

THE RELATIONSHIP BETWEEN PERFORMANCE OF INSTITUTIONALIZED
MENTAL RETARDATEES ON THE STANFORD-BINET, FORM L-M
AND THE FRENCH PICTORIAL TEST OF INTELLIGENCE

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CHAPTER I

INTRODUCTION

The problem of ascertaining the learning potentials of children is difficult under the best of conditions but even more so when attempting to evaluate the intelligence of the mentally retarded child. Trapp and Himmelstein observe:

The emphasis in the United States on the intelligence test scores in the diagnosis of mental retardation is reflected in the laws of many states which indicate specific IQ score limits as legal determinants of eligibility for commitment to institutions or placement in special education classes. In many communities, intelligence test scores have been used as rigid criteria for the selection or rejection of individuals for placement in education or rehabilitation programs with little or no regard for other important variables (22, p. 71).

Perhaps no word carries more ambiguity in all of psychology than "intelligence" a term used by nearly everyone, laymen as well as psychologists, but which is nebulously defined by most. Millerson writes, "Since 1905, psychologists have been in the curious position of devising and advocating tests for measuring intelligence and then disclaiming responsibility for them by asserting that nobody knows what the word really means" (12, p. 345).

The term "intelligence test" is being replaced by such terms as test of general mental ability or test of general scholastic ability. In spite of the limitations of so called intelligence tests, Cronbach reports "The outstanding success of scientific measurement of individual differences in behavior has been that of the general mental test. . .it stands today as the most important single contribution of psychology to the practical guidance of human affairs" (3, p. 157).

The first practical mental test was developed by Alfred Binet in 1904. Paris school officials were greatly concerned about the increasingly large number of students who did not seem to make progress in their school work and decided to move the feeble-minded to schools where they could be taught a more simplified curriculum. They did not want to penalize the child who was not making good progress because of lack of motivation, and felt they could not trust the teachers to pick out the feeble-minded. They wanted to identify the dull from good families whom teachers might hesitate to rate low and the dull with pleasant personalities who would be favored by the teachers. Binet was asked to assist in producing a method that would distinguish the genuinely dull; and he produced his first scale, in collaboration with Simon, in 1905. Binet's method was welcomed enthusiastically as a research technique and as a means of studying subnormal children (4, pp. 160-161).

Binet's technique, which was to a large degree impartial and independent of the preconceptions of the tester, was welcomed as a research technique and a means of studying subnormal children. The Stanford revisions of the Binet Scale (17, 18, 19) extended application of Binet's method to normal and superior children.

The Binet test performance is affected by a number of variables. Like other tests, it can measure only present ability and not innate capacity. The Binet score measures somewhat different mental abilities at different ages and the test is designed to give a single index of a child's general ability and does not give a reliable measure of separate aspects of mentality. This produces a problem as described by Guilford:

The advent of multiple-factor analysis has done something to broaden and enrich our conception of human intelligence but factor theory and the results of factor analysis have had little effect upon the practices of measurement of intelligence. We do have a great variety of tests in such intelligence scales as the Binet and its revisions and in the Wechsler scales, to be sure. Too commonly, however, a single score is the only information utilized and this single score is usually dominated by variance in only one or two factors. There is some indication of more general use of part scores, as in connection with the Wechsler tests but each of these scores is usually factorially complex and its psychological meaning is largely unknown as well as ambiguous. The list of factors that is to be presented in this article should clearly demonstrate the very limited information that a single score can give concerning an individual, and on the other hand, the rich possibilities that those factors offer for more complete and more meaningful assessments of the intellects of persons (6, p. 267).

In the past several decades there have not been many developments in the theory and measurement of intellectual functions, although the few developments have been very important. These developments suggest that the variety of intellectual factors or functions is greater than had previously been thought and that our conventional tests are most inadequate for the evaluation of these factors. In the case of the mentally retarded, there is strong evidence that our conventional tests leave much to be desired both as evaluators or predictors (8, p. 394).

In 1964, French (5) developed the Pictorial Test of Intelligence, which consists of six subtests, each designed to measure different aspects of intelligence and also give a single indication of general mental ability.

