A STUDY OF THE RESULTS OF A KUDER TEST BATTERY FOR USE IN VOCATIONAL GUIDANCE

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by
Mildred C. Stinson
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Date of Acceptance: May 24, 1950
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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

In the past, about the only vocational guidance a student received was that offered by his parents. Many times parents were unqualified to give any assistance in the making of a choice for a life's occupation and forced upon the youth their own choice. Today, one of the most important activities of the school is to help pupils plan an intelligent program of educational and vocational choices.

Richmond Senior High School at Richmond, Indiana, had been particularly conscious of and felt the need for vocational and educational guidance and has endeavored to be of as much assistance to the student population as is possible. However, the staff were cognizant of the fact that improvement is always possible.

The staff had recognized that program planning is a cooperative process, with the student actively participating in the process to become more self-directive, and with the student making final decisions as to which course he would pursue.

Program planning was done through the homeroom teacher who, in turn, had a grade counselor to whom individual problems could be referred. There were three such counselors for a student population of over 1,100, which meant over
250 pupils per counselor. One of the counselors was also
deann of girls; the other two were regular classroom teachers
whose teaching load was lessened to make them available two
hours daily for conferences with their counselees.

Since Richmond Senior High School does not have study
halls, it was necessary that a pupil be absent from class
whenever there was need for a conference with the grade
counselor.

Although the school did operate with a thirty-
minute homeroom period daily, it was impossible for coun-
selors to meet with students during this time, since the
counselor had a homeroom group of her own, and because that
was the time the club program functioned. The counselors
sponsored clubs and shared in the responsibility for extra-
curricular activities, which left them unavailable for voca-
tional and educational planning except the two hours daily
that were set aside for such.

A few restrictions or limitations were placed on a
student's course-selection. For instance, a boy who thought
he might wish to be a vocational shop major could be rejected
if he failed to pass the test called Prognostic Mechanical
Ability in the ninth grade. Those who passed the test but
who did unsatisfactory work in the class might be required
to change. This was done through the teacher with the con-
sent of the student, the homeroom teacher, the grade
counselor, parent, and department head.

A similar process was followed in the commercial and English departments. Two courses were offered in English: one called academic English and referred to as A English, the other called general English and more commonly termed G English. The former was required of students who intended to go to college.

Requirements for graduation from Richmond Senior High School were the completion of three majors, or one major and three minors.

On entrance to the high school at the tenth grade level, each pupil was given a handbook which described the educational offerings of the school, with information pertaining to the courses available, the activity of each course, and the requirements of each. For those students who did not readily fit into the pattern of school offerings, the school administration had attempted to find activities appropriate to their needs. Such a program was in line with the opinions of guidance authorities, such as Erickson, who has written:

A successful program-planning service should be considered as a continuous process carried on throughout a pupil's stay in school. It involves learning about the individual, helping the individual to learn about himself, providing a great deal of educational and

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vocational information, and providing adequate counseling services so that planning is carefully and skillfully done. All these factors are important in helping pupils plan programs.

At Richmond High School, the homeroom teacher had a file on all students in his group, which was a detailed record of each individual from his first entrance into the Richmond schools. These cumulative folders contained extensive information concerning health, extra-curricular activities, standardized test data, school marks, family background, personal data, teacher comments, etc. Thus a staff member had access to all available information regarding every student in school. Counselors particularly made use of this information.

Standardized tests such as the Kuder Vocational, the Stanford Arithmetic, Science Reading, General Science, mental ability tests—the Otis and California Maturity—and the Detroit General Ability Test were given as routine at the senior high school level. In addition, any student, parent, or staff member had the privilege of requesting that a certain type test or test battery be given an individual student. Periodically tests were administered for those interested in specific areas, such as nurses' aptitude, vocational, stenographic, mechanical, etc.

It was within this area of testing at the senior high school level that this study was written. Working on the
premise that although considerable information was already recorded for each student, still more would be valuable in the counseling field, particularly data regarding specific vocational assets and liabilities. It had also been recognized that the individuals concerned needed to know these personal data.

Three tests were administered to a group of students at Richmond Senior High School during the Fall Semester 1949-1950. Included in this test battery were the Kuder Preference Record-Vocational, the Kuder Preference Record-Personal, and the SRA Primary Mental Abilities.

I. THE PROBLEM

Statement of the problem. It was the purpose of this study (1) to discover the personality traits of each student and compare these with expressed vocational interests, (2) to discover the mental ability factors of each student and compare them with expressed vocational interests, (3) to compare the mental ability factors with the results of a standardized I. Q. test, (4) to examine the test results to find out if there were any comparisons between interests in chosen vocational fields and interests found in the test data, (5) to compare the percentile rank of pupils on the Stanford Arithmetic test with their percentile rank on the Number factor of the SRA Primary Mental Abilities, (6) to compare the major-
minor concentration areas in English with the Verbal-Meaning and Word-Fluency factors of the SRA Primary Mental Abilities, (7) to discover if any correlation exists between personality and physique, (8) to discover tangible data for use in the counseling situation, and (9) to get information concerning how the school was functioning in regard to group testing.

**Importance of the study.** Heretofore, the Kuder Preference Record-Vocational had been given the eleventh graders at Richmond Senior High School on a group basis, with the Kuder Preference Record-Personal and the SRA Primary Mental Abilities on an individual basis where there was a felt need. It was decided as an experiment to give all three of the tests on a group basis in order that more information would be available regarding each student.

It was felt that this additional information would provide more tangible data for use in the vocational and educational counseling program, and as a result the counselors would be able to counsel more wisely.

It was further believed that the data obtained would help the administration determine whether the school was functioning adequately in its program of group testing as it was utilized in individual guidance.

**II. LIMITATIONS OF THE STUDY**

This investigation will be limited to the following
conditions:

1. The group tested, during the Fall Semester 1949-1950, at Richmond Senior High School included all 11A's and only those 12B's who had not previously taken the Kuder Preference Record-Vocational.

2. Data were recorded for only those 107 students who completed the test battery.

3. The tests administered were the Kuder Preference Record-Vocational, the Kuder Preference Record-Personal, and the SRA Primary Mental Abilities.

4. All data, except the test results, were recorded from the cumulative records of each testee.

5. The school system involved was interested only in tangible data which could be used in the individual counseling situation.

6. Parts of this study were recorded on a group basis to be forwarded to Science Research Associates to be used by the test constructors in their research.

III. DEFINITIONS OF TERMS USED

Vocational guidance. Vocational guidance is that part of the guidance program that helps the student plan his career. The National Vocational Guidance Association states that vocational guidance is "the process of assisting the individual to choose an occupation, prepare for it, enter
upon and make progress in it."²

**Counseling.** "Counseling is the process of helping a pupil through interviews and other individual relationships, to solve his problems and improve his planning."³

**Kuder Preference Record-Vocational.** This is an interest "test" which gives clues to an individual's vocational likes and dislikes. Scores on the Preference Record are obtained in ten general areas: Outdoor, Computational, Literary, Musical, Clerical, Social Service, Artistic, Scientific, Mechanical, and Persuasive.⁴ To simplify terminology, this test may be referred to as the Vocational.

