56	53	12663	29805	7	4
Administrator	100.28	89.95	57	82	394	261	71	62
Special Education	99.78	105.69	58	35	667	4043	61	25
Medical Technologist	99.49	103.33	59	47	1318	9295	47	10
Other	99.08	91.73	60	80	9414	22547	11	6
Engineer, Industrial	99.06	90.68	61	67	1738	28	43	83
Engineer, Mechanical	98.94	109.24	62	28	9097	82	13	78
Entertainer (Radio, TV)	98.74	95.77	63	71	1341	1075	46	44

Career	Selection Score		Score Rank		N		Popularity	
	M	F	M	F	M	F	M	F
Earth Scientist	98.37	92.38	64	79	266	109	77	74
Guidance Counselor	98.23	103.53	65	45	272	1773	76	38
Business Manager	98.06	86.58	66	86	12077	6270	8	17
Occupational Therapist	97.80	100.73	67	57	46	882	87	50
Artist (fine arts)	97.43	102.02	68	50	1437	21	45	21
Designer	97.06	101.69	69	51	2214	4455	39	23
Forester	96.97	103.98	70	43	6191	157	19	70
Transportation Manager	96.79	88.00	71	84	253	67	78	81
Accountant	96.70	89.11	72	83	10391	5413	10	18
Hotel Manager	95.56	95.24	73	73	602	123	63	73
Social Worker	95.37	99.63	74	60	1063	15026	52	8
Educator, teacher, Elem.	95.01	100.30	75	58	1080	35604	50	3
Personnel Work (Industrial)	94.12	92.83	76	78	444	905	67	49
Sales Representative	94.09	93.13	77	77	1010	281	53	61
Physical Therapist	93.40	101.63	78	52	404	4224	76	24
Farmer, Rancher	92.09	100.81	79	56	3537	234	30	65
Nurse	92.05	97.22	80	65	124	36367	84	2
Agricultural engineer	91.70	96.99	81	66	1781	70	42	80
Home Economist, Dietician	91.30	96.11	82	69	52	6309	86	16
Blank	90.86	86.89	83	85	33101	29528	2	5
Speech Therapist	90.80	99.34	84	62	64	1901	85	36
Art Teacher	90.25	99.09	85	63	724	2809	60	29
Interior Decorator	89.35	95.01	86	74	314	5409	75	19
Physical Education	89.00	94.01	87	75	5573	7425	21	13

From R. Nichols, NMSC Research Report, 1968, based on 1966 NMSQT participants.

RESULTS

As shown in Table 5, the NMSQT scores for this sample were slightly lower than the typical NMSQT participant group. No practical significance was attached to this difference. An examination of Tables 6 through 9 confirms that there are considerable differences in the ability level of students with measured interests in different college majors. Table 10 reveals the same phenomenon between abilities as measured by NMSQT and expressed college major choice. It is interesting to note the high proportion of second semester high school juniors who are undecided or do not indicate a preference for a college major.

Differences in interest patterns between high and low scoring students were analyzed, but they contributed little that cannot be seen from the data in Tables 6 - 10. It should be noted that although the original sample selected for this study was large (15,000), after missing data cases and others were deleted the groups assigned to given categories of college majors were often very small, and no significance should be attached to some of these.

Since the categories of measured and expressed interests were not identical, it was difficult to compare the congruence of expressed versus measured choice. By combining some categories it is possible to make the comparison given in Table 11. Table 12 was not developed as a part

of this study. It is a report of the expressed career choice of all NMSQT participants, approximately 700,000, in 1966. It shows a pattern similar to that seen for college majors with regard to the spread of ability and interest in various careers.