Statement of the Problem

The purpose of the present study was to determine the relationship between the Stanford-Binet, Form L-M and the French Pictorial Test of Intelligence in a group of educable mental retardates.

Review of Related Literature

The mentally retarded cannot be studied as a homogeneous group which complicates research in this area. Stevens and Heber indicated that many researchers encounter difficulty in reviewing the literature because of the problems in defining the population under consideration (15, p. xii).

Form L-M is essentially a revision of the 1937 Form L. Budoff and Purseglove (2) made a study of the performance of retardates on the two tests, using a sampling of seventy institutionalized retardates with t tests to test the significance of the differences between the obtained means of the subjects on the two tests, and did not find any significant differences. This research indicated that Form L-M is highly correlated with Form L and consequently could be used interchangeably with a similar population.

The Stanford-Binet, Form L-M was chosen as the criterion with which to judge the Pictorial Test of Intelligence in view of the fact that it is a widely used instrument with mentally retarded children. In a survey of ninety-six institutions for the mentally retarded, Silverstein (14) found that forty-four used the Form L-M in evaluating their children and noted that the Binet has long been recognized as one of the best tests for the judgment of mental subnormality.

Taylor and Taylor reported that the Stanford-Binet, Form L-M is considered the most suitable test available for the placement of children in institutions for the mentally retarded (16, p. 26).

Rohs and Hayworth compared the performance of two groups of mentally retarded children, one of familial etiology (N 20) and the other of various organic etiology (N 26).

It was found that the mean score on the Form L-M was significantly higher than that on the WISC (13, p. 859).

Koh and Hadow (9) administered the Peabody Picture Vocabulary Test and Form L-M to 152 institutionalized retardates and found a positive correlation between the tests that was significant at the .01 level of confidence.

Description of the Instruments Used

Two evaluative instruments were used in this study;

(1) The Stanford-Binet, Form L-M and (2) the French Pictorial Test of Intelligence.

Stanford-Binet, Form L-M. Form L-M, as it will be referred to for the rest of the study, is the third Stanford revision of the Binet test (1960). It incorporates into a single scale the best test items from the L and M Forms of the 1937 scale. The majority of the items were carried over from Form L inasmuch as Form L was used much more frequently than Form M. It is recommended that Form M be used for re-test purposes obviating the need for an alternate form. A total of 4,493 subjects, between the ages of two and one-half and eighteen, were used in the standardization of Form L-M.

A number of changes were incorporated into Form L-M distinguishing it from the earlier scales. Deviation IQs are now used and this "intelligence quotient" is not really a quotient at all but a standard score with the mean set at 100 and the standard deviation at 16. The IQ was originally

introduced as a ratio representing a child's rate of mental development. Mental age was determined and then divided by the child's chronological age, then multiplied by 100 to remove the decimal point. Above-average development was evidenced by a quotient over 100.

In Form L-M, the mental ages are converted into deviation IQs by Tables that are provided for ages two to eighteen. For adults, the eighteen year old norms can be used although the average mental-test score is not strictly constant throughout maturity.

For the 1960 revision, the investigators calculated the standard deviation of mental age for a representative sample of people at each age. Whatever MA fell one standard deviation above the mean for that age was converted into an IQ of 116. A standard-score IQ formed in this manner is often called a "deviation IQ" (4, p. 171).

Form L-M has a total of 142 test items: 122 basic items and an alternate test for each of the twenty age levels. The 1937 scales had alternate tests just for the seven pre-school levels, for a total of 129 items.

Changes also consisted of eliminating or relocating those 1937 items that were found to have changed significantly in difficulty since the original standardization; elimination or substitution of items no longer suitable by reasons of cultural changes; clarification of scoring ambiguities; and

adjustments to make the average mental age that the scale gives more nearly equal to the average chronological age at each age level (7, p. 39-40).