**Kuder Preference Record-Personal.** This consists of a new series of preference scales intended to supplement the Kuder Preference Record-Vocational. The five new scales are relatively independent of each other and are as follows: Sociable, Practical, Theoretical, Agreeable, and Dominant.⁵ The term "Personal" will be used in parts of this investigation to designate this test.

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³ Erickson, op. cit., p. 8.


⁵ Loc. cit.
Personality. The sum total of those personal traits as revealed from the above mentioned preference scales.

SRA Primary Mental Abilities. "The SRA Primary Mental Abilities for Ages 11 to 17 are designed to measure several of the mental abilities that have been found through the method of factor analysis." The five separate abilities obtained are verbal-meaning, space, reasoning, number, and word-fluency. For simplicity, this test is referred to as the P.M.A.

Body type or physique. The classification of an individual into one of three categories based upon the anthropometric measurement of the body. This measurement included height and size of the wrist.

Major-minor concentration area. This was interpreted to mean the fulfilling of subject requirements as established by Richmond Senior High School. To major in an area meant satisfactory completion of six semesters in that department. To minor in a subject meant satisfactory completion of four semesters in that field.

IV. EXPLANATION AND ORGANIZATION

Chapter II points out the methods and procedures used

in conducting this study, with a brief explanation of past methods and procedures where a word of explanation is valuable.

Chapter III reports and interprets the findings and Chapter IV contains a summary, conclusions, and recommendations.
CHAPTER II

METHODS AND PROCEDURES

Selection of the group to be tested. Since it was customary for all 11A's to take the Kuder Preference Record-Vocational, it was decided to use that group for this study. Added to this group were those 12B's who had not previously been given this test. There was a total of 116 students at the beginning of the study, and at its completion there were 107.

Collection of data. Under the supervision of the director of testing at Richmond Senior High School, with the writer's assistance, the new form of the Kuder Preference Record-Vocational, revised August, 1949, was used for the first time. Along with this form, the Kuder Preference Record-Personal, revised April, 1949, and the SRA Primary Mental Abilities were given.

Individual profiles in duplicate were made of each test for every student concerned. Through the physical education teachers, under the direction of the writer, the physical data including the wrist measurement and height were collected. For this part of the study only 94 students were available. From this information, the group was classified into three types:
small frame, medium frame, and large frame.

Along with the test results and the physical measurements, the Otis I. Q. scores, obtained in the ninth grade, and the results of the Stanford Arithmetic Test, administered in the 11B, were recorded for each pupil.

In addition a record was made of the curriculum each student was following. This record included the major-minor areas of concentration.

A special form was constructed titled "Profile Chart for Kuder Test Battery." This resulted in an individual data sheet containing information compiled on each student. A sample copy will be found at the end of this study.

**Time involved for administering tests.** On the afternoon of registration day at the beginning of the fall semester 1949-1950, the students involved were to be given the Kuder Preference Record-Vocational. It was hoped that since school was not in session at least one of the series of tests could be completed. This did not prove to be the case.

It was customary for group tests to begin during the thirty-minute homeroom period whenever it would not interfere with school clubs, meetings, assemblies, etc. This meant that the test schedule was spread out over a long period of time, since from time to time only one day weekly could be set aside for administering tests.
Inasmuch as the school did not maintain study halls, each student was required to be absent from the classroom in order to complete a test.

For the 107 students concerned, the over-all testing period involved covered from September 1, 1949, to January 20, 1950. Approximately five months were needed because of absenteeism, a special meeting, make-up work for a class, and the fact that in some cases, it was necessary to retest if the score did not fall within the limits as established by the test constructors. The fact that only a few students could be tested at the same time also prolonged the testing period.

**Scoring of tests.** Scoring of the tests was done principally by the testing director and the writer with assistance from student clerical help in the testing division. To insure accuracy, all tests were rechecked.

**Interpretation of profile sheets.** Each profile sheet was carefully observed to ferret out any information which might have been of value to the student, the counselors, and the testing division.

In previous years a student could contact the staff counselor for an interpretation of his Kuder Preference Record-Vocational. Responsibility for seeking the interpretation was left to the student. It was hoped that with the added information recorded on a single compact sheet, a
method might be devised whereby interpretations at least on a group basis could be made by the counselors in homerooms.

Interpretation of data. The task of interpreting the data began after completion of the profiling. First, the results of the Kuder Preference Record-Vocational and Kuder Preference Record-Personal were compared on a group basis. This was followed by a comparison of the Kuder Preference Record-Vocational and the SRA Primary Mental Abilities; the Otis I.Q. and the SRA Primary Mental Abilities; the Kuder Preference Record-Vocational and major-minor concentration areas; the Stanford Arithmetic Test and the Number factor of the SRA Primary Mental Abilities. Also, a comparison was made between the English majors and minors and the Verbal-Meaning and Word-Fluency factors of the Primary Mental Abilities. The last data compared were those of the Kuder Preference Record-Personal and the anthropometric measurements.

Tables for each of these comparisons will appear later in the study.
CHAPTER III

REPORTING AND INTERPRETING THE FINDINGS

Comparison of Vocational with Personal. The Kuder Preference Record-Vocational is a vocational interest inventory in ten fields which gives clues to an individual's vocational likes and dislikes, and the Kuder Preference Record-Personal is a preference scale containing five personal qualities.

The results of an attempt to compare the findings of these two tests were shown in Table I and Table II.

The school was interested primarily in data to be used in individual counseling; therefore, little information was reported on a group basis.

A comparison on an individual basis seemed more valuable in this particular study. On the Profile Chart on the Kuder Test Battery was recorded in percentile rank the expressed interest in all ten vocational areas, as well as the five personal traits on a percentile basis. These tangible data would be valuable to the student and the counselor.

The counselors could readily make use of this information as it was generally agreed that certain personality characteristics go with certain vocations.

With the aid of the Examiner Manual for the Kuder Preference Record-Vocational, the counselor could give the
<table>
<thead>
<tr>
<th>Expressed interests</th>
<th>Personality traits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soci-</td>
</tr>
<tr>
<td></td>
<td>able</td>
</tr>
<tr>
<td>Outdoor</td>
<td>4</td>
</tr>
<tr>
<td>Mechanical</td>
<td>2</td>
</tr>
<tr>
<td>Computational</td>
<td>0</td>
</tr>
<tr>
<td>Scientific</td>
<td>0</td>
</tr>
<tr>
<td>Persuasive</td>
<td>3</td>
</tr>
<tr>
<td>Artistic</td>
<td>4</td>
</tr>
<tr>
<td>Literary</td>
<td>1</td>
</tr>
<tr>
<td>Musical</td>
<td>6</td>
</tr>
<tr>
<td>Social service</td>
<td>2</td>
</tr>
<tr>
<td>Clerical</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>
student considerable information regarding vocations in his expressed interests.

