Summer 1960

The Comparability of a Scholastic Aptitude Test and a Study Skills Test for the Prediction of Student Grade Point

Dorth Hibbs
Fort Hays Kansas State College

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THE COMPARABILITY OF A SCHOLASTIC APTITUDE TEST
AND A STUDY SKILLS TEST FOR THE
PREDICTION OF STUDENT GRADE POINT

being

First study
A Thesis Presented to the Graduate
Faculty of Fort Hays Kansas State College
in Partial Fulfillment of the Requirements
for the Specialist in Education Degree

by

Dorth Hibbs, B.S., M.S.
Fort Hays Kansas State College

Date July 18, 1960

Approved
Major Professor

Approved
Chairman, Graduate Council
ACKNOWLEDGMENTS

The author wishes to express his appreciation to the people who have given their time and assistance to the development of this field study. The writer is especially indebted to his advisor, Dr. Emerald V. Dechant, and to Dr. David E. Proctor for his statistical assistance throughout the study. Also, to the other members of the graduate committee, Dr. C. Charles Clark and Dr. Cecil R. Cain for their advice and helpful suggestions.

Appreciation is also extended to the members of the 1959-60 Sophomore Class who cooperated in the testing program, and to the Registrar of the College, Standlee V. Dalton, for his assistance in gathering student grade point averages.

Further, the writer wishes to acknowledge the assistance received from previous investigators and their studies on the tests used for this thesis.

D. H.
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</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

I. NEED FOR STUDY

For the high school student who wishes to continue his education there always has been a problem of helping the student determine his potential abilities. What information should be gathered about the student which will give college advisors the best estimate of the student's future college success? This is a question that has been asked repeatedly, and one which has been answered in different ways. Generally, it has been shown through research that a student's high school grades are the best predictor of college success. For the majority of entering college freshmen this may be true. For the high school student who has ability, but lacks motivation or has inadequate study skills, high school grades may have little predictive value.

Thus, in addition, college entrance examinations generally are given to entering college freshmen. The results of these examinations have given advisors additional information about the student's achievement in certain subject areas. In some instances it may be found that the student is deficient in English or mathematics. If and when this is the case
the student may be required to take a basic or remedial course before being permitted to enroll in a regular freshman English or mathematics class.

The scores obtained from these entrance examinations plus the student's expressed interests are used by advisors in helping the student plan his entire college course of study. As an end result the test scores may help to estimate the student's potential for achievement in various academic areas.

The freshmen tests at Fort Hays Kansas State College are so used. They include: The School and College Ability Test, which gives an estimate of ability to deal with words and concepts, and with numbers, and the Barrett-Ryan English Test, which indicates achievement in the various areas of English. Some of the areas in English tested include: The use of proper parts of speech, the construction of complete sentences, the use of functional grammar, the use of proper punctuation, and the use of an adequate vocabulary. The results of these two tests are used to place the student in regular freshman English or mathematics classes or in remedial courses.

The test results also are used by advisors in assisting the student with his proposed course of study. The question of the value of the use of such placement tests may be
raised. Do placement tests really fulfill their function?

Educators generally have been satisfied with the predictive efficiency of the entrance examinations and the student's high school grades. However, the question still remains: If the student has poor study habits and poor grades, do these tests actually estimate the student's true potential or do they discriminate against him?

Some educators believe that continued poor grades in high school and college not always is caused by a lack of intelligence or motivation, but the lack of proper study skills. If this is the case, perhaps a study skills test would help determine the student's weaknesses and indicate more accurately the areas in which the student is deficient. Also, a study skills test plus the School and College Ability Test might be a better set of predictors of college success than the School and College Ability Test alone.

II. Related Research

Many studies have been made in past years relating high school achievement to college success, scholastic aptitude to college grades, and study skills to college grades. Although these studies differ from the present study it was felt that much valuable data could be obtained from the findings of previous investigators.

Van Tine, in his Master's thesis, found that college success could be predicted with a fair degree of accuracy
by using the student's high school records, scholastic aptitude tests, and achievement tests.¹

Stone found that there was a positive relationship between intelligence and scholarship, but that they were not perfectly related. He said:

Even were intelligence and potential scholarship to correlate perfectly, there would always be cases of disparity between intelligence and scholarship grades; for the idlers, the men with excessive extra-curricular burdens, the men with unhealthy bodies or unhealthy philosophies of life skew the correlation on the one hand; and the men with unusual pertinacity or disproportionate absorption in scholarly performance upset calculations on the other hand. Any statement regarding the validity of a test as a predictive measure is premature, or speculative, until the disparity has been measured and some of the factors related to the disparity ascertained.²

In a study by Carter, in which correlations were determined between intelligence tests and study skills tests and grades in college, it was found that:

When the amount of time used in testing is considered, it appears that the study skills test is perhaps more efficient for predicting grades than is the intelligence test.³


²Charles L. Stone, "Disparity Between Intelligence and Scholarship," Journal of Educational Psychology, 13:241, April, 1922.

Brown, a leader in the development of study skills tests, stated that:

The study skills test shows evidence of its relevance for counseling purposes, diagnostic testing, investigations of the educational process, and as a teaching aid in remedial or how-to-study courses.  

Salisbury, in a review of the Tyler-Kimber Study Skills Test, explains that the test scores on the American Counsel of Education Psychological Examination for College Freshmen, and the Tyler-Kimber Study Skills Test were correlated with each other and with grade point averages for three hundred and forty-three unselected junior-college graduates. The correlations between the Tyler-Kimber and the A.C.E. ranged from .51 to .65. Salisbury concludes: "The study skills test appears to give as good an indicator of academic success as the other two measures."

