Dore, John Joseph

Performance on the
Wechsler-Bellevue
Intelligence Scale
And Success in the
College of Arts and
Sciences at the
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Approved ___*D. D. Rachiele*___
                                   Examiner

_____
                                   Examiner

___*Charles G. Weisgerber, P.I.*___
                                   Adviser

___*Allan P. Farrell S.J.*___
                                   Dean

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THE UNIVERSITY OF DETROIT

PERFORMANCE ON THE WECHSLER-BELLEVUE INTELLIGENCE

SCALE AND SUCESS IN THE COLLEGE OF ARTS AND

SCIENCES AT THE UNIVERSITY OF DETROIT

A THESIS

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MASTER OF ARTS

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JOHN JOSEPH DORE

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CHAPTER I

INTRODUCTION

Purpose of This Study

The problem undertaken here constitutes a part of a
broader investigation to determine more exactly the role of
the Wechsler-Bellevue Intelligence Scale, Form II, in guiding
college students.[1] The purpose of this investigation is,
first, to determine the average scores of freshmen enrolled
in the College of Arts and Sciences at the University of
Detroit, on the Wechsler-Bellevue Intelligence Scale, Form II;
secondly, to determine how well this test predicts the grades
obtained by freshman students in their first semester in the
College of Arts and Sciences.

That the Wechsler-Bellevue Intelligence Scale might be
used for the purpose of guiding students was suggested by
Wechsler when he stated:

> The most obviously useful feature of the
> Wechsler-Bellevue scales is their division into
> a Verbal and Performance part. We have already
> discussed the general significance of this division.
> Its a priori value is that it makes possible a
> comparison between a subject's facility in using
> words and symbols and his ability to manipulate
> objects, and to perceive visual patterns. In

1. Trygg Engen, "A Comparison of Performance on the
Wechsler-Bellevue Intelligence Scale and Success in the
Engineering College." Unpublished Master's thesis,
University of Detroit Library, 1952.

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practice this division is substantiated by the
differences between posited abilities and various
occupational aptitudes. Clerical workers and
teachers, in general, do much better on verbal
tests, whereas manual workers and mechanics do
better on performance. The correlations are
sufficiently high to be of value in vocational
guidance, particularly with adolescents of high
school age.[2]

This statement suggests that these tests should be of

value in vocational guidance, hence, applicable to our

problem. However, Diamond states that:

The Wechsler-Bellevue Scales, which have
been so thoroughly studied as instruments of
clinical diagnosis, have received little
attention, as far as the literature indicates,
from the standpoint of their possible
helpfulness in determining vocational aptitudes.[3]

To investigate this matter empirically, he grouped the sub-

tests of the Wechsler-Bellevue Intelligence Scale into three

catagories: linguistic, clerical, and spatial. He administer-

ed three widely used aptitude tests, one falling in each of

these three areas. He found a high degree of correspondence

between each aptitude test and the corresponding group of

subtests in the Wechsler-Bellevue Intelligence Scale. He

states that "these relationships may be taken as evidence of

2. David Wechsler. The Measurement of Adult Intelli-
gence, 3rd edition. Baltimore: The Williams and Wilkins
Company, 1944, p. 146.

3. Solomon Diamond, "The Wechsler-Bellevue Intelligence
Scales and Certain Vocational Aptitude Tests," Journal of
Psychology, XXIV (October, 1947), 279-282.

the validity of the group scores ... as indicators of linguistic, clerical, and spatial aptitudes." [4]

Another study by Renate Gerboth compares the Wechsler-Bellevue Intelligence Scale, Form I, and Form II, with grades made by students at the end of their first semester. Subjects were freshman, sophomore, junior, and senior students at the University of Washington who had, at one time or other, contacted the counseling center of the University. Gerboth found that the correlation of grade points with the test scores of Form I was .29, which was significant at the .05 level, while the correlation of grade point averages with Form II was .26, which was almost significant at the .05 level of confidence. [5]

In another study, Arden Frandsen found that both the Wechsler-Bellevue Full Scale and Verbal Scale IQs predict three year average grade point ratios very efficiently for high school achievement. The correlation is .69 for both the Full Scale and the Verbal Scale while the Performance Scale is less significantly related to academic achievement. For the Wechsler Full Scale, the mean IQ was 119.8 (SD: 11.86), and the correlation was .685 with school grades. For the Verbal Scale the mean IQ was 115.7 (SD: 12.96), and the correlation was .69. For the Performance Scale, the mean IQ

