

**CORRELATES OF THE WECHSLER ADULT
INTELLIGENCE SCALE, THE SLOSSON INTELLIGENCE
TEST, ACT SCORES AND GRADE POINT AVERAGES**

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CORRELATES OF THE WECHSLER ADULT INTELLIGENCE
SCALE, THE SLOSSON INTELLIGENCE TEST, ACT
SCORES AND GRADE POINT AVERAGES

An Abstract
Presented to
the Graduate Council of
Austin Peay State University

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Linda Bogard Rudolph

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ABSTRACT

The purposes of this study were to determine the validity of the Slosson Intelligence Test on an adult population when compared with an accepted and proven individual intelligence test, and to determine if the Slosson could be used to predict acceptance and success in college.

The subjects were 50 undergraduate students currently enrolled in lower division psychology courses at Austin Peay State University, Clarksville, Tennessee. The SIT and Wechsler Adult Intelligence Test were administered individually to each subject over a four month period.

The Pearson Product-Moment Correlation technique was used to compare WAIS IQ scores with SIT IQ's, ACT scores and GPA's. The correlation coefficients obtained in this study ranged from .30 to .73 and were all significant beyond the .01 level except for the SIT and GPA correlation of .30, which was significant at the .05 level.

The results of this study indicate that the SIT is a valid instrument for measuring adult intelligence, and is also a valid instrument for predicting acceptance and success in college.

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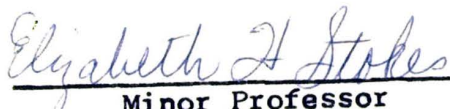
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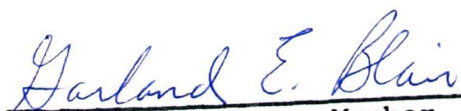
To the Graduate Council:

I am submitting herewith a Thesis written by Linda Bogard Rudolph entitled "Correlates of the Wechsler Adult Intelligence Scale, the Slosson Intelligence Test, ACT Scores and Grade Point Averages." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

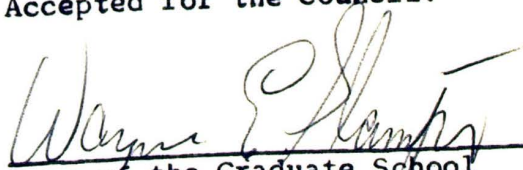

Major Professor

We have read this thesis and recommend its acceptance:


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or
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CHAPTER I

INTRODUCTION TO THE PROBLEM

The Slosson Intelligence Test (SIT) was introduced in 1963 by Richard L. Slosson for use as a quick "individual" intelligence test. Slosson's purpose in constructing this test was to provide an abbreviated form of the Stanford-Binet Intelligence Scale, Form L-M, by Terman and Merrill, which could be quickly and easily administered. The test is composed mainly of selected items from the Gesell Developmental Schedules and from the Stanford-Binet.

There are many occasions, due to the limitations imposed by time and personnel, when a short form intelligence test would be particularly valuable to teachers, principals, guidance workers or social workers. There are numerous advantages in using a short form intelligence test such as the SIT. This test requires approximately 30 minutes to administer and score, whereas widely used individual intelligence tests such as the Wechsler Adult Intelligence Scale and the Stanford-Binet require a minimum of one hour for administration and scoring. The SIT requires no special testing materials; only the manual and score sheet are

needed. Special supervised training is not necessary in order to give and score this test.

The SIT appears to be a highly reliable and valid test for measuring intelligence. Slosson (1963) reports in the test manual that in his standardization of the test he conducted a study of 139 subjects ranging from 4 to 50 years of age. He administered the Stanford-Binet, Form L-M, and the SIT to all subjects and reports a reliability coefficient of .97 in a test-retest interval of two months. Comparison with the Binet on 141 subjects, most of whom were subjects in the reliability study, yielded a concurrent validity coefficient of .92.

Published research on the SIT is limited; however, as will be noted from the review of the literature, studies indicate that the SIT correlates highly with older and proven measures of mental ability.