On the basis of past research the following inferences may be made:

(1) College success may be determined with a fair degree of accuracy by using high school records, scholastic

---


aptitude tests, and achievement tests.

(2) There is a positive relationship between intelligence and scholarship.

(3) When time is a major factor in testing programs, study skills tests are perhaps more efficient for predicting college grades than intelligence tests.

(4) The Tyler-Kimber is as good a predictor of college success as high school grades or scores from the A.C.E.

III. Selection of Appropriate Examinations

The two measuring devices used in this study were the School and College Ability Test and the Tyler-Kimber Study Skills Test.

The selection of the School and College Ability Test (referred to hereafter as the SCAT), was determined by several factors: (1) The test had been evaluated by many authorities as one of the best scholastic aptitude tests available; (2) the SCAT was being used for placement purposes at Fort Hays; (3) a previous study by Johnson\(^6\) gave correlations between the SCAT and grade point averages for the 1958-59 freshmen at Fort Hays and thus, the data from Johnson's study could be used for comparative purposes.

The selection of a study skills test which would best measure the student's study skills was a considerably more difficult task than the selection of the SCAT. Buros\textsuperscript{7} was consulted, and from this source a list of appropriate study skills tests was made. These tests were located in the files of the Guidance Department at Fort Hays, and evaluated for their possible use in the present study.

It was found that a majority of the study skills tests on the market today had been constructed for the testing of elementary and secondary school students. Thus, only two of the available tests contained norms for college use. Of these two possibilities, one test was a study-attitude survey or rating scale rather than a study skills test. Through a process of elimination the Tyler-Kimber Study Skills Test was chosen. (referred to hereafter as the Tyler-Kimber)

Although the Tyler-Kimber was selected for use in this study because of the above mentioned factors, the test had two main disadvantages. First, the test was published in 1937. Since that time the test publishers have made no attempt to revise the test or the norms. Secondly, the test, including instructions and administration, takes approximately

ninty minutes to complete. This in itself would perhaps make it a questionable examination for use in many testing programs unless the value of the results out-weighed the time consumed.

Nevertheless, the test seemed to be the best available for the purposes of this study. Although the evaluation was made in 1945 and consequently may be of limited value, McCall noted that the Tyler-Kimber Study Skills Test was the "best test of its kind." 8

IV. Statement of Problem

The purpose of this study was to discover the value of the School and College Ability Test and the Tyler-Kimber Study Skills Test in predicting grade point averages. In addition, it was intended to determine whether the two tests used jointly would lead to a better predictor of college success than just the scores of the SCAT alone.

In order to find answers to these questions the following correlations were felt to be necessary: (1) Correlations between the SCAT and the Tyler-Kimber, (2) Correlations between the SCAT and student grade point averages, (3) Correlations between the Tyler-Kimber and student grade point averages, (4) A multiple correlation of the SCAT and Tyler-Kimber

with student grade point averages, and (5) a comparison of
the Fort Hays mean scores on the SCAT and the Tyler-Kimber
with those of the standardization group on which the tests
were standardized.

V. Methodology

This study was made on a population selected by a ran-
don sampling process. The total population was the sophomore
class of 1959-60 at Fort Hays Kansas State College.

In determining the students to be selected for the
present study a survey by Johnson⁸ was consulted. This study
of the total freshman class of 1958-59 (the present sophomore
class) offered correlations between the SCAT and student grade
point averages, and in addition, provided other important data
on the same group.

The SCAT scores were used as the basis for selection
of the testing population for the present study. Each Stu-
dent's raw score, as determined by the SCAT, was converted
into centiles and placed into appropriate class intervals such
as 0-9, 10-19, 20-29, etc. up to 90-99. Table I, on page ten,
shows more clearly the total number of students in each centile.

The sophomore population, on which SCAT scores were
available, totaled six hundred and twenty-one. Of this number

⁸Aris Johnson, op. cit., p. 8.
# TABLE I  

**CENTILE GROUPS OF THE SCHOOL AND COLLEGE ABILITY TEST 1958-59 FRESHMAN CLASS**

<table>
<thead>
<tr>
<th>SCAT Centiles</th>
<th>GIRLS</th>
<th></th>
<th></th>
<th></th>
<th>BOYS</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>No.</td>
<td>% of</td>
<td>No. in</td>
<td>No.</td>
<td>% of</td>
<td>No. in</td>
</tr>
<tr>
<td></td>
<td>Tested</td>
<td>Total</td>
<td>Sample</td>
<td>Tested</td>
<td>Total</td>
<td>Sample</td>
</tr>
<tr>
<td>0-9</td>
<td>21</td>
<td>4.4</td>
<td>4</td>
<td>16</td>
<td>2.2</td>
<td>2</td>
</tr>
<tr>
<td>10-19</td>
<td>30</td>
<td>6.3</td>
<td>6</td>
<td>54</td>
<td>7.4</td>
<td>7</td>
</tr>
<tr>
<td>20-29</td>
<td>37</td>
<td>7.7</td>
<td>8</td>
<td>66</td>
<td>9.1</td>
<td>9</td>
</tr>
<tr>
<td>30-39</td>
<td>36</td>
<td>7.6</td>
<td>8</td>
<td>61</td>
<td>8.4</td>
<td>8</td>
</tr>
<tr>
<td>40-49</td>
<td>38</td>
<td>7.9</td>
<td>8</td>
<td>58</td>
<td>8.0</td>
<td>8</td>
</tr>
<tr>
<td>50-59</td>
<td>28</td>
<td>5.8</td>
<td>6</td>
<td>41</td>
<td>5.6</td>
<td>5</td>
</tr>
<tr>
<td>60-69</td>
<td>18</td>
<td>5.7</td>
<td>4</td>
<td>34</td>
<td>4.7</td>
<td>4</td>
</tr>
<tr>
<td>70-79</td>
<td>14</td>
<td>2.9</td>
<td>3</td>
<td>24</td>
<td>3.3</td>
<td>3</td>
</tr>
<tr>
<td>80-89</td>
<td>9</td>
<td>1.8</td>
<td>2</td>
<td>25</td>
<td>3.4</td>
<td>3</td>
</tr>
<tr>
<td>90-99</td>
<td>6</td>
<td>1.3</td>
<td>1</td>
<td>5</td>
<td>.7</td>
<td>1</td>
</tr>
</tbody>
</table>