4. Solomon Diamond, op. cit., p. 282.

5. Renate Gerboth, "A Study of the Two Forms of the Wechsler-Bellevue Intelligence Scale," Journal of Consulting Psychology, XIV (October, 1950), 365-371.

was 119.6 (SD: 10.08), and the correlation was .48. Frandsen concludes that, even though his data are limited to high school seniors, these conclusions would apply to college freshmen when conditions were equally favorable. This conclusion was reached in the light of the results obtained by Anderson and Sartain.[6]

Anderson and his co-workers made a study of the relationship between the scores on the Wechsler-Bellevue Intelligence Scale and grade point averages of 112 college women students in various curricula. With a mean IQ of 118.5 for the Wechsler Scales, they found a correlation of .41 for the Full Scale and grade point averages. Correlations of .50 and .19 were found for the Verbal Scale and the Performance Scale, respectively. Anderson and his co-workers are of the opinion that the Wechsler-Bellevue Intelligence Scale has provided a long-needed individual intelligence test standardized upon adult subjects and that these tests should be of value in student personnel work. However, they maintain that the usefulness of the Wechsler-Bellevue Scale with college students would be limited unless its relation to grade averages compares favorably with that of other tests.[7]

6. Arden Frandsen, "The Wechsler-Bellevue Intelligence Scale and High School Achievement," _Journal of Applied Psychology_, XXXIV (December, 1950), 406-411.

7. Edward Anderson, _et al._, "College Studies in Psychology: A Comparison of the Wechsler-Bellevue, Revised Stanford-Binet, and the American Council on Education Tests at the College Level," _Journal of Psychology_, XIV (October, 1942), 317-326.

Sartain, in another article, compared the Revised Stanford-Binet, the Wechsler-Bellevue Scale, and certain group tests of intelligence: the Revised Alpha Examination, Form 5, the Otis Self Administering Test of Mental Ability, Form A, and the ACE Psychological Examination, 1942 Edition. He found that although there was no significant difference in amounts by which each test correlated with grades, the ACE Psychological Examination yielded a lower coefficient than any other test score, while the IQs of the Stanford-Binet were significantly higher than those on the Wechsler-Bellevue Scales and the group tests. He obtained the following data for the Wechsler-Bellevue Intelligence Scale. The mean IQ and standard deviation for the Full Scale were 117.48 and 10.47. For the Verbal Scale and the Performance Scale, the mean IQs and standard deviations were 115.44 and 10.65; 115.12 and 10.38, respectively. Correlations between mean grades and the Wechsler Full, Verbal, and Performance Scales, were .53, .58, and .35, respectively. These results were obtained from a group of fifty college freshmen.[8]

Merrill and Heathers, in an experiment designed to establish centile scores for the Wechsler-Bellevue Intelligence Scale on a university counseling-center group, found

8. Aaron Q. Sartain, "A Comparison of the New Stanford-Binet, the Wechsler-Bellevue Scale, and Certain Group Tests of Intelligence," Journal of Social Psychology, XXIII (May, 1946), 237-239.

that mean scores on the Wechsler scales did not differ significantly for different groups. They list mean scores and standard deviations for three different groups of college students: a group of veterans, a group of non-veterans, and a group of volunteer subjects. The means and standard deviations were as follows: On the Wechsler Verbal Scale, the mean score for the veterans was 118.60 (SD: 8.75); on the Performance Scale, 119.83 (SD: 9.43); and on the Full Scale, 121.03 (SD: 8.31). For the non-veteran group, the mean score on the Verbal Scale was 118.99 (SD: 8.64); on the Performance Scale, 118.30 (SD: 10.04); and on the Full Scale, 121.06 (SD: 8.75). With the volunteer group, Merrill and Heathers found that the mean score on the Wechsler Verbal Scale was 121.66 (SD: 8.85); on the Performance Scale, 119.65 (SD: 8.91); and on the Full Scale, 122.74 (SD: 7.74). Merrill and Heathers conclude that in spite of age and educational differences the groups do not differ significantly in either means or standard deviations on any of the three scales of the Wechsler-Bellevue Intelligence Scale.[9]

Trygg Engen, in the study referred to earlier, found that there was a dependable relationship between the scores on the Wechsler-Bellevue Intelligence Scale, Form II, and

9. Reed Merrill and Louise Heathers, "Centile Scores for the Wechsler-Bellevue Intelligence Scale on a University Counseling Center Group," Journal of Consulting Psychology, XVI (October, 1952), 406-409.