Form I-II does retain the main characteristics of the earlier Stanford revisions. It is an age scale making use of age standards of performance and undertakes to measure intelligence regarded as general mental adaptability. The very factors that contribute to its success as a measure of general intelligence do interfere with its usefulness as a measure of the various separate aspects of mentality which many test developers expect of an intelligence test. Items were included in the scale because they contributed to the total score.

Attempts to construct profiles that are psychologically meaningful with tests designed to give a single measure of general mental ability are very discouraging. Profile analysis, as noted by Cronbach, "tempts the psychologist to make more definite diagnoses than its validity warrants" (3, p. 150).

However, although a test is not designed to measure differential aptitudes, that does not mean that it offers meager opportunities for observation. The experienced clinician may make meaningful observations on the qualitative aspects of a subject's performance, his methods of work, perseverance, reaction to praise and encouragement,

reaction to failure, efforts, attentiveness, cooperation and many other clinically significant areas of his behavior in the standard situations presented by the test (20, p. 13).

An attempt has been made by Valett (24) to determine sub-test categories. Following a consideration of the various factors of intellect as proposed by Linet (1), Thurstone (21) and Guilford (7), six classifications were determined for the Form L-M test items. Valett describes them as follows:

General Comprehension. The ability to conceptualize and integrate components into a meaningful total relationship.

Visual-motor Ability. The ability to manipulate materials in problem solving situations usually requiring integration of visual motor skills.

Arithmetic Reasoning. The ability to make appropriate numerical associations and deal with mental abstractions in problem solving situations.

Memory and Concentration. The ability to attend and retain. Requires motivation and attention and usually measures degree of retention of various test items.

Vocabulary and Verbal Fluency. The ability to correctly use words in association with concrete or abstract material; the understanding of words and verbal concepts; the quality and quantity of verbal expression.

Judgment and Reasoning. The ability to comprehend and respond appropriately in specific situations requiring discrimination, comparison, and judgment in adaptation (24, p. 2).

Many of the test items are placed in more than one of the above categories. This overlap exists in reality to some extent and the nature, and significance of an item must be clinically deduced upon consideration of marginal

successes and failures, and the nature of the item relative to maturational differences (23, pp. 124-131).

The Profile (Appendix A) appears to have value in stimulating further thought relative to individual differences and inter-test performance, in presenting a graphic picture of test results, and in assisting students to understand the psychological constructs underlying the Form I-II test items.

The French Pictorial Test of Intelligence was first called the North Central Individual Test of Mental Ability (NCITMA), and was designed to aid in the assessment of the intellectual ability of young children with severe physical handicaps (5, p. 8).

The NCITMA was standardized on 400 children, ages three to six, from Nebraska and Illinois, and then redesigned with the addition of new items and re-standardized on a national sample increasing the age range of the instrument from three to eight years. This revision was published by French (5) in 1964 and called the French Pictorial Test of Intelligence (PTI).

The PTI is designed for administration by a trained examiner to one child at a time. It has been designed to

provide an easily administered, objectively scored testing instrument to be used in assessing the general intellectual level of both normal and handicapped children between the ages of three and eight (5, p. 1).

In some respects the PII represents a further development of Binet type scales but employs an objective multiple-choice technique. A variety of tasks is presented to measure verbal comprehension, perceptual organization, and ability to manipulate increasing complex symbols, spatial and numerical. Items reflecting the above areas are grouped in six subtests (Appendix B), which are as follows:

Picture Vocabulary (PV). The PV subtest measures verbal comprehension. The items require recall of previously acquired verbal meanings. Subjects must respond to a word spoken by the examiner and then select on the Response card that one of four drawings which best represents a meaning of the stimulus word. Twenty-nine response cards and thirty-two words are used in the Picture Vocabulary subtest.

Form Discrimination (FD). The FD subtest measures an individual's ability to match forms and to differentiate between similar shapes. The process is one of perceptual organization that requires subjects to match a drawing on a Stimulus card with one of four drawings on a Response card. The majority of the cards use universally known figures; however, differences among drawings become increasingly minute as the series progresses. Twenty-four Response cards and 27 Stimulus cards are used in this subtest.