Read Table Thus: In the SCAT centile 0-9 there were twenty-one girls tested. This was 4.4 percent of the total number of cases in the freshman class. The number of girls selected for testing in the present study was four. The number of boys in the SCAT centile 0-9 was sixteen. This was 2.2 percent of the total number of the freshman class students. The number of boys needed for the representative sample of freshmen in this centile group was two.
two hundred and thirty-seven were girls, and three hundred and eighty-four were boys. To select a representative sample of this group the number of cases in each centile was converted into percentage, indicating what percent of students of the total sophomore population for girls and boys fell into each centile group. (See Table I, on page ten)

After these percentages were computed it was necessary to determine the number of students to be taken from each centile group in order to have a truly representative sample of the Fort Hays Sophomore Class. This was accomplished by dividing the total number of girls (237) and boys (384) into fifty. (fifty boys and fifty girls would equal one hundred percent)

Thus, by dividing two hundred and thirty-seven into fifty, a constant of .210 was produced for the girls. Likewise, by dividing three hundred and eighty-four into fifty, a constant of .138 was produced for the boys. The actual number of cases for each centile was then determined by multiplying the constant for each group times the total number of cases in the sophomore class. For example: There were twenty-nine girls in the 0-9 centile. Thus, twenty-nine times the constant (.210) equals 4.4 percent. Rounding this off to the closest number gave four cases. This was the number of students from the entire sophomore population which would be needed for the present study from the 0-9 centile group.

The next step involved the selection of a method of random sampling which would result in the one hundred cases desired for this study. The entire population, regardless
of sex, was numbered consecutively from one to six hundred and twenty-one. Small pieces of paper were then numbered in the same manner and according to the centile distribution were placed into separate piles. The number on the slip of paper was checked against the alphabetical listing of the total population, and the student's name corresponding to this number was the student selected for the new testing population. This procedure was followed in the selection of the remainder of the testing population.

Because of a possible lack of student cooperation in scheduling and administering the Tyler-Kimber to the newly selected population, it was felt that a relatively high margin of safety would be necessary. Due to college drop-outs, illness, conflicting schedules, and numerous other reasons, one hundred and fifty students were selected by the previously mentioned sampling process.

Although this seemed at the time to be a sufficiently high margin of safety, it proved to be inadequate. One hundred and fifty letters (see Appendix I and II) were sent to the testing population in the first mailing. A final tabulation of testing data showed that out of the one hundred and fifty students, only eighty-nine made an appearance at one of the seven designated testing periods. Inasmuch as more students were needed for the study, a second letter was sent
to the untested students. (see Appendix III) Eventually, after two letters and in some cases a telephone conversation, ninety-eight percent of the number of students needed for the study were tested.

Within the 0-9 centile group for both girls and boys, one case for each sex could not be obtained. Only three girls who had scored within the 0-9 centile on the SCAT still remained in college. For the boys' 0-9 centile, of which two cases were needed, only one could be tested. Five boys were in school who had scored within the 0-9 centile, but they refused to participate in the study.

An excessive number of students were tested in some centile groups. Thus, the total number for each centile was placed into a second random sampling process and cases were eliminated randomly until the required number for each centile group was reached and the testing population numbered ninety-eight.

Use of Standardized Norms. Inasmuch as there were no Fort Hays norms available for comparison of raw scores, the standardization norms of the test publishers were used. The standardization population for the SCAT included 1,484 college freshmen from twelve states.

The Tyler-Kimber was standardized on one hundred junior-college graduates from the Sacramento Junior-College, California. The norms that were used in comparing the Tyler-
Kimber with the SCAT were those of the "high-sophomores". This included only those students who had completed two years of junior-college, having a grade point average of 2.00 or above. A comparison of the high and low-sophomore scholarship groups is shown in Table II on page fifteen.

The "high-sophomore" norms were chosen for use inasmuch as the "low-sophomore" norms were based on two hundred and twenty-five academic probationers from the same junior-college. It was uncertain at the time as to the grade point average of the Fort Hays sophomores but it was felt that it would be between 1.00 and 2.00. With this in mind it was felt that the "high-sophomore" group would more closely approximate the Fort Hays sophomores. It could be expected, however, that the mean score on the Tyler-Kimber would be considerably higher for the standardization group than for the Fort Hays sophomores in this study. No further data could be obtained as to the grade point averages of the "low-sophomores", but it was assumed to be 1.00 and below.

For further clarification of the selection of norms for the Tyler-Kimber, the data in Table II on page fifteen should be consulted.