grades earned in the first semester by freshman students in the College of Engineering at the University of Detroit. He found mean scores for his group to be 124.10 (SD: 6.98) for the Wechsler Full Scale, 120.14 (SD: 7.73) for the Verbal Scale, and 120.98 (SD: 8.00) for the Performance Scale. The correlation between the Wechsler Full Scale and mean grades for the first semester was .556 (SE: .144). The correlations of the Verbal Scale and the Performance Scale with the mean grades for the first semester were .594 (SE: .144), and .417 (SE: .144), respectively. Engen concludes that "the validity coefficients are relatively high for this type of study, and hence this scale seems to be of practical usefulness for this purpose."[10]

Intelligence and Aptitude Tests with Arts and Science Students

Trygg Engen cites studies showing that the mean scores on the American Council on Education Psychological Examination are higher for students in Science, Literature and the Arts, Law, Medicine, the Institute of Technology, and the School of Business Administration than those for students in the Colleges of Education, Agriculture, Dentistry, and Pharmacy. He refers to another study which states that

10. Trygg Engen, "A Comparison of Performance on the Wechsler-Bellevue Intelligence Scale and Success in the Engineering College." Unpublished Master's thesis, University of Detroit Library, 1952.

"all medians of the college of commerce, journalism, and engineering are distinctly higher than the medians for other colleges."[11] He states further that "there seem to be certain qualifications, although these apparently have not been clearly determined, required for those who are to succeed in the field of engineering."[12]

A study was conducted by Luellen Hauser at the University of Miami. This study involved 885 freshman students entering the Liberal Arts College, and an equal number from the entering freshman enrollment in the School of Business Administration. The results of the American Council on Education Psychological Examination, taken by these students, were compared. Comparisons were made on the basis of the quantitative, linguistic, and total scores of this test. The two groups were compared as to mean differences and percentages of overlapping.

Hauser's results show that there is a difference of approximately two and one-half points in favor of the Liberal Arts freshmen on the linguistic and total scores, and practically no difference on the quantitative score. The most statistically reliable difference appears on the linguistic score.

Hauser concludes that the difference in intelligence between the Liberal Arts and Business Administration students

11. Trygg Engen, op. cit., pp. 3-4.

12. Ibid., p. 6.

is probably too small to be of value for admission policies, methods of induction, guidance, or counseling at the college level. "Theoretically," she states, "the difference shown between the two groups might indicate a tendency for Liberal Arts students to do better than the Business Administration students on the linguistic phase of the American Council on Education Psychological Examination."[13]

This short review of the literature indicates that, although some research has been done, there is still much to be desired. It seems that results have been variable. Particularly, there seems to be need for research with the Wechsler-Bellevue Intelligence Scale, Form II, if it is to be used with other tests for guidance purposes. The literature also indicates that there is a need for research with the Wechsler scales and specific groups of college students. This study, therefore, is an attempt to fulfill some of the needs that have been indicated.

The Problem

The main objective of this study is to determine the mean scores of first semester freshmen in the College of Arts and Sciences, on the Verbal Scale, Performance Scale, and Full Scale of the Wechsler-Bellevue Intelligence Scale,

13. Luellen Hauser, "A Comparative Study of the Intelligence of University Freshmen Enrolled in Business and Liberal Arts Schools," Journal of Educational Research, XLIII (September, 1949), 48-58.

Form II. These scores will also be correlated with the mean grade scores achieved by these students for their first semester of work in the College of Arts and Sciences.

The investigation involves, therefore, a study of the Wechsler-Bellevue Intelligence Scale, Form II, and its usefulness as an instrument for guiding a specific group of college students. The principal parts of the report will consist of (1) a tabular presentation of the mean IQ scores of fifty freshman students from the College of Arts and Sciences on the Verbal Scale, Performance Scale, and Full Scale of the Wechsler-Bellevue Intelligence Scale, Form II; (2) a tabular presentation of correlations between these scales and the mean school grades of these students; (3) expectancy tables showing the relation of the various IQs made by these students to their various mean grade scores for the first semester. These relations will be given in terms of number and percentages. The mean percentile of the total score on the American Council on Education Psychological Examination (hereafter referred to as ACE Psychological Examination) for the freshman enrollment in the College of Arts and Sciences will be checked against the mean percentile of the total score on this examination made by the students who were used as subjects for this study.

The Subjects

The subjects selected for this study were students from the freshman enrollment of the College of Arts and Sciences of the University of Detroit. The group consisted of fifty male students who volunteered to act as subjects. None of these students had any previous college training, and all enrolled in the College of Arts and Sciences of the University of Detroit in the fall semester of 1952.