Information and Comprehension (IC). The IC subtest is designed to sample range of knowledge and general understanding in addition to reflecting the subject's verbal comprehension. Effort was made to develop cross culture items which minimize specialized knowledge but past experience is, of course, utilized when the subject solves the problems. The responses reflect the subject's alertness to his environment and to available educational and cultural opportunities. Twenty-four Response cards are used to obtain answers to the 29 items in this subtest.

Similarities (S). In the S subtest, three drawings on each Response card possess common elements. The child's task is to determine the three drawings that "go together" and recognize the one drawing that does not "belong" with the others. The common elements in three of the four drawings must be perceived and brought together in a single concept. Responses to these items reveal the subject's ability to generalize. There are twenty-two response cards in this subtest.

Size and Number (SN). Perception and recognition of size, number symbol recognition and comprehension, ability to count and ability to solve simple arithmetical problems are sampled in the SN subtest. In many instances, the child must employ reasoning with numerical concepts. Problems of basic facts (addition, subtraction, division, multiplication and fractions) are included in this subtest but recognition of number symbols is not necessary for their solution. The SN subtest contains thirty-one items and employs nineteen Response cards and seven Stimulus cards.

Immediate Recall (IR). The IR subtest attempts to measure ability to retain momentary perceptions of size, space, and form relationships. A Stimulus card is presented for five seconds and then removed from view. A Response card is immediately exhibited for the subject to identify the same drawing. Successful performance requires freedom from distractibility. Nineteen Stimulus and Response cards are used in the IR subtest (5, pp. 4-7).

As with the Form I-L, deviation intelligent quotients are used with the PTH, with the mean set at 100 and a standard deviation of sixteen. The deviation IQ tables were constructed from the raw scores made by the 1930 children for the six age levels in the standardization.

Definition of Terms

The following terms are defined for purposes of this study:

Educable retarded. A child who has potentials for development in minimum educability in the academic subjects

of the school, social adjustment to such a point that he can get along independently in the community, and minimum occupational adequacy to such a degree that he can later support himself partially or totally at the adult level (8, p. 105).

Mental age. Chronological age for which a child's mental performance is average.

Mental retardation. Subaverage general intellectual functioning which originates during the developmental period and is associated with impairment in maturation, learning, and social adjustment (22, p. 22).

Intelligence. The global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment (25, p. 7).

Measurable intelligence. The quantitative performance of a person on a standardized intelligence test.

Hypotheses

The following research hypotheses were investigated:

1. There will be a significant, positive correlation between the Mental Age scores of the Stanford-Binet, Form L-M, and the Full Scale Mental Age scores of the Pictorial Test of Intelligence.

2. There will be a significant, positive correlation between the Mental Age scores on the Stanford-Binet, Form L-M and the Mental Age scores of the Picture Vocabulary subtest of the Pictorial Test of Intelligence.

3. There will be a significant, positive correlation between the Mental Age scores of the Stanford-Binet, Form L-M, and the Mental Age scores of the Form Discrimination subtest of the Pictorial Test of Intelligence.

4. There will be a significant, positive correlation between the Mental Age scores on the Stanford-Binet, Form L-M and the Mental Age scores of the Information and Comprehension subtest of the Pictorial Test of Intelligence.

5. There will be a significant, positive correlation between the Mental Age scores on the Stanford-Binet, Form L-M and the Mental Age scores of the Similarities subtest of the Pictorial Test of Intelligence.

6. There will be a significant, positive correlation between the Mental Age scores of the Stanford-Binet, Form L-M and the Mental Age scores of the Size and Number subtest of the Pictorial Test of Intelligence.

7. There will be a significant, positive correlation between the Mental Age scores of the Stanford-Binet, Form L-M and the Mental Age scores of the Immediate Recall subtest of the Pictorial Test of Intelligence.

The .05 level of confidence was accepted as being statistically significant for purposes of this study.

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CHAPTER II

METHOD

In general, the method of conducting this study was to administer two intelligence scales to each subject. The results of each of these examinations were then correlated with each other to investigate the relationship between them.