For Table I each testee's first expressed vocational interest and the leading personal trait were recorded.

Table II shows each individual's three highest expressed vocational interests as compared with his three leading personal traits.

Table I shows 11 students with a first vocational interest in outdoor activities, with 4 indicating a leading personal trait of sociable, 5 in practical, 1 in theoretical, 1 in agreeable, and 0 in dominant.

Of the 13 pupils who expressed a first vocational interest in mechanical activities, there were 2 with a leading sociable characteristic, 5 in practical, 1 in theoretical, 0 in agreeable, and 5 in dominant.

Nine students were found to have a first expressed vocational interest in computational. No one in this group had sociable as a leading personal trait, 1 had practical, 2 had theoretical, 3 had agreeable, and 3 had dominant.

In the scientific area, there were 2: 1 with the practical trait and 1 with the theoretical trait.

Persuasive showed 10 students: 3 having sociable traits, 0 with practical, 3 with theoretical, 2 with agreeable, and 2 with dominant.

Fifteen students with an expressed vocational interest
TABLE II

THREE LEADING EXPRESSED VOCATIONAL INTERESTS COMPARED WITH THREE HIGHEST PERSONALITY TRAITS

<table>
<thead>
<tr>
<th>Expressed interests</th>
<th>Sociable</th>
<th>Practical</th>
<th>Theoretical</th>
<th>Agreeable</th>
<th>Dominant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>Mechanical</td>
<td>6</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td>Computational</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>Scientific</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Persuasive</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>10</td>
<td>8</td>
<td>42</td>
</tr>
<tr>
<td>Artistic</td>
<td>5</td>
<td>8</td>
<td>8</td>
<td>11</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>Literary</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Musical</td>
<td>12</td>
<td>11</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>44</td>
</tr>
<tr>
<td>Social service</td>
<td>7</td>
<td>11</td>
<td>11</td>
<td>3</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Clerical</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>Totals</td>
<td>65</td>
<td>74</td>
<td>66</td>
<td>55</td>
<td>61</td>
<td>321</td>
</tr>
</tbody>
</table>
in Artistic activities had a total of 4 with sociable, 3 in the practical category, 3 in theoretical, 5 in agreeable, and 0 in dominant.

In the literary field, there were 5: 1 with sociable traits, 0 in practical or theoretical, 3 in agreeable, and 1 in dominant.

The musical interest led all fields with a total of 19 students, of whom 6 had sociable qualities, 5 practical, 3 theoretical, 5 agreeable, and 0 dominant.

Social service was second high with 17, of whom 2 showed sociable characteristics, 4 practical, 6 theoretical, 2 agreeable, and 3 dominant.

Six pupils were in the clerical category, with 2 in sociable, 0 in practical or dominant, and 2 each in agreeable and theoretical.

Of the five personal traits as recorded from this particular test, distribution was similar: sociable and practical each had 24 students, agreeable 23, theoretical 22, and dominant 14.

Table II attempted to compare each testee's three leading expressed vocational interests with his three outstanding personal qualities as specified by the test.

The outdoor category had a total of 28 pupils with 5 each in the sociable, theoretical, and dominant traits; 7 were in practical, and 6 were in agreeable.
Mechanical showed a total of 33 students, of whom 6 had sociable traits, 9 had practical, 4 had theoretical, 3 had agreeable, and 11 had dominant.

In the field of computational with 30 pupils, 3 were found to have sociable traits, 5 each in practical and agreeable, 10 in theoretical, and 7 in dominant.

From the scientific area containing 16 pupils, 2 were discovered to have sociable traits, 5 each in practical and theoretical characteristics, 1 in agreeable and 3 in dominant.

The persuasive category was second high with 42 students, 10 each in sociable and agreeable, 9 in practical, 5 in theoretical, and 8 in dominant.

Expressed vocational interest in artistic areas with a total of 37 had 5 pupils each in sociable and dominant, 8 each in practical and theoretical, and 11 in agreeable.

Twenty-five were discovered to have literary interest, of whom 8 had sociable traits, 5 each had practical and dominant, 4 had theoretical and 3 had agreeable.

The musical category led all others with a total of 44 students, with 12 in sociable traits, 11 in practical, 7 in theoretical, 9 in agreeable, and 5 in dominant.

Social service with a total of 40 pupils was the third highest category, with 7 in sociable, 11 each in practical and theoretical, 3 in agreeable, and 8 in dominant.
From the clerical field of 26 students, there were 7 each in sociable and theoretical, and 4 each in practical, agreeable, and dominant.

Of the five personal traits as recorded from this test, it was found that 74 students had the practical trait, 66 theoretical, 65 sociable, 61 dominant, and 55 agreeable.

As previously stated, for Richmond Senior High School, the data obtained in this research on the vocational-personal factors were considered more valuable in the vocational counseling situation on an individual basis. The results of these two tests were recorded on each student's profile chart on Kuder test battery.

Comparison between vocational and P.M.A. Tables similar to those in the vocational-personal were devised for this part of the study. Once again it was felt that since vocational guidance was totally an individual relationship at Richmond Senior High School, more value would be obtained from the test data on individual profiles than on a group basis.

To be efficient and to gain satisfaction from a vocation, an individual requires certain mental abilities or patterns of abilities. The counselor can assist the student in matching his ability pattern and his expressed vocational interest.

The SRA Primary Mental Abilities are measures of intellectual ability, whereas, the Kuder Preference Record-
Vocational is a vocational interest inventory.

Table III and Table IV were submitted for an over-all picture of the 107 students and their expressed vocational interests and their mental abilities as revealed on the Kuder tests.

Table III included each individual's first expressed interest in a vocational field and his highest ranking trait of mental ability.

Two factors were noteworthy from this part of the study. One was that 59 of the 107 students concerned scored highest on the number area of the primary mental abilities. The other was the extreme in which only 6 ranked in the verbal-meaning category of the primary mental abilities.

The reason for the writer making note here of these two elements was the fact that verbal-meaning "is the ability to understand ideas expressed in words. It is needed in activities where one gets information by reading or listening. High ability in V is especially useful in such school courses as English, foreign languages, shorthand, history, and science."7

The English requirement at Richmond Senior High School was that all students had either a major or a minor in that department. Of those 107 students who participated in this study, 78 were English majors and 29 English minors, but only

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7 Science Research Associates.
TABLE III

FIRST EXPRESSED VOCATIONAL INTEREST COMPARED WITH HIGHEST FACTOR ON PRIMARY MENTAL ABILITIES

<table>
<thead>
<tr>
<th>Expressed interest</th>
<th>Verbal-Meaning</th>
<th>Space</th>
<th>Reasoning</th>
<th>Number</th>
<th>Word-Fluency</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Mechanical</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Computational</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Scientific</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Persuasive</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Artistic</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Literary</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Musical</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Social service</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Clerical</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>4</strong></td>
<td><strong>12</strong></td>
<td><strong>4</strong></td>
<td><strong>59</strong></td>
<td><strong>26</strong></td>
<td><strong>107</strong></td>
</tr>
</tbody>
</table>
6 of them ranked first in verbal-meaning. More will be said on this point later in the study.