From a list compiled by the Psychological Service Center of the University of Detroit, every fifth name was chosen. However, if the student chosen had been admitted on a probationary status his name was omitted. Each student was approached individually. He was told the purpose of this study and asked if he wanted to participate. He understood that participation was strictly voluntary, and that his college records would not be affected in any way. Participation on a voluntary basis was desired because it was felt that in this way the cooperation of the subject would be more readily assured.

The age distribution of the subjects is presented in Table I.

The Collection of the Data

The Wechsler-Bellevue Intelligence Scale, Form II, was administered to fifty subjects during the fall semester, beginning with the first week in October. The scale was

TABLE I

AGE DISTRIBUTION OF THE SUBJECTS

Age Group	Subjects
17	9
18	37
19	2
20	1
21	1

administered in accordance with Wechsler's instructions. The
testing conditions were kept as constant as possible in re-
gard to place of examination, rapport, praise, and encourage-
ment. It should be noted, however, that there were some
factors that were not easily controlled, and that these
factors might have influenced the results. The time of day
the test was administered may have had some influence on the
physical condition of the subject. The scale was administered
during the free time of the subject. In no case, however,
was a test undertaken unless the subject had at least one
hour free. In fourteen cases, however, the subjects failed
to complete the scale in the free time available. It was
necessary in these cases, therefore, to score only those
subtests completed, and prorate the scale to include the
subtest omitted. The subtest omitted in these cases was the
Object Assembly test. According to Wechsler this procedure
is allowed. Wechsler states that:

Another question regarding which we have had recurrent inquiry is the feasibility of an abbreviated scale. The scale may be shortened to include as few as five subtests, without seriously altering its reliability provided a judicious choice of subtests is made. The reduction is possible because of the relatively high correlations between most of the subtests with the total scale score (see table 43). Of course the more tests included the higher will be the correlation of the battery with the Full scale, but not necessarily so. Thus, the correlation between seven of the tests (all except Object Assembly, Picture Arrangement and Digit Symbol) and the Full scale is above .90. But the correlation of the Verbal part alone with the Full scale is also around .90, and its correlation with other scales is generally just as high as that of the Full scale, and sometimes even higher.[14]

The Object Assembly subtest was omitted because in Form I, this subtest correlates lowest of all the subtests with the Full Scale. The correlation is .409. [15] In his introduction to Form II, Wechsler speaks of the similarity of the subtests of the two scales.[16] Hence, since no correlations are given between the subtests and Full Scale for Form II, it is assumed that these correlations would be similar to those for Form 1.

The subjects' final grades for the fall semester were obtained from the files in the office of the Dean of the

14. David Wechsler. The Measurement of Adult Intelligence, 3rd edition. Baltimore: The Williams and Wilkins Company, 1944, p. 145.

15. Ibid. p. 224.

16. David Wechsler. The Wechsler-Bellevue Intelligence Scale, Form II. (manual). New York: The Psychological Corporation, 1946. p. v.

College of Arts and Sciences. The scores of these subjects on the ACE Psychological Examination were obtained from the Psychological Service Center of the University of Detroit. This examination had been taken by these students at some time prior to the beginning of the fall semester. Finally, all pertinent data for each subject, i.e., name, age, date of examination, birthdate, test scores, and final grades, were transcribed to individual records.

Concluding Remarks

This investigation was undertaken for the purpose of enlarging a study to determine the usefulness of the Wechsler-Bellevue Intelligence Scale, Form II, for guiding college students. It is felt that there is a need for research of this type with specific groups, and that if the Wechsler-Bellevue Intelligence Scale, Form II, is to be used in guiding prospective students, more evidence for justifying its use in this manner is necessary.

Trygg Engen makes notes of the fact that the classical investigation of this type was undertaken by Yerkes during World War I. Yerkes utilized the Army Alpha test. Engen also points out that the Army General Classification Test was used in this manner.[17]

17. Trygg Engen, "A Comparison of Performance on the Wechsler-Bellevue Intelligence Scale and Success in the Engineering College." Unpublished Master's thesis, University of Detroit Library, 1952.

CHAPTER II

PRESENTATION AND ANALYSIS OF THE DATA

This study is based on the performance of fifty fresh-
man students enrolled in the College of Arts and Sciences of
the University of Detroit, on the Verbal Scale, Performance
Scale, and Full Scale of the Wechsler-Bellevue Intelligence
Scale, Form II. At the end of the first semester it was
found that one of the students had withdrawn from the college
between the time he had taken the Wechsler-Bellevue Intell-
igence Scale, Form II, and the end of the first semester.
This student was included, however, for the following reason:
It is the policy of the College of Arts and Sciences at the
University of Detroit to indicate the quality of a student's
work at the time of his withdrawal. This is done by giving
a grade of passing or failing with the notation "withdrawal"
indicated. This is indicated by the notation "WP" if the
student was doing passing work at the time he withdrew from
a course, and a "WF" is given if the student was failing at
the time of withdrawal from a course. On the basis of the
number of "WP's" and "WF's", therefore, it was possible to
estimate the work of the subject in our group who had with-
drawn.