Subjects

The subjects used in this study consisted of twenty-eight mildly retarded children who were all residents of the Denton State School for Mentally Retarded Children, Denton, Texas. Seventeen males and eleven females ranging in chronological age from ten years and two months to fifteen years and four months, with a mean age of thirteen years and three months were evaluated. The subjects were selected to fit three criteria. (1) They possessed no physical handicaps that would prevent their performing on either testing instrument. (2) Their mental ages would be appropriate to the instruments involved (mental ages from three to eight years, the limits of the PTL). (3) They did not have a history of any serious

emotional problems. The twenty-eight subjects evolved from those children available at the Denton State School.

Procedure for Collecting Data

Each subject was administered both the PTI and the Stanford-Binet, Form L-L, individually, at two different sessions. All tests were administered by the same individual in the same office on the campus of the Denton State School. Half of the subjects, six females and eight males, were given the PTI at the first session, and Form L-L at the second session. The remaining subjects, five females and nine males, were given the Form L-L at the first session, and the PTI at the second session. All tests were administered and scored as indicated in the test manuals. The results were recorded in months of mental age, as the deviation IQs for the PTI are given only for those subjects whose chronological ages range from two and one half to eight and one half years.

Statistical Treatment

The seven hypotheses were tested by calculating the Pearson Product-Moment correlations between the Stanford-Binet, Form L-L mental age, and each of the following: (1) the PTI Full Scale mental age; (2) the PTI Picture Vocabulary subtest mental age; (3) the PTI Form Discrimination subtest mental age; (4) the PTI Information and Comprehension subtest mental age; (5) the PTI Similarities subtest mental

age; (6) the PTI Size and Number subtest mental age; and (7) the PTI Immediate Recall subtest mental age. All mental ages were figured in months. A significant relationship was assumed if the correlation between the tests was at the .05 level of confidence.

CHAPTER III

RESULTS AND DISCUSSION

Results

As indicated in Chapter One, this research was undertaken to investigate the relationship between the Stanford-Binet, Form L-M, and the French Pictorial Test of Intelligence when used on educable mental retardates. Specifically, the following theoretical hypotheses were investigated concerning the correlation between these two instruments: (1) There would be a significant, positive correlation between the Stanford-Binet, Form L-M mental age and the PTI Full Scale mental age. (2) There would be a significant, positive correlation between the Stanford-Binet, Form L-M mental age and the PTI Picture Vocabulary subtest mental age. (3) There would be a significant, positive correlation between the Stanford-Binet, Form L-M mental age and the PTI Form Discrimination subtest mental age. (4) There would be a significant, positive correlation between the Stanford-Binet, Form L-M mental age and the PTI Information and Comprehension subtest mental age. (5) There would be a significant, positive correlation between

the Stanford-Binet, Form L-M mental age and the PTI Similarities subtest mental age. (6) There would be a significant, positive correlation between the Stanford-Binet, Form L-M mental age and the PTI Size and Number subtest mental age. (7) There would be a significant, positive correlation between the Stanford-Binet, Form I-M mental age and the PTI Immediate Recall subtest mental age. The relevant data are presented in Table I.

TABLE I

PEARSON PRODUCT-MOMENT COEFFICIENT BETWEEN
THE STANFORD-BINET MENTAL AGE AND THE
PTI MENTAL AGES

Pictorial Test Of Intelligence	Pearson Product-Moment Correlation Coefficient
Full Scale	.9139*
Picture Vocabulary	.5377*
Form Discrimination	.6177*
Information and Comprehension	.6571*
Similarities	.6562*
Size and Number	.5166*
Immediate Recall	.4036**

*p = .01.

**p = .05.

Inspection of TABLE I reveals that the Stanford-Binet, Form L-M correlated .9139 with the PTI Full Scale. Form L-M correlated .5377 with the PTI Picture Vocabulary subtest.