Details also will be pointed out later regarding the number factor. It was found that 59 of the 107 participants were high in the number area, which was different from the results of the Stanford Arithmetic test administered to this same group.

Table III revealed that of the 9 pupils whose first expressed vocational interest was in the outdoor category, 0 scored highest in the verbal-meaning element of mental ability, but there were 3 in space, 1 in reasoning, 3 in number, and 2 in word-fluency.

In the mechanical area there were 15 students in two ability factors; 10 in number and 5 in word-fluency.

Computational revealed 1 in space, 6 in number, and 2 in word-fluency.

The scientific field had 2 pupils, both showing space as leading mental ability.

Twelve students expressed first vocational interest in persuasive activities, with 1 high in reasoning, 9 in number, and 2 in word-fluency.

The artistic area showed a total of 15 with 2 in space, 9 in number, and 4 in word-fluency.

Literary had 3 students with 1 high in verbal-meaning, 1 in space, and 1 in number.
### TABLE IV

**THREE LEADING EXPRESSED VOCATIONAL INTERESTS COMPARED WITH THREE HIGHEST FACTORS OF PRIMARY MENTAL ABILITIES**

<table>
<thead>
<tr>
<th>Expressed interests</th>
<th>Factors of Primary Mental abilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Verbal-Meaning</td>
</tr>
<tr>
<td>Outdoor</td>
<td>5</td>
</tr>
<tr>
<td>Mechanical</td>
<td>2</td>
</tr>
<tr>
<td>Computational</td>
<td>7</td>
</tr>
<tr>
<td>Scientific</td>
<td>3</td>
</tr>
<tr>
<td>Persuasive</td>
<td>10</td>
</tr>
<tr>
<td>Artistic</td>
<td>8</td>
</tr>
<tr>
<td>Literary</td>
<td>9</td>
</tr>
<tr>
<td>Musical</td>
<td>8</td>
</tr>
<tr>
<td>Social service</td>
<td>9</td>
</tr>
<tr>
<td>Clerical</td>
<td>9</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

*This total included cases in which students had identical scores on more than three factors. This accounted for the difference in total cases.*
Of the 19 who expressed musical as first vocational interest, 4 were high in verbal-meaning, 1 in reasoning, 8 in number, and 6 in word-fluency.

In the social service category containing 17 students, 1 was high in verbal-meaning, 1 in space, 1 in reasoning, 9 in number, and 5 in word-fluency.

The clerical interest area with 6 students showed 2 with space ability and 4 with number ability.

In the five personal traits specified in this test, it was found that 6 students indicated mental ability in verbal-meaning, 12 in space, 4 in reasoning, 59 in number, and 26 in word-fluency.

Table IV recorded each individual's first three expressed vocational interests and his three leading mental abilities as found in the SRA Primary Mental Abilities test.

In the outdoor category were found 25 students, of whom 5 ranked high in verbal-meaning, 7 in space, 5 in reasoning, 5 in number, and 3 in word-fluency.

The mechanical area had a total of 34 pupils with 2 high in verbal-meaning, 8 in space, 3 in reasoning, 15 in number, and 6 in word-fluency.

Thirty-seven testees were grouped in the computational field, with 7 ranking high in verbal-meaning, 6 in space, 7 in reasoning, 8 in number, and 9 in word-fluency.

There were 16 students in the scientific category,
with 3 showing verbal-meaning ability, 6 having space ability, and 2 ranking high in word-fluency ability.

In the persuasive category, there were 48 pupils, of whom 10 indicated high ability in verbal-meaning, 8 in space, 7 in reasoning, 15 in number, and 8 in word-fluency.

The artistic area had a total of 41 students, with 8 high in verbal-meaning and in space, 4 high in reasoning, 14 high in number, and 7 high in word-fluency.

Thirty-one were grouped in the literary field, having 9 individuals high in verbal-meaning, 4 in space, 6 in reasoning, 5 in number, and 7 in word-fluency.

Expressed vocational interest in musical totaled 44, with 8 students rating high in verbal-meaning, 6 each in space and reasoning, 15 in number, and 9 in word-fluency.

The social service category was second high in number with 45 students of whom 9 ranked high in verbal-meaning, 10 in space, 8 in reasoning, 12 in number, and 6 in word-fluency.

Clerical had a total of 24 students with 9 indicating ability in verbal-meaning, 5 high in space, 1 in reasoning, 6 in number, and 3 in word-fluency.

Of the five personal traits, the results revealed that 70 students indicated high ability in verbal-meaning, 68 were high in space, 50 were high in reasoning, 97 were high in number, and 60 were high in word-fluency.
Comparison of Primary Mental Abilities and a standardized I. Q. test.

Until rather recently intelligence has been considered a unitary trait. Research done during the past several years has demonstrated that intelligence can be better described in terms of several different abilities. By use of a statistical technique called "factor analysis," several different abilities have been found and described. These abilities have been given the name, "primary mental abilities."

An individual may score high in one primary mental ability and low in another. Students whose intelligence scores were the same may differ widely in specific intellectual abilities. Factor analysis has made it possible to measure separate abilities.

According to Science Research Associates, research was in progress to determine the correlation between the intelligence quotient obtained from a standardized test, the Otis I. Q., and the Primary Mental Abilities total quotient. Also, they wished to correlate the Otis I. Q. and combinations of factor scores on the Primary Mental Abilities.

The results of this part of the study were forwarded to Science Research Associates for use in their research.

While the Primary Mental Abilities did attempt to test mental faculties, the Otis I. Q. was a test for educational success or achievement.

8 Science Research Associates.
Correlations would necessarily be low, for the two tests measured different factors. Ordinary I. Q. tests, such as the Otis, did not test for the same mental factors that were included in the Primary Mental Abilities; neither did the Primary Mental Abilities include certain types of required information included in the Otis.

Table V, recorded the results of the Primary Mental Abilities by percentiles. Again, the number factor appeared great, in that 72 of the 107 students participating in this study scored above the seventy-fourth percentile.

Table VI showed the results of the two tests. The range appeared unusually wide for 107 students. As already reported, the number factor of the Primary Mental Abilities may have skewed the curve of distribution.

At this point, it also indicated that it would be well for our school to continue with a standardized I. Q. test if the intelligence quotient was primary.

Comparison of vocational and major-minor concentration areas. The profile chart on Kuder test battery was used in this part of the study. On each student's profile chart was recorded in percentile rank the ten vocational interests as specified in the Kuder Preference Record-Vocational. Under "M. M. Corr." was recorded the majors and minors.