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TABLE II

MEANS AND STANDARD DEVIATIONS OF THE WECHSLER VERBAL
SCALE, PERFORMANCE SCALE, AND FULL SCALE, AND THE
ACE PSYCHOLOGICAL EXAMINATION

Instrument	M	SD	N
Verbal Scale IQ	117.00	6.57	50
Performance Scale IQ	114.24	8.73	50
Full Scale IQ	118.22	6.90	50
ACE Psychological Examination (Raw Scores)			
L-Score	69.00	4.00	50
Q-Score	46.60	8.65	50
T-Score	116.80	18.40	50

Means of the Wechsler Scales

The means and standard deviations were computed by the
short method in which $M = M' + C$, and $\sigma = i \sqrt{\frac{fx'^2}{N} - C'^2}$,
according to Guilford.[18] The results obtained by these
formulae are presented in Table II.

The IQs on the Verbal Scale of the Wechsler-Bellevue
Intelligence Scale, Form II, range from 105 to 132. The mean
IQ for the Verbal Scale is 117.00. The range of the IQs of
the Performance Scale is from 95 to 132, while the mean is

18. Joy P. Guilford. Fundamental Statistics in Psych-
ology and Education, 2nd edition. New York: McGraw-Hill
Book Company, Inc., 1950, pp. 61, 102.

114.24. The range of the scores for the Full Scale is from 103 to 134, and the mean for this scale is 118.22.

Wechsler, using the definition of intelligence level in terms of statistical frequencies as a basis for the classification of intelligence for his standardization population, classified intelligence as : defective, borderline, dull normal, average, bright normal, superior, and very superior. He indicated the percentage of the population in each class. According to his classification the bright normals included 16.1 per cent of the total American population, and obtained IQs between 111 and 119. [19] Therefore, the average student in the College of Arts and Sciences at the University of Detroit who acted as subject for this study belongs to the bright normal group, and he is ranked higher than approximately 74 per cent of the American population.

A point to be stressed here is that these data were gathered only from students at the University of Detroit. One should be cautious in applying these means to other groups. For one thing, the group in this study is small, consisting of only fifty subjects. Secondly, even though an attempt was made to secure a representative sample, the fact that participation was on a voluntary basis does not guarantee random sampling.

The subjects in this study obtained percentile scores

19. David Wechsler. The Measurement of Adult Intelligence, 3rd edition. Baltimore: The Williams and Wilkins Company, 1944, pp. 36-48.

on the ACE Psychological Examination that ranged from 25 to
100 for the total score. The mean percentile score for the
subjects in this study was 66.40 for the total score. The
mean percentile score for the entire enrollment of the fresh-
man class in the College of Arts and Sciences at the University
of Detroit (excluding, however, those students that entered
on a probationary level) was 55.47 for the total score. When
the scores of these two groups are compared it appears that
our sample shows some difference. There is a large difference
between the mean scores made by the subjects in this study,
and those made by the freshman class in the College of Arts
and Sciences. Secondly, the freshman class approaches the
mean, namely 50, of the ACE Psychological Examination more
closely than does our group. Both of these points would in-
dicate that our sample is not a representative one, but,
rather, a more selected one.

Correlations Between Wechsler Scale Scores and Mean School Grades

Having determined the mean scores, let us now turn to
the correlation between the Wechsler-Bellevue Intelligence
Scale, Form II, and the scholastic success of the subjects.
In this way an index of the practical validity of the
Wechsler scales may be obtained. The correlations between
the Wechsler scales and the mean school grades for the first
semester in the College of Arts and Sciences are given in
Table III. The first column in the table indicates the

TABLE III

CORRELATIONS BETWEEN THE WECHSLER VERBAL SCALE, PERFORMANCE SCALE, AND FULL SCALE, AND THE MEAN GRADES FOR THE FIRST SEMESTER

Instrument	r	SE	Significance
Verbal Scale	.377	.143	1% level
Performance Scale	.267	.143	5% level
Full Scale	.359	.143	1% level

instruments used; the second, the correlations between this instrument and the mean school grades obtained by the fifty subjects. The third column gives the standard error, and the fourth column gives the level of significance for the correlation. The correlations were computed by the formula for the Pearson Product-Moment r from the scatter diagram. The standard error was estimated by the formula $\sigma_r = \frac{1}{\sqrt{N-1}}$, and the level of significance was determined by a table published by Linquist.[20]