Form L-M correlated .6177 with the PTI Form Discrimination subtest. Form L-M correlated .6571 with the PTI Information and Comprehension subtest. Form L-M correlated .6562 with the PTI Similarities subtest. Form L-M correlated .5166 with the PTI Size and Number subtest. Form L-M correlated .4036 with the PTI Immediate Recall subtest. The highest positive correlation was between Form L-M and the PTI Full Scale. The least positive correlation was between the Form L-M and the PTI Immediate Recall subtest. All correlations were significant at the .01 level of confidence with the exception of that between Form L-M and the PTI Immediate Recall subtest, which was significant at the .05 level of confidence.

Discussion

The first hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Full Scale mental age. The findings indicate that there was a positive correlation of .9134 between these mental ages, and that this was significant at the .01 level of confidence. This hypothesis was therefore accepted.

The second hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Picture Vocabulary subtest mental age. This hypothesis was accepted as the correlation involved, .5377, was significant at the .01 level of confidence.

The third hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Form Discrimination subtest mental age. Again the hypothesis was accepted, as the positive correlation of .6177 was significant at the .01 level of confidence.

The fourth hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Information and Comprehension subtest mental age. The obtained correlation of .6571 was significant at the .01 level of confidence and led to the acceptance of this hypothesis.

The fifth hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Similarities subtest mental age. Again the .01 level of significance was found with a correlation of .6562, so the hypothesis was accepted.

The sixth hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Size and Number subtest mental age. This hypothesis was accepted with a correlation of .5166, which again was significant at the .01 level of confidence.

The seventh and final hypothesis stated that there would be a significant, positive correlation between the Form L-M mental age and the PTI Immediate Recall subtest mental age. This hypothesis was also accepted with a

correlation of .4036; however, this correlation was the only one of the seven that was not significant at the .01 level of confidence, although significant at the .05 level of confidence.

Data presented in Table II show the mean mental age in months for the Form L-X and each of the PTI subtests, and the standard deviations for each. The mean mental age of the Form L-X differs only .2857 months from the mean mental age of the PTI Full Scale with these subjects. This results in a difference of only .79 in the standard deviations for these two scales. The difference would indicate that the two tests not only tend to measure the same thing, but do so very closely.

The data in Table II also indicate that the mental age for the PTI Size and Number subtest was a great deal lower than the mental age for the Form L-M, while the mean mental age for the PTI Immediate Recall and the Picture Vocabulary subtests were higher than the mental age for the Form L-X. The mental age for the PTI Form Discrimination, Information and Comprehension, and the Similarities subtests were very nearly the same as the mental age for the Form L-X.

TABLE II

MEAN MENTAL AGE IN MONTHS AND STANDARD DEVIATIONS
FOR THE STANFORD-BINET AND THE
SIX SUBTESTS OF THE PTI*

Variable	Mean Mental Age In Months	Standard Deviation
Stanford-Binet, Form L-M	75.9642	11.1178
Full Scale (PTI)	75.6785	11.9075
Picture Vocabulary (PTI)	88.3928	19.4171
Form Discrimination (PTI)	74.8928	17.1116
Information and Comprehension (PTI)	73.9285	15.8180
Similarities (PTI)	75.4285	20.3108
Size and Number (PTI)	69.5357	10.3250
Immediate Recall (PTI)	85.5714	16.2951

*N = 28.

From these data it can be seen that the subjects accomplished less on the subtest that required abstraction (i.e., Size and Number); and did their best on the subtest that required little abstraction, but rather comprehension and retention of perception (i.e., Picture Vocabulary and Immediate Recall). The subjects' performance on the subtests that required ability to generalize, range of knowledge

of environment, and perceptual organization (i.e., Similarities, Information and Comprehension, and Form Discrimination, respectively) was most typical of their performance on the Form L-II. The implication here is that these latter three subtests are the ones most like the Form L-M in what they measure. Even with this slight scatter of subtest mental ages, as mentioned earlier, the subjects' intellectual ability as inferred from the PTI Full Scale very closely resembles their intellectual ability as inferred from the Form L-II. Table III (Appendix C) summarizes the collecting data.