VI. Limitations

This study was limited to a representative sample of the 1959-60 sophomore class at Fort Hays Kansas State College. A time lapse of approximately two years between the adminis-
### Table II

**Comparison of Low- and High-Scholarship Groups for the Tyler-Kimber Study Skills Test**

<table>
<thead>
<tr>
<th>Group</th>
<th>( \bar{x} )</th>
<th>S.D.</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Scholarship (N=100)</td>
<td>137</td>
<td>11.85</td>
<td>1.19</td>
</tr>
<tr>
<td>Junior-College graduates, 1937, with Grade-Point ratio 2.00 and above</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Scholarship (N=225)</td>
<td>107</td>
<td>22.02</td>
<td>1.47</td>
</tr>
<tr>
<td>Junior-College probationers, 1936-37</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The students in the testing population had the benefit of two years of college as a result of which the mean score for the study skills test would possibly be raised. This difference in time should not, however, seriously affect the correlations between the Tyler-Kimber and student grade point averages.
CHAPTER II

ANALYSIS OF THE DATA

The analysis of the data in this study required the use of various statistical measurements which included: The mean, the standard deviation, the coefficient of correlation, and the significance of difference between coefficients of correlation. For the reader's clarification the statistical treatment of each test was discussed separately, then in a combined manner.

I. School and College Ability Test

The range of scores for boys on the SCAT was seventy-one; the highest score being one hundred and one, while the lowest was thirty. The relatively wide range of seventy-one points indicated a fairly broad scatter of scores. The range of scores for girls on the SCAT was ten points less, being sixty-one; the highest score was ninety-two, whereas the lowest score was thirty-one.

The mean score for boys was found to be sixty, whereas the girls' mean score was fifty-nine. Thus, the means of the two groups were approximately the same. The relatively large difference in the range of the two groups was because the highest boy's score was eleven points higher than his next closest rival, whereas the girls, at the upper level of the
of the test, tended to cluster together. Mean scores for each centile group and the total mean of the boys' and girls' groups are shown more clearly in Table III, on page eighteen.

The standard deviation of the forty-nine boys' scores was 10.97. Of the seven hundred and forty-nine college freshmen on which the SCAT was standardized the standard deviation was 14.90. The difference between these standard deviations was significant at the .01 level. The figures showed that approximately sixty-eight percent of the Fort Hays boys scored within the range from forty-nine to sixty-one, whereas sixty-eight percent of the standardization group scored within the range from forty-nine to seventy-nine.

The standard deviation for the forty-nine girls' scores in the present study was 10.40. This compared to the standard deviation of 14.90 for the standardization group for the SCAT. The difference between these for both studies was significant at the .01 level. The figures showed that approximately sixty-eight percent of the sophomore girls scored within the raw score range from forty-nine to sixty-nine, whereas the standardization group scored between forty-nine and seventy-nine, sixty-eight percent of the time. Table IV, on page nineteen gives the mean scores and the standard deviations for this study and also for the standardization group.

In a recent study already referred to, Johnson found that the mean for Fort Hays freshmen was approximately ten
# Table III

The mean scores for each centile group for the school and college ability test

<table>
<thead>
<tr>
<th>Centile Group</th>
<th>BOYS</th>
<th>GIRLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases</td>
<td>Mean</td>
</tr>
<tr>
<td>0-9</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>10-19</td>
<td>7</td>
<td>42</td>
</tr>
<tr>
<td>20-29</td>
<td>9</td>
<td>50</td>
</tr>
<tr>
<td>30-39</td>
<td>8</td>
<td>56</td>
</tr>
<tr>
<td>40-49</td>
<td>8</td>
<td>63</td>
</tr>
<tr>
<td>50-59</td>
<td>5</td>
<td>66</td>
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<td>60-69</td>
<td>4</td>
<td>76</td>
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<tr>
<td>70-79</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>80-89</td>
<td>3</td>
<td>87</td>
</tr>
<tr>
<td>90-99</td>
<td>1</td>
<td>101</td>
</tr>
</tbody>
</table>

Total Mean: 49 BOYS, 60 GIRLS

---

Read Table Thus: Within the 0-9 centile group for boys there was only one boy and his score was thirty. Within the 0-9 centile group for girls there were three girls whose mean score was thirty-three.
points lower than that of the standardization group. The present study found that the mean of a random sample of the freshman population at Fort Hays was approximately four points lower than that of the standardization group. Johnson's work used centiles, whereas this study used raw scores for all statistical computations.

### TABLE IV

**THE MEAN SCORES AND STANDARD DEVIATIONS IN COMPARISON WITH THE NATIONAL NORMS FOR THE SCHOOL AND COLLEGE ABILITY TEST**

<table>
<thead>
<tr>
<th>Source</th>
<th>BOYS Mean</th>
<th>S.D.</th>
<th>GIRLS Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present Study</td>
<td>60</td>
<td>10.97</td>
<td>59</td>
<td>10.40</td>
</tr>
<tr>
<td>(N=49)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Norms</td>
<td>64</td>
<td>14.90</td>
<td>64</td>
<td>14.90</td>
</tr>
<tr>
<td>(N=747)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

II. Tyler-Kimber Study Skills Test

The range of scores for the boys on the Tyler-Kimber was fifty-four; the highest score being one hundred and fifty-five while the lowest score was one hundred and four. The range of scores for the girls on the test was fifty-three; the highest being one hundred and forty-nine and the lowest ninety-six. The highest possible score which could be obtained was one hundred and seventy-seven.
The mean score for the boys was found to be one hundred and thirty-one, whereas the mean for the girls was one hundred and twenty-seven. Thus, the means of the two groups were approximately the same. The mean score for each centile group and the total mean of the groups are shown more clearly in Table V, on page twenty-one.