The correlation of .359 (SE: .143) of the Full Scale with the mean grades is fairly low, since correlations of this type are near .50. This correlation is somewhat lower than the .556 (SE: .144) found by Trygg Engen with his group of

20. Edward F. Linquist. Statistical Analysis in Educational Research. New York: Houghton Mifflin Company, 1940, p. 212.

freshman engineers. Of course, the low correlation obtained
for the Performance Scale does not add to the correlation
yielded by the Full Scale. Further, it may be noted, that the
correlation obtained here for the Full Scale is lower than
correlations usually obtained with good group tests. The
Pre-Engineering Inventory and the ACE Psychological Examina-
tion have higher correlations with mean school grades. The
correlation obtained here for the Full Scale would suggest,
however, that further study with groups of this type is
advisable.

It is interesting to note the relatively great differ-
ence between the correlations for the Verbal Scale and the
Performance Scale. These correlations are .377 (SE: .143)
and .267 (SE: .143), respectively. This fact was also
noted by Trygg Engen who found approximately the same dif-
ference between these two scales. It would, therefore, give
further indication that the Verbal Scale has a decidedly
better practical validity since its correlation seems to be
the more dependable one in both instances.

The correlations in this study were obtained from a
select group. Even though the correlations are low the
Wechsler-Bellevue Intelligence Scale, Form II, might have
practical validity when correlated with school grades.
Since literature indicates that results have been variable
with different groups, further study would be suggested
(cf. pp. 2-7).

Grade Expectancy

Expectancy tables serve the purpose of organizing the data for interpreting an individual's chances of success. The validity coefficient, or coefficient of correlation, summarizes the data for the entire group in one mathematical figure while the expectancy table summarizes the data for the individuals of the group. In this way the expectancy tables can demonstrate more adequately what these correlations mean, and how they can be interpreted.[21]

Table IV gives the relationships between the Wechsler Verbal Scale scores, which are placed in the first column, and the mean school grades, which are recorded in the top row. By means of this table one can determine roughly the probability whether a student with a given Wechsler Verbal Scale score will succeed in the first semester in the College of Arts and Sciences, and what average grade he can expect to receive.

The frequency with which each grade occurs has been converted into per cent on the basis of the total number of scores placed in each row. The table should, therefore, read that, of the students who obtained Verbal Scale scores between 125 and 134, fourteen per cent (1 student) earned a mean grade of D, forty-three per cent (3 students) earned

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21. Alexander G. Wesman, "Expectancy Tables--A Way of Interpreting Test Validity," Test Service Bulletin, No. 38, (December, 1949), 1-5.

TABLE IV

EXPECTANCY TABLE FOR PREDICTING AVERAGE GRADES
ON THE BASIS OF WECHSLER VERBAL SCALE SCORES

Wechsler Verbal Scale Scores	No. of Subjects Earning Each Grade				Total N	Per Cent of Subjects Earning Each Grade				Total Per Cent
	F	D	C	B*		F	D	C	B	
125-134		1	3	3	7		14	43	43	100
115-124	5	5	14	5	29	17	17	48	17**	99
105-114	4	6	4		14	29	43	29		101
	9	12	21	8	50					

* A = 4; B = 3.0-3.9; C = 2.0-2.9; D = 1.0-1.9; F = below 1.
The mean school grade for each student was determined by
adding up the total number of quality points earned and
dividing this sum by the total number of credit hours
carried in the first semester. There were no A averages.
** At each IQ level, the discrepancy in percentages is due
to rounding.

TABLE V

EXPECTANCY TABLE FOR PREDICTING AVERAGE GRADES ON THE
BASIS OF THE WECHSLER PERFORMANCE SCALE SCORES

Wechsler Perf. Scale Scores	No. of Subjects Earning Each Grade				Total N	Per Cent of Subjects Earning Each Grade				Total Per Cent
	F	D	C	B		F	D	C	B	
125-134	1	1	2	3	7	14	14	29	43	100
115-124	1	6	8	4	19	5	32	42	21	100
105-114	5	4	7	1	17	29	24	41	6	100
95-104	2	1	4		7	29	14	57		100
	9	12	21	8	50					