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CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary and Conclusions

In this study the concurrent validity between the Stanford-Binet, Form L-M and the French Pictorial Test of Intelligence was investigated among twenty-eight mentally retarded children as subjects. The results obtained from administering each of the above mentioned instruments were analyzed by means of the Pearson Product-Moment correlation technique. The data suggested that the mental age, as assessed by the Full Scale French Pictorial Test of Intelligence could be interchanged with the mental age as assessed by the Stanford-Binet, Form L-M, because of the high statistical correlation between these intelligence scales. This information should be found useful by those persons who need to assess the intelligence of mentally retarded children who possess physical handicaps which preclude the use of the Stanford-Binet, Form L-M. The correlations of the six subtests of the Pictorial Test of Intelligence with the Stanford-Binet, Form L-M were all significant at the .05 level of confidence; and all of

the subtests, with the exception of the Immediate Recall subtest, were found to correlate with the Stanford-Binet, Form L-II, at the .01 level of confidence.

Suggestions for Further Research

As indicated in the first chapter, there has been very little research reported using the French Pictorial Test of Intelligence. What research that has been reported, however, indicates that the French should prove to be a useful tool for the psychologist who works with children. One of the main weaknesses of the present study is the size of the sample used. Further research is needed involving more subjects.

Another similar study should be conducted using the PTI and the Wechsler Intelligence Scale for Children. In a survey of ninety-six state institutions for mentally retarded children conducted by Silverstein, it was reported that the WISC was second only to the Binet in popularity (2). This reflects the wide use of these instruments with the mentally handicapped and justifies their use as the criteria with which a new test should be judged. In the test manual for the PTI, French reports that using thirty-two first graders, a correlation of .65 was found between the PTI and the WISC. The subjects for this study were of "normal" intelligence and ranged in chronological age from seventy-one to eighty-nine months (1).

In conclusion, the French Pictorial Test of Intelligence is an easily administered test of intelligence that is designed for use with children whose mental ages range from two and one half to eight and one half years. The subtests reportedly measure different, easily defined, abilities which lend themselves well to research designed to compare these abilities with those measured by other instruments. This is an instrument that can easily be, and should be, used with the mentally retarded child, both in research, and in practice.

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A PROFILE FOR THE STANFORD BINET (L-M)

Item Classifications by Robert E. Valett

INSTRUCTIONS: Draw a vertical line through the year for the obtained basal age. Circle all test items passed beyond this level.

SUBJECT'S NAME: _____ CA: _____ MA: _____ IQ Range: _____ Grade: _____ Date of Test: _____

TEST CONSTRUCTS	Year:	2	2-6	3	3-6	4	4-6	5	6	7	8	9	10	11	12	13	14	AA	SA	SAII	SAID
GENERAL COMPREHENSION		3	1		6	4	4			2	4			6	3	4	5	5	6	7	
	A	2	2	6	6	A				5	A				6						4
VISUAL-MOTOR ABILITY		1	A	1	2			1		3			2	1	A	A				A	
	4			3	5			2				3									
ARITHMETIC REASONING									4			5					4	2	2	4	
																	A	4	4		4
MEMORY & CONCENTRATION		2	5	4		2	5			6	2	3	6	1	4	3				4	
				A		A				A	6	6		4	A	6					6
VOCABULARY & VERBAL FLUENCY		5	3	2	4	1		3		1	1	4	1	3	1	2	1			1	
	6	4							A		A	A	5		5					8	5
JUDGMENT & REASONING			1		1	3	1	5		1	3	1	2	2	2	1	2			2	
						2	2	6		2	4	2	A	5	4	4	4	5	6	7	6

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STANFORD-BINET L-M ITEM CLASSIFICATIONS (Valett)