Table VII tried to show the comparison between the students three top ranking expressed vocational interests and the
### TABLE V

**NUMBERS AND PERCENTILE RANK OF STUDENTS ON FACTORS OF PRIMARY MENTAL ABILITIES**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Percentile rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75-99</td>
</tr>
<tr>
<td>Verbal-meaning</td>
<td>11</td>
</tr>
<tr>
<td>Space</td>
<td>25</td>
</tr>
<tr>
<td>Reasoning</td>
<td>9</td>
</tr>
<tr>
<td>Number</td>
<td>72</td>
</tr>
<tr>
<td>Word-fluency</td>
<td>44</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>161</td>
</tr>
</tbody>
</table>

*Percentile rank was taken from norms as established by the test constructors.
TABLE VI

NUMBERS AND QUARTILE RANK OF STUDENTS ON OTIS I. Q. AND SRA PRIMARY MENTAL ABILITIES

<table>
<thead>
<tr>
<th>Quartile Rank*</th>
<th>Number of pupils on Otis I.Q.</th>
<th>Number of pupils on P.M.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth quartile</td>
<td>22</td>
<td>59</td>
</tr>
<tr>
<td>Third quartile</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>Second quartile</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>First quartile</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
<td>107</td>
</tr>
</tbody>
</table>

*The source of quartile rank was the norms as established by the test constructors.
subjects they were taking as a major or a minor at Richmond Senior High School.

By high correlation was meant that a student had two fields in which the expressed vocational interest was similar to his major-minor concentration area.

Medium correlation was interpreted to mean that in one field the expressed vocational interest was similar to the major-minor concentration area.

Low correlation indicated no similarity between the expressed vocational interests and the major-minor concentration area.

Table VII was interpreted to indicate that of the 107 students participating in this study, 48, or 44.8 per cent, of their vocational areas were confirmed by the Kuder Preference Record-Vocational. This could mean that counseling had been adequate up to this point or that these students were aware of their assets and liabilities.

In the medium correlation group, 47 of the pupil choices, 44 per cent, seemed to be partially confirmed by this inventory. Since in each case one of the expressed interest areas was similar to the major-minor concentration area, it was interpreted to indicate that the students bases for deciding their courses was not totally in line with their expressed interests. Other determining factors seemed to be evident.

Some students may have taken courses under the influence
### TABLE VII

**NUMBER OF CORRELATIONS BETWEEN FIRST THREE EXPRESSED VOCATIONAL INTEREST AND MAJOR-MINOR CONCENTRATION AREAS**

<table>
<thead>
<tr>
<th></th>
<th>High Correlation</th>
<th>Medium Correlation</th>
<th>Low Correlation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students</td>
<td>48</td>
<td>47</td>
<td>12</td>
<td>107</td>
</tr>
</tbody>
</table>
of friends, there may have been parental pressure, they may have attempted to choose "snap" courses; or it might be possible that their interests were uncrystallized.

Emotional and intellectual capacities might preclude others from making favorable choices.

Need for more counseling with this group might be indicated.

The third column, low correlation, included 12, or 11.2 per cent, of the students involved in this study. It was interpreted to mean that there was no similarity between the expressed vocational interests and the choice of subject areas.

Some students, in fact, showed a wide difference, which indicated a need for a special type of individual guidance.

This might further indicate a need for a vocational inventory and more vocational information in the lower grades.

The possibility that some correlation might be found in the remaining 7 expressed vocational interests should not be entirely discounted. It may indicate that through counseling a student might become more familiar with his own capabilities.

Stanford Arithmetic test and the number factor of the Primary Mental Abilities compared. To graduate from Richmond Senior High School, every student was required to satisfactorily complete one course in mathematics.
Those students who took no mathematics prior to the Stanford Arithmetic test in the eleventh grade used the results of the test to determine whether they must enroll in senior mathematics or arithmetic review.

If a score of seventy was made on the test, they took senior mathematics. If the student scored between 68.5 and 69, he could request a retest. Should the score fall between 62 and 68, the student could review at his leisure and then be retested. Students who made less than 62 were required to take arithmetic review.

Experience had shown that after reviewing most of the students did make a passing grade on the retest. Generally, this was not true of those not required to review.

Those students who had taken mathematics prior to the Stanford Arithmetic test had to make a score of 70 or enroll in arithmetic review.

Table VIII showed the results of the Stanford Arithmetic test, which involved recall, and the number factor of the Primary Mental Abilities, which was based on recognition.

Scores tended to be higher on the number factor of the Primary Mental Abilities than on the standardized Stanford Arithmetic test. Of the 107 participants in the study, 72 were above the seventy-fourth percentile on the Primary Mental Abilities as compared with 15 on the Stanford Arithmetic test. Seventeen students were between the fifty-first and
### TABLE VIII

PERCENTILE RANK OF STANFORD ARITHMETIC TEST AND NUMBER FACTOR OF PRIMARY MENTAL ABILITIES

<table>
<thead>
<tr>
<th>Percentile rank*</th>
<th>Student total on Stanford test</th>
<th>Student total on number factor of P.M.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>75-99</td>
<td>15</td>
<td>72</td>
</tr>
<tr>
<td>51-74</td>
<td>33</td>
<td>17</td>
</tr>
<tr>
<td>26-50</td>
<td>46</td>
<td>12</td>
</tr>
<tr>
<td>1-25</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>107</strong></td>
<td><strong>107</strong></td>
</tr>
</tbody>
</table>

*The percentile rank was from the norms as established by the test constructors.
seventy-fourth percentile on the number factor, whereas there were 33 in that rank on the Stanford Arithmetic test. Between the twenty-sixth and fiftieth percentile on the number factor, there were 12 pupils, whereas, there were 46 in the same rank on the Stanford Arithmetic test. From the first to twenty-fifth percentile, there were 6 on the number factor and 13 on the Stanford Arithmetic test.

From this part of the study, the results might indicate that the particular students involved were more successful on recognition than on recall, and that perhaps they were capable of doing better work in arithmetic than the results revealed.

If the number factor proves to be reliable in its present form, these results may be a challenge to the teaching of arithmetic in our schools.

It would seem from a psychological point of view that the number factor in the test was too easy, having too many of the same type of problem with the same degree of difficulty.

Future studies may be more revealing than one usage of a test with a small number of students.

Comparison of English majors and minors and the verbal-meaning and word-fluency factors of the P. M. A. As reported earlier, all students completed a major or a minor in English. Since five semesters of English were required on all school courses, to complete a major meant that a pupil needed only
one more semester of English. To many this might have appeared easy. The completion of four semesters meant a minor in English.

Of the 107 students tested, 78 of them were majoring in English, and 29 minoring in that area.

Table IX attempted to present the percentile rank of the English majors and minors in verbal-meaning and word-fluency factors of the P. M. A.

English majors had 9 students above the seventy-fourth percentile in the verbal-meaning factor. There were 34 between the fifty-first and seventy-fourth percentile; 22 students were between the twenty-sixth and fiftieth percentile; and 13 were between the first and twenty-fifth percentile.

Of those students minoring in English, 2 ranked above the seventy-fourth percentile; 15 ranked between the fifty-first and seventy-fourth percentile; 9 ranked within the twenty-sixth to fiftieth percentile; and 3 ranked below the twenty-sixth percentile.