DeLapa (1968) concluded from his study using the SIT that it appeared to be measuring approximately the same abilities as the Binet. The purposes of his study were to determine whether there was a relationship between the Stanford-Binet, Form L-M, scores of educable children in special education classes and the scores obtained by those same children on the SIT, and to determine whether there

was a relationship between the Stanford-Binet, Form L-M, scores of a representative sample of children from regular classrooms and their SIT scores. The sample included 117 children, ages 8 to 12 years. The resulting correlation between the SIT and Binet scores for students in special education classes was .60, and for the students from regular classrooms it was .90.

Poissant (1967) tested 36 slow learners (ages 8 to 12 years) with the Stanford-Binet and two weeks later the same children were tested with the SIT. She obtained a product moment correlation of .89 and concluded that the SIT may prove to be a valuable tool for use with slow learners.

Kaufman and Ivanoff (1969) assayed the validity of the SIT via a correlational study with the Wechsler Adult Intelligence Scale on a rehabilitation population. Impairments of the 45 subjects covered a range of emotional disturbances, and intellectual functioning of the subjects ranged from mild retardation to bright normal, based on WAIS scores. A correlation of .93 between the SIT and the WAIS full scale scores indicates that the two tests appear to be measuring the same types of intellectual functioning. This high correlation was not expected by the researchers

as the SIT consists predominantly of Stanford-Binet type items and does not include a performance section as does the WAIS. A correlation of .70 was obtained between the SIT and the performance section of the WAIS, and the SIT and verbal section of the WAIS correlated .96. Again, the authors feel that "it is reasonable to assume that the SIT is providing an adequate measure of intellectual functioning."

Hammill (1969) investigated the reliability and validity of the Slosson when administered and scored by special education teachers who had no prior psychological testing experience. Subjects were students between the ages of 4 and 16 years enrolled in a Philadelphia school. Test-retest reliability coefficient was .97, and the validity study yielded a coefficient between the SIT and 14 intellectual and cognitive variables of from .70 to .80. Hammill concluded that the results he obtained relative to inter-scorer differences, internal consistency, reliability and concurrent validity corroborates the contention by Slosson that the test can be administered by teachers, principals and other personnel unskilled in psychological testing.

Moreover, Hammill reports in his article that McRae (1968) found a correlation of .74 between the SIT and the Wechsler Preschool and Primary Scale of Intelligence,

and Soft (1968) obtained a correlation of .91 between the Wechsler Intelligence Scale for Children and the SIT.

Jongeward (1969) investigated the validity of the SIT with two age groups of educable mentally retarded children. One group of 30 subjects, ages 7 years 5 months to 9 years 11 months, was tested with the Binet and SIT. Jongeward obtained a correlation of .761 between IQ scores and a correlation of .806 between mental ages of the SIT and Binet. Both correlation coefficients were significant beyond the .01 level. Jongeward tested a second group of 30 EMR children, ages 12 years 2 months to 15 years 3 months, with the SIT and the Wechsler Intelligence Scale for Children (WISC). He found a correlation of .537 between SIT IQ scores and WISC full scale scores. The SIT and WISC verbal IQ scores correlated .852. These correlation coefficients were also significant beyond the .01 level. A comparison of SIT scores and WISC performance scores yielded a .204 correlation, which was not significant at the .01 level. He concluded that the SIT should not replace the Binet or WISC as a basic tool for assessing the mental abilities of EMR children, but felt that the SIT does have merit as an instrument for screening children for EMR classes.

Included in materials sent to the present writer by the Slosson Educational Publications was an abstract of a study by the Very Rev. Msgr. Leo Hammerl, Superintendent of Schools, Department of Education, Diocese of Buffalo (1965). The SIT was administered by three members of the school staff: a principal, a teacher, and a guidance counselor. The Stanford-Binet, Form L-M, was given by a psychologist who had no previous knowledge of the SIT test results. Subjects were 30 boys and girls ranging in age from 11 to 19 years, some of whom were disturbed, uncooperative and difficult to test, and some of whom had serious reading handicaps. The correlation coefficient eventuating from this study was .91.