The boy with the lowest score on the Tyler-Kimber fell within the 0--9 centile group on the SCAT. In contrast, the girl scoring the lowest on the Tyler-Kimber fell within the 60-69 centile group on the SCAT. At the upper scoring limits the boy with the highest score on the Tyler-Kimber scored within the 90-99 centile group on the SCAT, whereas the girl scoring the highest on the Tyler-Kimber fell within the 80-89 centile on the SCAT.

The standard deviation of the forty-nine boys' scores on the Tyler-Kimber was 10.95. This was quite close to the standard deviation of the standardization group. This was 11.85 and was based on one hundred junior-college graduates having a grade point average of 2.00 or above. This figure for the present study showed that approximately sixty-eight percent of the boys scored within eleven points above or below the mean score of one hundred and thirty-one, or within the range of raw scores from one hundred and twenty to one hundred and forty-two.
TABLE V
THE MEAN SCORES FOR EACH CENTILE GROUP FOR THE TYLER-KIMBER STUDY SKILLS TEST

<table>
<thead>
<tr>
<th>Centile Group</th>
<th>BOYS</th>
<th>GIRLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>10-19</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>20-29</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>30-39</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>40-49</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>50-59</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>60-69</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>70-79</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>80-89</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>90-99</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Mean</th>
<th>Cases</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49</td>
<td>131</td>
<td>49</td>
<td>127</td>
</tr>
</tbody>
</table>

Read Table Thus: Within the 0-9 centile group one boy had a score of one hundred and one on the Tyler-Kimber. There were three girls within this same centile group whose mean score was one hundred and sixteen.
The standard deviation of the forty-nine girls' scores on the Tyler-Kimber was 11.61. This also closely approximates that of the standardization group which was 11.85. The difference between the two standard deviations was not significant. Table VI shows the mean score and standard deviation for both the standardization group and the group used in this study.

**TABLE VI**

THE MEAN SCORES AND STANDARD DEVIATIONS IN COMPARISON WITH THE NATIONAL NORMS FOR THE TYLER-KIMBER STUDY SKILLS TEST

<table>
<thead>
<tr>
<th>Source</th>
<th>BOYS</th>
<th>GIRLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Present Study</td>
<td>131</td>
<td>10.95</td>
</tr>
<tr>
<td>(N=49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Noms</td>
<td>137</td>
<td>11.85</td>
</tr>
<tr>
<td>(N=100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III. Grade Point Averages

The range of grade point averages for boys of the present study was from .41 to 2.89. The boy who attained the lowest grade point did not score in the 0-9 centile group on the Tyler-Kimber, but rather within the 20-29 centile. Likewise, the highest grade point average for the boys was not found within the 90-99 centile, but within the 70-79 centile.

The range of grade point averages for girls was from
.52 to 2.48. In this case, the lowest grade point average was found within the 0-9 centile, while the highest grade point average was found to be within the 80-89 centile. There was a difference in range of .49 between the boys and girls, with the boys having the largest range.

The mean grade point for boys, which included the first two years of college, was 1.52. For the girls the mean grade point was found to be 1.64. As shown in Table VII, on page twenty-four, the mean grade points for girls during the freshman and sophomore years were practically the same, being 1.64 and 1.63 respectively.

The mean grade point for boys during the freshman year was 1.42, and during the sophomore year, 1.61. It is shown in Table VII that as a group the freshman girls seemed to make better grades than freshman boys. For the sophomore year, however, the boys' mean grade point had raised to within .02 grade points of the girls' mean grade point. Nevertheless, the girls' mean cumulative grade point was still .12 higher than that of the boys.

It was stated earlier in the study that the Fort Hays sophomores were compared with the "high-sophomores" in the standardization group and that the Fort Hays sophomores' mean score on the Tyler-Kimber would be lower than that of the standardization group. An analysis of the Fort Hays sophomores' scores showed that the sophomore boys' mean score
### TABLE VII

**MEAN GRADE POINTS FOR EACH SCAT CENTILE GROUP**

**FRESHMAN, SOPHOMORE AND TOTAL GRADE POINTS**

<table>
<thead>
<tr>
<th>Centile Group</th>
<th>FMGP* Boys</th>
<th>SMGP** Boys</th>
<th>TMGP*** Boys</th>
<th>FMGP* Girls</th>
<th>SMGP** Girls</th>
<th>TMGP*** Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>.46</td>
<td>.50</td>
<td>.48</td>
<td>1.41</td>
<td>1.01</td>
<td>1.21</td>
</tr>
<tr>
<td>10-19</td>
<td>1.12</td>
<td>1.31</td>
<td>1.21</td>
<td>1.39</td>
<td>1.22</td>
<td>1.30</td>
</tr>
<tr>
<td>20-29</td>
<td>1.15</td>
<td>1.19</td>
<td>1.17</td>
<td>1.04</td>
<td>1.26</td>
<td>1.15</td>
</tr>
<tr>
<td>30-39</td>
<td>1.31</td>
<td>1.51</td>
<td>1.45</td>
<td>1.44</td>
<td>1.46</td>
<td>1.45</td>
</tr>
<tr>
<td>40-49</td>
<td>1.18</td>
<td>1.72</td>
<td>1.45</td>
<td>1.56</td>
<td>1.49</td>
<td>1.52</td>
</tr>
<tr>
<td>50-59</td>
<td>1.27</td>
<td>1.42</td>
<td>1.34</td>
<td>1.67</td>
<td>1.77</td>
<td>1.72</td>
</tr>
<tr>
<td>60-69</td>
<td>1.66</td>
<td>1.82</td>
<td>1.81</td>
<td>2.01</td>
<td>1.96</td>
<td>1.98</td>
</tr>
<tr>
<td>70-79</td>
<td>1.72</td>
<td>1.75</td>
<td>1.73</td>
<td>1.62</td>
<td>1.75</td>
<td>1.73</td>
</tr>
<tr>
<td>80-89</td>
<td>1.58</td>
<td>2.03</td>
<td>2.40</td>
<td>2.30</td>
<td>2.50</td>
<td>2.40</td>
</tr>
<tr>
<td>90-99</td>
<td>2.94</td>
<td>2.82</td>
<td>1.95</td>
<td>2.00</td>
<td>1.90</td>
<td>1.95</td>
</tr>
<tr>
<td>Total Mean</td>
<td>1.42</td>
<td>1.61</td>
<td>1.52</td>
<td>1.64</td>
<td>1.63</td>
<td>1.64</td>
</tr>
</tbody>
</table>