TABLE VI

EXPECTANCY TABLE FOR PREDICTING AVERAGE GRADES
ON THE BASIS OF WECHSLER FULL SCALE SCORES

Wechsler Full Scale Scores	No. of Subjects Earning Each Grade				Total N	Per Cent of Subjects Earning Each Grade				Total Per Cent
	F	D	C	B		F	D	C	B	
125-134	1	1	3	6	11	9	9	27	55	100
115-124	4	8	12	2	26	15	31	46	8	100
105-114	4	2	6		12	33	17	50		100
95-104		1			1		100			100
	9	12	21	8	50					

a grade of C, and forty-three per cent (3 students) earned
a grade of B. Of the twenty-nine students who obtained a
Verbal Scale score between 115 and 124, seventeen per cent
(5 students) obtained a mean grade of F; seventeen per cent
(5 students), a D; forty-eight per cent (14 students) ob-
tained a C; and seventeen per cent (5 students) obtained a B.
Finally, of those students who obtained a Verbal Scale IQ
between 105 and 114, twenty-nine per cent (4 students) had
grades of F; forty-three per cent (6 students) had grades of
D; and twenty-nine per cent (4 students) made grades of C.
No student in this range made a better grade than C. On the
basis of this table, then, one might predict the probable
grades received in the first semester by future students in
the College of Arts and Sciences. However, note should be
made of the fact that the nature of the sample and its size
must be considered when such data are used. Wesman warns
that the lesser reliability of individual per cents is a real
limitation of the expectancy table technique, and one of
which the user should be conscious.[22]

Table IV can be summarized in the following manner: of
those students with IQs below 115 only about one-fourth ob-
tained satisfactory grade-point averages; of those with IQs
between 115 and 124, about two-thirds obtained a satisfactory
grade-point average; of those with IQs of 125 or above, about
four-fifths obtained a satisfactory grade-point average.

22. Op. cit., p. 4.

Tables V and VI which show the prediction of average grades on the basis of the Wechsler Performance Scale and Full Scale scores, respectively, are to be read in the same manner as Table IV, and may be interpreted in the same fashion.

The difference, then, between the use of expectancy tables and the validity coefficients is the way in which the data are handled. The validity coefficients summarize the data while the expectancy tables demonstrate the details of these data. Wesman states that, "one should recall that the average score of a class is a more stable figure than the score of any individual student."[23] It is evident also, that the usefulness of the expectancy tables varies with the value of the correlation; hence, the higher the correlation, the more useful becomes the expectancy table. Therefore, our expectancy tables are limited in usefulness, and they must be interpreted with caution.

Conclusions

The results of the data in this study indicate fairly low correlations between the Wechsler-Bellevue Intelligence Scale, Form II, and the mean school grades of freshman students in the College of Arts and Sciences, in their first semester at the University of Detroit. However, they do not eliminate the value of the instrument as a possible predictor

23. Op. cit., p. 4.

of success with college students. As it was pointed out,
correlations of this type are usually near .50. It was also
indicated that good group tests give higher correlations.
The Pre-Engineering Inventory and the ACE Psychological Ex-
amination were listed as examples of group tests that give
higher correlations.

The Verbal Scale, however, does have fair utility as a
guidance instrument for college students. It was found that
the Verbal Scale shows a higher correlation than either the
Performance Scale or the Full Scale. Since this was also
found by Trygg Engen, the Verbal Scale would seem to have
better practical validity than the Performance Scale and the
Full Scale. The results, moreover, indicate that there is a
need for further study of this type.

CHAPTER III
SUMMARY

1. The objectives of this investigation were: (1) to determine the mean scores of freshman students enrolled in the College of Arts and Sciences, on the Verbal Scale, Performance Scale, and the Full Scale of the Wechsler-Bellevue Intelligence Scale, Form II; (2) to correlate these mean scores with the mean school grades obtained by these students in their first semester in the College of Arts and Sciences in order to determine the practical validity of this scale at the college level; and (3) to organize the data in expectancy tables by which it would be possible to predict an individual student's probable success or failure in terms of his results on this intelligence scale.

2. The Wechsler scale was administered during the first semester to fifty freshman students from the College of Arts and Sciences of the University of Detroit. With the exception of only two students all ranged from seventeen to nineteen years of age. The school grades were obtained from the office of the Dean of the College at the end of the first semester.

3. All subjects were obtained on a voluntary basis. An attempt was made, however, to secure a representative sample. In order to check the nature of the sample the mean percentile

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for the total score of the ACE Psychological Examination, which was taken by the subjects before their entrance into the College of Arts and Sciences, was compared with the mean percentile for the total score obtained on the same test by all freshman students (except those admitted on a probationary basis) in the College of Arts and Sciences at the University of Detroit. The results of this comparison indicate that the subjects of this study are a selected group.