For the word-fluency factor, there were 29 majors who ranked above the seventy-fourth percentile. Eighteen of them ranked within the fifty-first to seventy-fourth percentile; and 3 ranked below the twenty-sixth percentile.

Of the students who were completing a minor in English, 15 ranked above the seventy-fourth percentile in the word-fluency factor. Five were ranked between the fifty-first
### Table IX

**Numbers and Percentile Rank of English Majors and Minors on Verbal-Meaning and Word-Fluency Factors of Primary Mental Abilities Test**

<table>
<thead>
<tr>
<th>Percentile rank*</th>
<th>English majors</th>
<th>English minors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Verbal-meaning</td>
<td>Word-fluency</td>
</tr>
<tr>
<td>75-99</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>51-74</td>
<td>34</td>
<td>18</td>
</tr>
<tr>
<td>26-50</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>1-25</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>78</strong></td>
<td><strong>78</strong></td>
</tr>
</tbody>
</table>

*The percentile rank was taken from the author's established norms.*
and seventy-fourth percentile; 6 were within the twenty-sixth to fiftieth percentile; and 3 were below the twenty-sixth percentile.

Since verbal-meaning was the ability to understand ideas expressed in words, and word-fluency was the ability to write and talk easily, Table IX might be interpreted to indicate that a great many students should not become involved in vocations involving these factors.

These data might also be interpreted as a reflection on the possibility of attaining an easy major in English.

There also was the possibility that success was difficult to attain on this test.

The writer recognizes the fact that too few cases were used to substantiate these tentative findings.

It had been noted in the past that mid-year pupils usually did not score as high as others in interest or in school marks. This might be one element of explanation for the low correlation.

However, until more data are compiled and norms established, this phase of the study may have served only to assist the authors in their research.

Comparison between the personal and body build. The writer made a special project of this section of the study. The Kuder Preference Record-Personal consisted of a series of preference scales including:
1. **Sociable** which was an expressed preference for activities involving people, taking the initiative for personal activities of a sociable nature.

2. **Practical** which was a preference for practical problems and everyday affairs.

3. **Theoretical** which was a preference for thinking, speculating, and philosophizing.

4. **Agreeable** which was a preference for pleasant and smooth personal relations free from conflict.

5. **Dominant** which was a preference for activities in which authority and power were used.

Of the five possible personality traits, only the three in which each student scored highest were used.

Before a decision was reached as to what physical measurement would be used, extensive reading was done to get authorities' viewpoints on the possible correlations between personality and physique.

Stagner\(^9\) writes that even the Greeks attempted to evolve classifications based upon physical appearance which would also correspond to distinctions in personality. "Aristotle is said to have written a treatise on physiognomy (predicting personality pattern from facial appearance) and Hippocrates tried to

---

connect temperamental types with an excess of some bodily fluid.\textsuperscript{10}

Shaffer\textsuperscript{11} points out that from time immemorial a tradition has existed that persons of a certain body type, build, or habits show characteristic traits of personality. Usually the distinction is drawn between the fat type of body structure and a thin tall type. This tradition asserts that the round body type indicates the good mixer, the diplomat, and the leader. Thin men are alleged to be moody, introspective and given to solitude.

Woodworth\textsuperscript{12} states that the individual's physique is certainly a factor in his personality. The mere size of a person affects his attitude toward other people and their attitude toward him, though the big fellow is not always inclined to be dominant nor the little one submissive. Muscular development and "looks" also have their effect.

There is reason for believing "that close enough relationships can be established between physique and personality traits so that eventually body build may be used as a short

\textsuperscript{10} \textsuperscript{Loc. cit.}

\textsuperscript{11} \textsuperscript{Laurance Frederic Shaffer, The Psychology of Adjustment (New York: Houghton Mifflin Company, 1936), p. 341.}

\textsuperscript{12} \textsuperscript{Robert S. Woodworth, Psychology (New York: Henry Holt and Company, 1940), p. 168.}
cut to personality analysis.\textsuperscript{13}

Hooton\textsuperscript{14} continues by saying that if the physical, mental and temperamental characteristics of a person are known, it is possible to predict within certain limits his fitness for various tasks, his ability in performance under different conditions—in other words, the quality of his behavior.

Richmond\textsuperscript{15} states that bodily type is correlated with personality type. She reports that the narrow-chested, slender type tends to be a sensitive, shut-in person, while the full-bodied type is emotional and given to behavior that might be described as temperamental.

The work of Cleeton and Knight as reported in The Measurement of Man\textsuperscript{16} shows a correlation of exactly zero between personality and physique. One hundred and twenty-two physical measurements were considered in testing the hypothesis that judgment, intelligency, frankness, will power, etc., are revealed by various physical characteristics. Ratings were made by intimate associates and pooled in such a manner as to yield


\textsuperscript{14} Loc. cit.


an unusually reliable index of those traits.

"The correlations between various facial measurements and the Thorndike three-hour intelligence examination for high school seniors and college students hover around zero."\(^{17}\)

Hull and Evans\(^{18}\) carefully measured the precise degree of convexity of profiles of twenty-five university sorority members. Each member rated the others, and these character-traits were correlated with measurements of convexity. The results were very close to zero.

The Measurement of Man summarized its findings thus, "the writer is quite prepared to see his audience somewhat crestfallen and disillusioned at the trend toward negative evidence manifest throughout our discussion of the relation between physical and mental development."\(^{19}\)

Paterson\(^{20}\) collaborated in a study of traits characteristic of blondes and brunettes and found little correlation, which is at complete variance with Blackford's generalizations.

Dr. Katherine M. Blackford's study is most the extensive in the United States concerning blonde and brunette

\(^{17}\) Loc. cit.
\(^{18}\) Ibid., p. 127.
\(^{19}\) Ibid., p. 169.
\(^{20}\) Ibid., pp. 123-4.
characteristics. "This investigation covered a period of several years, and involved careful examination of thousands of persons. Findings showed that blondes tend to be positive, optimistic, aggressive, changeable, quick-acting, and variety-loving. Brunettes, on the other hand, were found to be more dependable, thoughtful, cautious, and conservative."21

Havelock Ellis' study in England showed that blondes were generally of more restless temperament, more energetic, and inclined to dominate their fellows. In summing up his findings, Ellis reported, "Men of action tend to be fair, while men of thought have a tendency to be dark. In virtually all occupations, the more intellectual persons showed a darker index of pigmentation."22

Authorities were also read to arrive at the selection of criteria for body typing.

Mohr and Gundlach23 used the body types set up by Kretschmer, and examined 254 inmates of Joliet Prison in Illinois. Their results supported Kretschmer's physique types of pyknic, asthenic and athletic.