* Freshman Mean Grade Point
** Sophomore Mean Grade Point
*** Total Mean Grade Point

Read Table Thus: The freshman mean grade point for boys within the 0-9 centile was .46, whereas for the girls it was 1.41. The sophomore mean grade point for boys was .50 and for the girls 1.01. The total mean grade point for boys was .48 and for the girls 1.21.
was one hundred and thirty-one, whereas the girls' mean score was one hundred and twenty-seven. This gave an average of one hundred and twenty-nine for both sexes. Thus, although the mean score for Fort Hays sophomores was eight points lower than that of the Tyler-Kimber standardization group, this difference of eight points seems insignificant. On the average, the Fort Hays sophomore missed only eight more questions out of a possible one hundred and seventy-seven than did the junior-college graduate who had achieved a 2.00 or above grade point average.

An analysis of the individual grade points for students in this study was made and it was found that of the ninety-eight students, only eleven had achieved a grade point average of 2.00 or above for the first two years of college. This extremely high percentage difference (all of the standardization group had a 2.00 plus) and the relatively low difference between the mean scores of Fort Hays students and the standardization group would tend to indicate that the Fort Hays students possess comparable study skills to those of the standardization group even though this latter group received better grades.

In addition, the Fort Hays sophomores were compared with the total standardization group including both "high" and "low-sophomores". The Fort Hays sophomore mean of one hundred and twenty-nine was equivalent to the sixieth per-
centile of the standardization group. On the basis of this study it would seem that the Fort Hays sophomores have better study skills than the average student of the standardization group.

Inasmuch as the SCAT correlated with the Tyler-Kimber at .66 for the boys and .37 for the girls, it would tend to indicate that the Tyler-Kimber and the SCAT, to a degree, measure similar factors.

IV. Correlations

This section of the chapter was devoted to an analysis of the correlations between the boys' and girls' coefficients of correlation. This analysis included correlations between the:

1. School and College Ability Test and the Tyler-Kimber Study Skills Test for both boys and girls.
2. School and College Ability Test and the total grade point averages for both boys and girls.
3. Tyler-Kimber Study Skills Test and the total grade point averages for both boys and girls.
4. Combined correlations of the School and College Ability Test and the Tyler-Kimber Study Skills Test with the total grade point averages for both boys and girls.

The amount of difference between the various coefficients of correlations was quite small. However, a difference of .29 was obtained between the coefficients for boys and girls when the SCAT was correlated with the Tyler-Kimber. The degree to which this difference was significant was unknown. Thus, the significance of these differences had to
be determined. In order to find the amount of significance which could be given to these coefficients of correlations, Guilford\(^9\) was consulted to find the necessary formulas and proper conversion tables for computations of the significance of difference from a 0.00 correlation. For the significance of difference between sexes, Edwards\(^10\) was consulted for the proper formulas and conversion tables. Table VIII, on page twenty-seven gives coefficients of correlations and the significance of difference (Z) for all correlations made in this study.

Inasmuch as the significance of difference method of correlations is perhaps not as widely known as some other statistical concepts, a brief explanation by Howell is given here.

If the probability is greater than .05 we will say there is no significant difference. If the probability is between .01 and .05 we will say that it is questionable whether there is a significant difference.\(^11\)

All correlations for the study were significant beyond the .01 level from a 0.00 correlation. However, in testing


the significance of difference between sexes, it was found that only the difference of .29 obtained by comparing the SCAT with the Tyler-Kimber approached the .05 level of significance. A $Z$ of 1.96 is the point at which the difference would be significant at the .05 level. The computed $Z$ of 1.94, shown in Table VIII, indicated that the difference of coefficients was extremely close to being significant. All other differences were even more insignificant.

Finally a multiple correlation of the SCAT and the Tyler-Kimber with student total grade point averages was obtained. The assumption was that the scores on both the SCAT and Tyler-Kimber would give a better estimate of the student's total grade point average than either test alone. The use of both tests produced only a slightly higher coefficient of correlation for boys than for girls. The difference between the coefficients for the multiple correlation and the coefficients of the SCAT and Tyler-Kimber was not significant.

**TABLE VIII**

**COEFFICIENTS OF CORRELATIONS**

<table>
<thead>
<tr>
<th>Tests</th>
<th>Coefficients of Correlation</th>
<th>$Z$</th>
<th>$%$</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCAT and Tyler-Kimber</td>
<td>.66</td>
<td>.37</td>
<td>1.94</td>
</tr>
<tr>
<td>SCAT and TGPA</td>
<td>.54</td>
<td>.43</td>
<td>.69</td>
</tr>
<tr>
<td>Tyler-Kimber and TGPA</td>
<td>.55</td>
<td>.42</td>
<td>.81</td>
</tr>
<tr>
<td>Multiple $r$ and TGPA</td>
<td>.59</td>
<td>.51</td>
<td>.55</td>
</tr>
</tbody>
</table>
CHAPTER III

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

I. Summary

The problem was to discover significant differences, if any, of the predictive value between the SCAT and student grade point averages. Also, to see if the scores from the SCAT and Tyler-Kimber, when used together for counseling purposes, would be a better predictor of college success than the scores of the SCAT alone.