Also included in the materials from Slosson Educational Publications was a study from the Director of Our Lady of Victory Homes of Charity, Walter Suchowiecki, Lackawanna, New York (1965). The SIT was administered to 72 boys by a graduate student social worker, a teacher and an undergraduate student of sociology. A psychologist administered the Stanford-Binet, Form L-M, without knowledge of the SIT results. The ages of the boys ranged from 13 to 18 years, and most came from difficult and disturbed home environments. Many of the boys had serious emotional or

reading and learning problems. The correlation coefficient resulting from this study was .91 also.

As will be noted from the foregoing reviews, most reliability and validity studies of the Slosson Intelligence Test have been done with children or with an atypical population such as educable mental retardates or a rehabilitation group. Slosson indicates that this test is a valid and reliable instrument for measuring adult intelligence as well as the intelligence of children. One of the purposes of this study was to determine the validity of the SIT on an adult population when compared with an older and proven test of mental ability.

A second purpose of this study was to determine the degree of relationship between the SIT and the American College Testing Program examination (ACT), and between the SIT and grade point averages (GPA's) in order to ascertain whether the SIT can be used to predict acceptance and success in college.

CHAPTER II

METHOD

The Sample

The sample used in this study was undergraduate students enrolled in lower division psychology courses at Austin Peay State University, Clarksville, Tennessee. All participants volunteered to serve as subjects. The sample was composed of 50 students, of which 35 were females and 15 were males. Because ACT scores were not available for transfer students included in the sample, the number of subjects for the correlation between ACT scores and the Slosson was reduced to 41, 32 females and 9 males. Subjects ranged in age from 18 to 39 years with the mean age being 22 years 2 months.

Description of the Instruments

The Slosson Intelligence Test is a short form individual intelligence test for use with adults and children. The test is essentially verbal except for lower levels where perceptual-motor items are included. The test yields a mental age and a ratio IQ.

The present writer selected the Wechsler Adult Intelligence Scale as the criterion with which to compare the

SIT because of its proven and established reputation as a valid and reliable test of mental ability. The WAIS manual (1955) quotes a special study undertaken to determine the relationship between the WAIS and the Stanford-Binet, Form L. Two experienced examiners tested 52 adult, white males and obtained a correlation of .85 between the WAIS full scale IQ and Binet IQ; a correlation of .86 between the verbal section of the WAIS and the Binet; and a correlation of .69 between the WAIS performance score and Binet IQ scores. According to Anastasi (1961) the Wechsler scales have been repeatedly correlated with the Stanford-Binet, with validity coefficients in unselected groups clustering around .80. Therefore, it is the assumption of the present writer that if the WAIS correlates this highly with the Stanford-Binet, the Slosson Intelligence Test, which is derived from and standardized on the Stanford-Binet, should correlate highly with the WAIS also.

In selecting an instrument to serve as the criterion for predicting achievement in college, the American College Testing Program examination was chosen because of its widespread acceptance and use as a measure of scholastic aptitude for entering students.

Slosson Intelligence Test scores were correlated with grade point averages of the subjects in order to ascertain the value of the SIT in predicting success in college.

The Wechsler-Bellevue (W-B) was compared with the American Council on Education Psychological Examination (ACE) by Merrill and Heathers (1953). The ACE is the forerunner of the currently used American College Testing Program (ACT) and was also widespread in its use as a measure of scholastic aptitude before the appearance of the ACT. These researchers investigated the relationship between the scores obtained on the two tests and the relative capacity of the two tests to predict academic achievement at the college level. They reported a correlation of .46 between the full scale W-B and GPA's and a correlation of .40 between the ACE scores and GPA's. The verbal portion of the W-B correlates .58 with GPA's. The researchers concluded that the W-B full scale predicts college achievement as well as the total ACE, and that the verbal scale appears to be the best single predictor of the general academic achievement of freshmen.

Anderson (1942) investigated the relationship of the Stanford-Binet, Form L, the Wechsler-Bellevue, the ACE and college grades on a population of 112 college women in

a freshman class. He found that ACE scores correlated from .48 to .55 with grade point averages. The correlation of the W-B full scale scores with grade point averages were .41 and .45 as compared with correlations of .48 to .55 for the ACE. The Stanford-Binet and W-B full scale only correlated .62, which he explained as being the result of the homogeneity of his population.