22 Ibid., p. 32.
A more recent typing was done by Dr. E. A. Hooton of Harvard and a group of anthropologists who worked with the Chemical Warfare Service and the Massachusetts Institute of Technology. It was the first big study of its kind to be made by the United States government. Heads of over 3,000 soldiers were measured to find the most comfortable gas-mask size. As a result "the average head among army men had a face length, from tip of chin to nose depression between the eyes, of about five inches; from temple to temple, not quite six inches; and face depth, from tip of nose to ear passages of about four inches. Five normal and five unusual head sizes were established by correlating principal measurements representing breadth, depth, and length of face."\(^{25}\)

Sontheimer\(^{26}\) reported on the three types of human personality as listed by Dr. Sheldon, who had devoted almost twenty-five years to study of the relationship between personality and physique.

"The most recent and by far the most intensive scientific study in the field of body classification has been conducted by William H. Sheldon of Columbia University. The


\(^{25}\) Loc. cit.

initial study was concerned with the detailed classification of human physique, and continued from there to associate the many physical characteristics with those of temperament.\textsuperscript{27}

He studied photographs of 4,000 college students and found that body types seemed to classify themselves according to three dominant components—endomorphy, mesomorphy, and ectomorphy.

The writer made no attempt to delve into such detailed measurements for body types; consequently, the criteria selected for use in this study were the wrist measurement and height of the 94 available students.

Results of these anthropometric measurements classified the subjects into small frame, medium frame, or large frame.

Table X listed the three classifications for girls, while Table XI showed the classification for boys.

The three leading characteristics of each student as compiled from the Kuder Preference Record—Personal and body build were recorded in Table XII.

Table XII showed that 10 students were classified as small frame (4 girls and 6 boys), 53 were classified as medium frame (19 girls and 34 boys), and 31 were classified as large frame, (16 girls and 15 boys).

The three leading personal factors for each of the 94

\textsuperscript{27} Willgoose and Rogers, \textit{loc. cit.}
## TABLE X

**ANTHROPOMETRIC MEASUREMENTS OF GIRLS CLASSIFIED INTO SMALL FRAME, MEDIUM FRAME, OR LARGE FRAME**

<table>
<thead>
<tr>
<th>Height</th>
<th>Small frame Wrist size</th>
<th>Medium frame Wrist size</th>
<th>Large frame Wrist size</th>
</tr>
</thead>
<tbody>
<tr>
<td>5'1&quot;</td>
<td>Less than 6&quot;</td>
<td>5 1/2&quot; to 5 3/4&quot;</td>
<td>Over 5 3/4&quot;</td>
</tr>
<tr>
<td>5'2&quot;</td>
<td>Less than 6&quot;</td>
<td>5 1/2&quot; to 5 3/4&quot;</td>
<td>Over 5 3/4&quot;</td>
</tr>
<tr>
<td>5'3&quot;</td>
<td>Less than 6 1/2&quot;</td>
<td>6&quot; to 6 1/2&quot;</td>
<td>Over 6 1/2&quot;</td>
</tr>
<tr>
<td>5'4&quot;</td>
<td>Less than 6 1/2&quot;</td>
<td>6&quot; to 6 1/2&quot;</td>
<td>Over 6 1/2&quot;</td>
</tr>
<tr>
<td>5'5&quot;</td>
<td>Less than 6 1/2&quot;</td>
<td>6&quot; to 6 1/2&quot;</td>
<td>Over 6 1/2&quot;</td>
</tr>
<tr>
<td>5'6&quot;</td>
<td>Less than 6 1/2&quot;</td>
<td>6&quot; to 6 1/2&quot;</td>
<td>Over 6 1/2&quot;</td>
</tr>
<tr>
<td>5'7&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 1/2&quot; to 6 3/4&quot;</td>
<td>Over 6 3/4&quot;</td>
</tr>
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<td>6 1/2&quot; to 6 3/4&quot;</td>
<td>Over 6 3/4&quot;</td>
</tr>
<tr>
<td>5'9&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 1/2&quot; to 6 3/4&quot;</td>
<td>Over 6 3/4&quot;</td>
</tr>
<tr>
<td>5'10&quot;</td>
<td>Less than 7&quot;</td>
<td>7&quot; to 7 1/2&quot;</td>
<td>Over 7 1/2&quot;</td>
</tr>
<tr>
<td>5'11&quot;</td>
<td>Less than 7&quot;</td>
<td>7&quot; to 7 1/2&quot;</td>
<td>Over 7 1/2&quot;</td>
</tr>
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### TABLE XI

ANTHROPOMETRIC MEASUREMENTS OF BOYS CLASSIFIED INTO SMALL FRAME, MEDIUM FRAME, OR LARGE FRAME

<table>
<thead>
<tr>
<th>Height</th>
<th>Small frame Wrist size</th>
<th>Medium frame Wrist size</th>
<th>Large frame Wrist size</th>
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<tr>
<td>5'2&quot;</td>
<td>Less than 6&quot;</td>
<td>6&quot; to 6½&quot;</td>
<td>Over 6½&quot;</td>
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<tr>
<td>5'3&quot;</td>
<td>Less than 6&quot;</td>
<td>6&quot; to 6½&quot;</td>
<td>Over 6½&quot;</td>
</tr>
<tr>
<td>5'4&quot;</td>
<td>Less than 6&quot;</td>
<td>6&quot; to 6½&quot;</td>
<td>Over 6½&quot;</td>
</tr>
<tr>
<td>5'5&quot;</td>
<td>Less than 6½&quot;</td>
<td>6½&quot; to 6 3/4&quot;</td>
<td>Over 6 3/4&quot;</td>
</tr>
<tr>
<td>5'6&quot;</td>
<td>Less than 6½&quot;</td>
<td>6½&quot; to 6 3/4&quot;</td>
<td>Over 6 3/4&quot;</td>
</tr>
<tr>
<td>5'7&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
<tr>
<td>5'8&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
<tr>
<td>5'9&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
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<tr>
<td>5'10&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
<tr>
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<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
<tr>
<td>6'</td>
<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
<tr>
<td>6'1&quot;</td>
<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
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<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
<tr>
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<td>Less than 6 3/4&quot;</td>
<td>6 3/4&quot; to 7&quot;</td>
<td>Over 7&quot;</td>
</tr>
</tbody>
</table>
TABLE XII

THREE LEADING PERSONAL FACTORS OF 94 STUDENTS ON KUDER PREFERENCE RECORD—PERSONAL COMPARED WITH ANTHROPOMETRIC MEASUREMENTS AS ESTABLISHED FOR THIS STUDY

<table>
<thead>
<tr>
<th>Traits</th>
<th>Small frame (10)*</th>
<th>Medium frame (53)*</th>
<th>Large frame (31)*</th>
<th>Total (94)*</th>
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<tbody>
<tr>
<td>Agreeable</td>
<td>5</td>
<td>30</td>
<td>17</td>
<td>52</td>
</tr>
<tr>
<td>Dominant</td>
<td>7</td>
<td>31</td>
<td>15</td>
<td>53</td>
</tr>
<tr>
<td>Practical</td>
<td>6</td>
<td>36</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Sociable</td>
<td>7</td>
<td>28</td>
<td>18</td>
<td>53</td>
</tr>
<tr>
<td>Theoretical</td>
<td>5</td>
<td>34</td>
<td>17</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>159</td>
<td>93</td>
<td>282</td>
</tr>
</tbody>
</table>

*Number of students
students were used, and it was found that of the 10 students in the small frame group, 7 pupils had the dominant and 7 had the sociable characteristics as the leading trait; 6 had the practical trait as highest; 5 had the agreeable characteristic, and 5 had the theoretical characteristic as the leading trait.