The study was limited to only ninety-eight students, but this was a representative sample of the 1958-59 sophomore class at Fort Hays. The study was not made on a true cross-section of the original freshman class. This was because some of the students had dropped out of school after their freshman year. The reasons may have been because of a lack of finances, poor health, low academic achievement, or numerous other personal reasons. Regardless of these freshmen generally represent a more heterogeneous group, showing greater variability than the sophomores from which the testing population was taken. The effect this may have had upon the study is unknown.

Another limitation was the lapse of time between the
administration of the SCAT and the Tyler-Kimber. Although it is doubtful that the time factor substantially influenced the correlations, nevertheless, it must be considered in interpreting the data.

The data indicated that both the SCAT and the Tyler-Kimber would predict student's grade point with approximately the same degree of accuracy. The predictive efficiency of each correlation is approximately thirteen percent in the case of the boys and about eight percent in the case of the girls.

In trying to explain why the SCAT and the Tyler-Kimber show similar correlations with the total grade point average, a number of alternatives are possible. The SCAT, as a scholastic aptitude test which measures individual potential for achievement, has shown its effectiveness in predicting achievement. The Tyler-Kimber is an achievement test which supposedly measures primarily what the student has achieved in the study skills area.

Inasmuch as grade point average represents achievement it is possible that an individual's achievement in study skills is also a good indicator of his potential achievement in other areas, and that academic or scholastic aptitude is the underlying factor being measured by both tests.
II. Conclusions

In interpreting the data between the SCAT and student grade point averages, as shown in Table III, on page eighteen, there seemed to be no difference between sexes in regard to the mean scores on the SCAT. This adds strength to the writer's previous statement that: "The group selected for the study was truly a representative sample of the sophomore class." If the mean score had differed substantially it may have indicated an error in the sampling procedure.

Table VIII, on page twenty-seven, shows the coefficients of correlation between the SCAT and student grade point averages. Although the SCAT correlated higher for the boys (.54) than for the girls (.43) the difference was not significant. Thus, by using the SCAT, the student's grade point can be predicted for either sex with approximately the same degree of confidence.

In interpreting the data between the Tyler-Kimber and student grade point averages, it is shown in Table V, on page twenty-one, that there is no important difference between sexes in regard to the mean scores. The mean scores for the boys and the girls on the test were only four points apart.

The coefficients of correlation between the Tyler-Kimber and student grade point averages was .53 for boys, and .42 for girls. Although the coefficient was higher for the boys than for girls, the difference was found to be in-
significant. Grade point prediction in using the Tyler-Kimber would be approximately the same for both sexes.

Data in the preceding paragraphs indicates that the Tyler-Kimber will predict grade point with approximately the same degree of confidence as the SCAT. This seems to be in agreement with Salisbury's findings that a study skills test appeared to give as good an indication of academic success as a scholastic aptitude test or the student's high school record.

The multiple correlation of the SCAT and the Tyler-Kimber with student grade point averages showed a coefficient of .59 for boys, and .51 for girls. The slight increase in the boys' coefficient over the SCAT (.54) and over the Tyler-Kimber (.53) seemed to be unimportant. The small increase in the multiple correlation for girls (SCAT .4, Tyler-Kimber .42) also indicated that relatively little value would be gained by the use of both tests.

In order to determine whether there was a significant increase in prediction by the use of both tests McNemar was consulted for the necessary formula to compute the significance of difference between the multiple r and r.

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12Rachel Salisbury, op. cit., p. 1850.
This increase for both sexes was insignificant.

Inasmuch as there was no statistical significance between these coefficients, it would be entirely an administrative decision whether to use both tests or just the SCAT alone. Because of the slight increase in predictiveness, as determined by computing the multiple correlation, the added time and expense involved in using both tests as predictive devices would not be justified. The inclusion of the Tyler-Kimber into the freshman testing program would not make the prediction of the student's grade point more accurate. However, the Tyler-Kimber would be of value as a diagnostic tool in which student's study skills weaknesses could be determined and remedial work in specific areas more accurately prescribed.

The coefficient of .66 for boys and .37 for girls between the SCAT and Tyler-Kimber indicated that more of the boys than girls who scored high on the SCAT also scored high on the Tyler-Kimber. The girls' mean score on both tests were lower than those of the boys' but the girls' mean grade point was slightly higher. The reasons that the girls' mean score was lower might be because the tests contain items which are more comparable to the past experiences of boys. Or, perhaps there was more emphasis in schools to teach study skills to boys because of their general lower achievement.
The girls' mean grade point was .22 higher than that of the boys during the freshman year. This was not the case for the sophomore year, however, as the mean grade point was only .02 higher than that of the boys. A reason for the difference in grade point might have been that more boys with low grades than girls dropped out of school after the freshman year. This would mean that the sophomore girls represented a more heterogeneous group, whereas the higher percentage of "drop-outs" made the sophomore boys a more homogeneous group. This adds strength to the findings that the boys' mean grade point was considerably higher during the sophomore year, whereas the girls' remained relatively the same.