Sartain (1946) found similar correlations of .53 between the W-B full scale and grade point averages, and .43 between the ACE and grade point averages. The W-B verbal section correlated even higher with ACE scores and grade point averages, with correlations ranging from .50 to .56.

Imre (1963) used the WAIS Information, Comprehension, Similarities and Vocabulary subtests to estimate IQ and predict academic achievement for a group of subjects in a state hospital psychiatric aide training program. He obtained correlations from .40 to .65 between the different subtests and grades on theory subjects. He felt that the obtained correlation coefficients were comparable to those used in predicting achievement in schools and colleges.

Brill (1962) found that the WAIS and WISC were of value in determining what should be expected in the academic achievement of deaf students. He found correlations of .54

and .55 between WISC and WAIS scores and two well-known achievement tests.

Frandsen (1950) studied the relationship of the W-B and high school achievement. He chose subjects of relatively superior intelligence from a midwest university city whose employed population consisted predominantly of university staff and other professional and business occupations. He found that the W-B full scale IQ's and verbal scale IQ's predict three year GPA ratios very well, the correlation being .69 for both. Frandsen concluded that even though his data were limited to high school seniors, that in the light of results obtained by Anderson and Sartain (reviewed in the previous paragraphs) it is probable that these results could also apply with college freshmen in similarly favorable conditions.

Administration and Scoring

The WAIS and SIT were administered individually to each subject by this researcher and a fellow graduate student over a period of four months. Each test was scored according to the manuals of direction without knowledge of other test results.

CHAPTER III

RESULTS

The Pearson Product-Moment technique was used to compute the correlation coefficients. WAIS IQ scores were compared with SIT IQ's, ACT scores and GPA's. Table 1 summarizes the correlations. Means and standard deviations are given in Table 2.

TABLE 1

Correlations between the SIT, WAIS, ACT scores and GPA's

| Item | r* |
|-----------------------------------|-----|
| 1. WAIS Full Scale and SIT | .70 |
| 2. WAIS Verbal Scale and SIT | .73 |
| 3. WAIS Performance Scale and SIT | .49 |
| 4. ACT Scores and SIT | .56 |
| 5. GPA's and SIT | .30 |

*All correlations were significant beyond the .01 level with the exception of the r of .30 obtained between GPA's and SIT. This correlation was significant at the .05 level.

TABLE 2

Means and Standard Deviations

| Item | Mean | SD |
|----------------------|---------|-------|
| 1. WAIS Full Scale | 120.24 | 8.60 |
| 2. WAIS Verbal Scale | 123.02 | 7.63 |
| 3. WAIS Performance | 113.82 | 11.95 |
| 4. SIT | 124.72 | 10.32 |
| 5. ACT Scores | 20.37 * | 4.08 |
| 6. GPA's | 2.725 | .64 |

*N = 50 for all correlations except ACT scores, where N = 41.

The differences between IQ scores obtained on the WAIS full scale and the SIT ranged from 1 to 23 points, with the average difference between scores being 4.4. In the validity section of the SIT manual (1963), Slosson charts the actual scores on a small sample of adults, ages 17 to 55. He compares SIT scores to those obtained on the Stanford-Binet, Form L-M, and the WAIS. For a sample of 10 he reports an average difference between SIT and WAIS scores of 3.3. No correlation coefficients were given for the group.

CHAPTER IV

DISCUSSION

The validity coefficient of .70 between the WAIS and SIT obtained in this study is slightly lower than the coefficients reported in the review of the literature between the Binet and the WAIS, although it is still significant beyond the .01 level. Since the SIT is composed of items from the Stanford-Binet, it is plausible that the SIT would correlate higher with the Stanford-Binet than with the WAIS.

The study quoted in the WAIS manual (1955) between the WAIS and the Stanford-Binet, Form L, reports that the average WAIS full scale IQ was found to be about five points below the average Stanford-Binet IQ. The correlation between the WAIS and Stanford-Binet was .85, however, the study was done on a normally distributed population, not a selected one as composes the present study.