4. Next, the data were statistically analyzed. The mean scores on the Wechsler Verbal Scale, Performance Scale, and Full Scale were 117.00 (SD: 6.57), 114.24 (SD: 8.73), and 118.22 (SD: 6.90), respectively. According to Wechsler's classification, this means that the average student in this sample ranks higher than about 74 per cent of the American population, and belongs to the bright-normal group in Wechsler's terminology.

5. The coefficients of correlation for these scales were determined in order to arrive at an index of their predictive value at the college level. The correlation of .359 (SE: .143) for the Full Scale indicates a fairly low correlation between this scale and college grades, when it is compared with the correlation of .556 (SE: .144) for the Full Scale as found by Trygg Engen. However, this correlation is not so low as to indicate the lack of a relationship between this scale and college grades. It would, rather, suggest the desirability of further study. The correlations

for the Verbal Scale and the Performance Scale were also relatively low, being .377 (SE: .143) and .267 (SE: .143), respectively. The Verbal Scale faired better than the other two. Since this was found to be true in Trygg Engen's study also, it would give further indication that the Verbal Scale is a more dependable instrument for predicting success at the college level.

6. Finally, three expectancy tables were prepared in order to present the details of the relationship between the scores on the three Wechsler scales and the mean school grades. The coefficient of correlation summarizes the data while the expectancy tables indicate the chances an individual has for success or failure in terms of his scores on the Wechsler scales and the mean grades he receives. It was indicated that the higher the correlation, the more useful the expectancy table becomes. In this study, therefore, the usefulness of the expectancy tables was somewhat limited.

CHAPTER IV

CONCLUSION

1. The intelligence rating found for students in the
College of Arts and Sciences is not too much different from
the intelligence rating found by Trygg Engen for students in
the Engineering College. It would appear that the students
in the College of Arts and Sciences are rated with students
of a usual college population. This conclusion would be in
accordance with the results obtained by Anderson, Sartain,
and Merrill and Heathers (cf. pp. 4-6). The average
student in the College of Arts and Sciences falls into
Wechsler's bright-normal group. Subjects in the studies of
Anderson, Sartain, and Merrill and Heathers, which include
students from various college curricula fall into the same
group. This would indicate, therefore, that students at the
college level, including the College of Arts and Sciences,
would score higher than 74 per cent of the total American
population.

2. This study indicates that although a relationship
exists between the Wechsler-Bellevue Intelligence Scale,
Form II, and mean grade scores for students in the College
of Arts and Sciences, the resulting correlations are not
high. The correlations are low when compared with Trygg
Engen's, and those of Frandsen, Anderson, and Sartain.

However, a study by Gerboth shows only a correlation of .26 for the Wechsler-Bellevue Intelligence Scale, Form II, and mean school grades for college students. It would appear, then, that correlations between the Wechsler-Bellevue Intelligence Scales and mean school grades for college students show some variation. Therefore, although a relationship may be said to exist between the Wechsler scales and mean school grades of freshman students in the College of Arts and Sciences, nevertheless, this study, like the others that were mentioned, indicates that further research with specific college groups is necessary.

3. The correlation between the Wechsler Verbal Scale IQs and mean school grades is higher than that for the Performance Scale. Since this fact was found by Engen in his study also, and since it also seems to hold true for other studies investigated, it would appear that the Wechsler Verbal Scale is a more dependable instrument than the Performance Scale for the purpose of predicting college grades.

4. On the basis of expectancy tables one might forecast roughly the probable success or failure of an individual student in the College of Arts and Sciences. However, the usefulness of these expectancy tables varies with the coefficient of correlation. The higher the correlation the more useful become the expectancy tables. Hence, the usefulness of the expectancy tables in this study is somewhat

limited.

5. One should be cautious in applying these results to other groups of students from a college of Arts and Sciences for the following reasons:

   a. The sample is not large. It consisted of only fifty subjects.

   b. Students at the University of Detroit may tend to form a more selected group since the University is a private institution.

   c. The subjects were obtained on a voluntary basis. This does not guarantee a representative sample, and, as has been pointed out, the subjects of this study tend to be a selected group.

   d. Grades determined by teachers might be poor metric material.

6. Further study of this type is necessary before these conclusions can be accepted. The following type of research is, therefore, suggested:

   a. Another study with a larger group of subjects from the College of Arts and Sciences;

   b. Investigation of the predictive value of each Wechsler subtest in connection with every course taken by these students.

7. A further problem, suggested by a review of the literature, would be a careful investigation of the validity of the Performance Scale for predicting success at the college level.

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