Of the 53 classified as medium frame, 36 were found to have the practical trait; 34, the theoretical; 31, the dominant; 30, the agreeable; and 28, the sociable.

In the large frame grouping of 30 students, 26 had practical characteristics, 18 had sociable, 17 had agreeable, and 17 had theoretical while 15 had dominant.

Table XII also showed that any correlation between personality and body build of the 94 students involved would be so low that the original hypothesis would be rejected.

This result was in keeping with most of the authorities the writer read for this part of the study. In other words, persons previously making a study on the same hypothesis reported correlation bordering on zero.

**Tangible data for use in the counseling situation.** Throughout this investigation, instances have occurred when it would seem that tangible data were apparent.

Before this study began, the Kuder Preference Record-Vocational had been the only test for guidance purposes that
had been administered on a group basis. The purpose of an interest test was to locate areas of interest to place an individual in a vocation he could do and would like the best.

In order to counsel wisely, it would seem that more data than could be derived from one vocational interest test would be necessary. From the additional tests administered, the counselors would also have information regarding personality traits and mental abilities.

Although tests would not serve as a finality, they could be used for diagnosis in that they would approximate the particular aspects of a person's capabilities.

They would also serve as means of helping an individual help himself and plan better for the future.

Authorities have concurred in the idea that good guidance and counseling lead to knowledge of one's self. This study indicates that some such knowledge could be attained with data from several tests.

School functioning in group testing. As has already been mentioned, this research indicates that administrative surveillance of the time element involved to complete a test battery would be helpful. Approximately five months were needed to administer three tests to 107 students, because of time allotted for such during a school day.

Another point noted was the great amount of time
required to check and score the test battery. It might indicate a need for efficient clerical assistance.

A third point indicated was that for counseling to function to a greater degree of success, the students needed to have an interpretation of the results of their tests.
CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

During the entire fall semester 1949-1950, a series of tests were given to the 11A's and some 12B's at Richmond Senior High School, Richmond, Indiana.

The series of tests included the Kuder Preference Record-Vocational, the Kuder Preference Record-Personal, and the SRA Primary Mental Abilities.

In addition to data compiled from these three tests, there were added the Otis I.Q. scores, the Stanford Arithmetic results, the major-minor concentration areas of the 107 students involved, and the body build or physique of each individual.

A form referred to as profile chart for Kuder test battery was devised upon which the necessary data were recorded in percentile rank.

Many students were interested in an interpretation of their test data and sought the assistance of the testing director and the writer for such.

As a result, during March, 1950, counseling had been undertaken with homerooms on a group basis. The individual profile chart was made available to the counselors for use in
the counseling situation. It proved to be a valuable chart as the student and the counselor could view the assets and liabilities as discovered in this particular test battery.

II. CONCLUSIONS

It appeared that the bulk of the vocational and educational guidance at Richmond Senior High School was done through the homeroom teacher, since the students referred to the counselors were those having schedule difficulties or those who had difficulty in deciding which course to follow.

This might indicate that only those students who had difficulties were referred to the counselors.

The writer realized that with only 107 students participating in the study and with some new tests being used, comparisons of the data compiled could serve only as indicators.

If we assume that the results of this investigation were reliable, it would seem late in the educational process to recommend program revisions to channel students into new or different lines if the test battery were administered to 11A's and 12B's. Maximum value would be derived from this information if the tests were given in earlier years.

Conclusions of the study indicate that:

1. The results of the comparison between the Kuder Preference Record—Vocational and Personal were of more value
to the school when comparisons were done on an individual basis.

2. The results of the comparison between the Kuder Preference Record-Vocational and the SRA Primary Mental Abilities were more valuable on an individual basis.

3. The results of the comparison between the first three expressed vocational interests as discovered by the Kuder Preference Record-Vocational and the major-minor concentration areas of the 107 students evidenced a need for more vocational information and vocational guidance.

4. The results of the comparison between the Primary Mental Abilities and the Otis I.Q. test were low due to the different factors being tested. The Primary Mental Abilities scores were higher, which might possibly have been due to the number factor. It was felt the Primary Mental Abilities was a valuable test in that its purpose was to test individual mental abilities. Students had never been informed of I.Q. results, whereas, the Primary Mental Abilities might test individual mental factors which could be discussed with them.

5. The low results of the comparison between the number factor of the Primary Mental Abilities and the Stanford Arithmetic test may have been attributed to the difference in requirements for success.

6. The results of the comparison between the English major or minor concentration area and the verbal-meaning and
word-fluency factors of the Primary Mental Abilities might have been due to the fact that although all students were majoring or minoring in English, their low achievement might indicate a need for a more practical, everyday English course in earlier years in which more emphasis would be placed on these two factors. Further testing would be required to substantiate this.

7. The results of the low comparison between the Kuder Preference Record-Personal and body build might be attributed to the few cases involved. However, these results were in line with reports of similar studies by authorities.

III. RECOMMENDATIONS

The following suggestions were submitted as a result of this study:

1. Group counseling began on an experimental basis with the profile chart on Kuder test battery during March, 1950 in the homerooms. It was recommended that in the future, counselors be relieved of homeroom assignments to discuss test results on a group basis.

2. It was recommended that counselors spend more time on individual vocational and educational guidance with their respective groups. The suggestion was offered that an attempt be made to interview each counselee at least once per year.

3. The administration of this test battery consumed
approximately five months. In order to expedite early completion, scoring and interpretation of the tests, it was recommended that time be set aside to administer the tests at the beginning of each semester.

4. It was recommended that investigation be made to discover any reasons for low results of the comparison between English majors and minors and the verbal-meaning and word-fluency factors of the Primary Mental Abilities.

5. It was recommended that use of the profile chart on Kuder test battery be continued as it recorded all data on a compact sheet.

6. It was recommended that additional vocational information and guidance be given in earlier years as well as at the high school level.

7. It was recommended also that a mental abilities test similar to the Primary Mental Abilities test be given in the lower grades. A teacher, with the knowledge of a pupil's stronger areas, could devote more time helping him achieve success in his weaker ones.

The writer wished to reemphasize the fact that this is a relatively small study in one high school. No claim is made that these results would always be true.

Continued use of this test battery over a period of time would serve as more than indicators.
BIBLIOGRAPHY

A. BOOKS


B. PERIODICAL ARTICLES


C. OTHER PUBLICATIONS


# Profile Chart on Kuder Test Battery

<table>
<thead>
<tr>
<th>Name</th>
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- PMA Personal Voc.  
- Math.  
- STAF. M. M.  

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**Comments**   

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