Anderson (1942) also reports in his study with the Stanford-Binet, Form L, the Wechsler-Bellevue and ACE scores that the Stanford-Binet scores could be expected to be about seven points higher than the W-B scores. He notes that the mean W-B IQ is 10 points below the mean Stanford-Binet IQ and explains this difference by stating that such

a discrepancy could be expected at the upper IQ levels because of the difference in the standard deviations of the two tests. He obtained a correlation of .62 between the Stanford-Binet and W-B full scale and justified his lower correlation as being the result of the homogeneity of his population, a college group.

Anastasi (1961) in her discussion of validity coefficients states that "it is essential to specify the nature of the group on which the validity coefficient is found," and that "the wider the range of scores the higher the correlation." The range of scores in this sample is restricted to IQ's from 90 to 146, thereby omitting the lower end of the normal distribution or approximately 50 per cent of a standardization sample. The effect of this selection of a population will therefore lower the validity coefficient. Anastasi states specifically that within more homogeneous samples such as college students, correlations usually are considerably lower.

As could be expected, it was found that the WAIS verbal section correlates higher with the SIT (.73) than the full scale WAIS and SIT (.70). Most studies reviewed in the literature show a higher correlation between the verbal portion and other academic indices than the full

scale WAIS scores. Merrill and Heathers (1953) concluded that the W-B verbal scale appeared to be the best single indicator of general academic achievement of freshmen.

The correlation of .49 between the WAIS performance section and the SIT was also expected as most studies indicate that the performance section does not predict academic success as well and does not correlate as highly with other verbal intelligence tests such as the Stanford-Binet.

The correlation of .56 between ACT scores and the SIT was comparable or slightly higher than those reported by Anderson (1942) between ACE scores and W-B full scale scores.

The correlation of .30 between GPA's and SIT scores is slightly lower than those reported by Anderson (1942), Merrill and Heathers (1953) and Sartain (1946). Their coefficients between the W-B full scale and GPA's ranged from .45 to .53 and were significant at the .01 level, whereas the coefficient found in the present study was significant at the .05 level. It appears that GPA's may be more difficult to predict inasmuch as many factors affect their variability.

The time for administering the Slosson to subjects ranged from 15 minutes to 45 minutes, usually averaging

about 30 minutes. Slosson (1963) states in the test manual that the "time required to give and score this test varies from about 10 to 15 minutes for the average person, to 20 or even 30 minutes for the slow, the timid, the very gifted or the person who is defective in certain areas or higher in other areas." This researcher feels that the lengthened time for administration of the SIT in this study was due to the necessity for subjects to pass "10 in a row" in order to establish a basal age. Slosson suggests that the examiner start at the 15-0 year level for an average adult; however, it was necessary most of the time in testing these subjects to go back to an earlier age level in order to obtain a basal age. Math items seemed to hinder many subjects, especially since they must be "done in your head."

Although validity coefficients between the SIT and the WAIS were not as high as expected, they were of sufficient magnitudes to be significant at better than the .01 level, thereby substantiating Slosson's contention that the SIT is a valid test of mental ability for adults.

The SIT correlates highly enough with ACT scores to be considered a valid instrument for predicting acceptance and success in college, even though it does not correlate as well with GPA's. With the multiplicity of factors

affecting GPA's it would seem more logical to this writer to place more emphasis on the relationship of the SIT with the ACT scores than with GPA's.

the ACT scores than with GPA's.

The purpose of determining the correlation between ACT scores and GPA's was to determine what compared better as a predictor of college success. The first intelligence test, the ACT, was used to predict college success.

CHAPTER V

SUMMARY

The purposes of this study were to determine the validity of the SIT on an adult population when compared with an accepted and proven individual intelligence test, and to determine if the Slosson could be used to predict acceptance and success in college.

The selection of the criteria instruments--the Wechsler Adult Intelligence Scale, the American College Testing Program scores and grade point averages--was based on their reliability, validity and their widespread use in educational and institutional settings, and their use as criteria in many previous studies.

The correlation coefficients obtained in this study ranged from .30 to .73 and were all significant beyond the .01 level except for the SIT and GPA correlation of .30, which was significant at the .05 level.

In the light of the results of this study, it is concluded that the Slosson Intelligence Test is a valid instrument for measuring adult intelligence, and is also a valid instrument for predicting acceptance and success in college.

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