Other reasons why the girls' mean grade point was higher than that of the boys may be because teachers were more lenient in grading; boys more frequently are behavioral problems, thus, grades were reduced by some instructors; or, some instructors may have graded heavily on attendance. In this case girls would generally rank higher inasmuch as boys "cut" class more frequently.

III. Recommendations

The writer feels that further research in the study skills and grade point prediction areas would be of great value to guidance personnel. Should a similar study be made, it is felt that the study skills test should be given at
approximately the same time as the scholastic aptitude test. This would completely eliminate the possibility of college courses effects upon the test results.

Also, it is felt that further information would be desirable in correlating student's quantitative scores with grade point averages, and verbal scores with grade point averages. This would give further information as to the type of aptitude the student possessed in relationship to his study skills.

Further, it is felt that a how-to-study course would be of value to Fort Hays' students in improving individual study skills weaknesses. The screening of freshmen, to find students with poor study skills, could be done either by an evaluation of the student's high school grades, by the use of a study skills test in which a pre-determined cut-off score had been set, or, by the use of both methods.
BIBLIOGRAPHY

A. Books


B. Periodicals


Stone, Charles L. "Disparity Between Intelligence and Scholarship," Journal of Educational Psychology, 13:241, April, 1922.

C. Thesis and Surveys


D. Yearbooks


APPENDIX I
Copy of First Letter Sent to Testing Population

APPENDIX II
Testing Schedule

APPENDIX III
Copy of Second Letter Sent to Untested Population

APPENDIX IV
Copy of the School and College Ability Test

APPENDIX V
Copy of the Tyler-Kimber Study Skills Test
Dear Student,

Mr. Dorth Hibbs, graduate student in Guidance and Counseling, is conducting a study here at Fort Hays and needs subjects for this study. We are asking you to cooperate with him.

As a basis for selection, each member of the sophomore class was included. Using the scores that you made as a freshman on the School and College Ability Test, a representative distribution of the Fort Hays sophomore class was made. Each student's score was placed into centiles from which your name was selected as a possible testing candidate.

The purpose of this testing program is to administer the School and College Ability Test and the Tyler-Kimber Study Skills Test to a representative sample of the sophomore class. The scores from these tests will then be correlated with each individual's grade point average. This will help to determine whether the School and College Ability Test or the Tyler-Kimber Study Skills Test is the best predictor of the student's grade point average.

The results of the test will be kept confidential. The individual scores, however, will be tabulated and correlated for the sophomore class. Final correlations will be made available to those concerned. If, as a student, you are interested in your scores on the tests, Mr. Hibbs will be happy to explain them to you and to indicate not only your standing in the class, but the relationship between your scores and your grade point average for your first two years of college.

The testing time and place are given on a separate sheet. Your cooperation in this program would be greatly appreciated and will not only be a great assistance to Mr. Hibbs in the writing of his Specialist Thesis, but to the college as well.

Sincerely yours,

Dr. Emerald Dechant
Director of Guidance

Fort Hays, KSC
Hays, Kansas
## TESTING SCHEDULE

<table>
<thead>
<tr>
<th>DAY</th>
<th>DATE</th>
<th>TIME</th>
<th>PLACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday</td>
<td>April 19th</td>
<td>7:15 p.m.</td>
<td>Residence Hall</td>
</tr>
<tr>
<td>Wednesday</td>
<td>April 20th</td>
<td>7:15 p.m.</td>
<td>Custer Hall</td>
</tr>
<tr>
<td>Thursday</td>
<td>April 21st</td>
<td>7:15 p.m.</td>
<td>Residence Hall</td>
</tr>
<tr>
<td>Monday</td>
<td>April 25th</td>
<td>7:15 p.m.</td>
<td>Custer Hall</td>
</tr>
<tr>
<td>Tuesday</td>
<td>April 26th</td>
<td>7:15 p.m.</td>
<td>Residence Hall</td>
</tr>
<tr>
<td>Wednesday</td>
<td>April 27th</td>
<td>7:15 p.m.</td>
<td>Custer Hall</td>
</tr>
<tr>
<td>Thursday</td>
<td>April 28th</td>
<td>7:15 p.m.</td>
<td>Residence Hall</td>
</tr>
</tbody>
</table>

The above testing periods have been authorized through the college. Please choose the time and place which will best fit your personal time schedule and come a few minutes early as this is a time test. The tests will be administered in the dining rooms at Residence and Custer Hall.

Only one test will be given, the Tyler-Kimber Study Skills Test. The test, including instructions, administration, etc., will take a little more than an hour.

Your cooperation in this program is of utmost importance to future Fort Hays students.

Thank you,

Dorth Hibbs
Dear Student,

You are being asked once again to participate in the sophomore testing program which is being made at Fort Hays Kansas State College. During the seven nights of testing, ninety sophomores reported for testing and were administered the Tyler-Kimber Study Skills Test. Before the study can be completed, however, a few more students must be tested.

The students for this study were selected on the basis of their centile ranking in the sophomore class from the School and College Ability Test, which was administered during the Freshman Entrance Examinations. A certain number of students from each centile group must be tested in order to make this study complete. You are among the remaining few who must be tested.

You are asked to report to the Psychology Department, which is located in the basement of Rarick Hall, at your earliest convenience, sometime during the week of Monday, May 2nd, and Friday, May 6th, to take the test. The test takes approximately one hour and your cooperation in this study is urgently solicited. The progress of the entire program will be delayed until you have been administered the examination.

Sincerely yours,

[Signature]

Dr. Emerald Dechant
Director of Guidance

Fort Hays KSC
Hays, Kansas