GENERAL COMPREHENSION: The ability to conceptualize and integrate components into a meaningful total relationship.			
II, 3.	Parts of body	VIII, 4.	Similarities and differences
II, A.	Identifying objects by name	VIII, 5.	Comprehension IV
II-6, 1.	Identifying objects by use	XI, 6.	Similarities 3
II-6, 2.	Parts of body	XII, 3.	Picture absurdities II
II-6, 6.	Simple commands	XII, 6.	Minkus completion I
III-6, 6.	Comprehension I	XIII, 4.	Problems of fact
IV, 4.	Picture identification	XIV, 5.	Direction I
IV, 6.	Comprehension II	AA, 5.	Proverbs I
IV, 6, 4.	Materials	AA, 6.	Direction II
IV, 6, 6.	Comprehension III	AA, 7.	Essential differences
IV-6, A.	Picture identification	SA-I, 6.	Essential similarities
VII, 2.	Similarities 2	SA-II, 3.	Proverbs II
VII, 4.	Comprehension IV	SA-III, 2.	Proverbs III
VII, 5.	Opposite analogies III	SA-III, 4.	Directions III
VISUAL MOTOR ABILITY: The ability to manipulate materials in problem solving situations usually requiring integration of visual and motor skills.			
II, 1.	Form board	V, 4.	Copying square
II, 4.	Block tower	V, 6.	Patience: rectangles
II, 6, A.	Form board	V, A.	Knot
III, 1.	Stringing beads	VI, 6.	Maze
III, 3.	Block bridge	VII, 3.	Copying diamond
III, 5.	Copying circle	IX, 1.	Paper cutting
III, 6.	Vertical line	IX, 3.	Designs I
III-6, 2.	Patience: pictures	X, 2.	Block counting
III-6, 5.	Sorting buttons	XI, 1.	Designs
V, 1.	Picture completion: man	XII, A.	Designs II
V, 2.	Folding triangle	XIII, A.	Paper cutting
		AA, A.	Binet paper cutting
ARITHMETIC REASONING: The ability to make appropriate numerical associations and deal with mental abstractions in problem solving situations.			
VI, 4.	Number concepts	AA, 2.	Ingenuity I
IX, 3.	Change	AA, 4.	Arithmetic reasoning
XIV, 4.	Ingenuity I	SA-I, 2.	Enclosed boxes
XIV, A.	Ingenuity II	SA-II, 4.	Ingenuity I
MEMORY & CONCENTRATION: The ability to attend and retain. Requires motivation and attention and usually measures degree of retention of various test items.			
II, 2.	Delayed response	VIII, 2.	Wet Fall
II, 5.	2 digits	VIII, 6.	Days of week
III, 4.	Picture memories	IX, 3.	Designs I
III, A.	3 digits	IX, 6.	4 digits reversed
IV, 2.	Objects from memory	X, 6.	6 digits
IV, A.	Memory for sentences I	XI, 1.	Designs I
IV-6, 5.	3 commissions	XI, 4.	Memory for sentences II
VII, 6.	5 digits	XII, 4.	5 digits reversed
VII, A.	3 digits reversed	XII, A.	Designs II
XIII, 3.	Memory for sentences III	SA-I, 4.	6 digits reversed
XIII, 6.	Copying a head chain from memory	SA-II, 6.	Repeating thought of passage: tests
VOCABULARY & VERBAL FLUENCY: The ability to use words correctly in association with concrete or abstract material; the understanding of words and verbal concepts; the quality and quantity of verbal expression.			
II, 5.	Picture vocabulary	XI, 3.	Abstract words
II, 6.	Word combinations	XII, 1.	Vocabulary
II, A.	Identifying objects by name	XII, 5.	Abstract words
II-6, 3.	Naming of objects	XII, 6.	Minkus completion I
II-6, 4.	Picture vocabulary	XIII, 2.	Abstract words II
III-2.	Picture vocabulary	XIII, 5.	Dissected sentences
III-6, 4.	Response to pictures	XIV, 1.	Vocabulary
IV, 1.	Vocabulary	AA, 1.	Vocabulary
V, 3.	Definitions	AA, 3.	Difference between abstract words
VI, 1.	Vocabulary	AA, 8.	Abstract words III
VI, A.	Response to pictures	SA-I, 1.	Vocabulary
VIII, 1.	Vocabulary	SA-I, 3.	Minkus Completion II
IX, 4.	Rhymes; new form	SA-I, 5.	Sentence building
IX, A.	Rhymes; old form	SA-II, 1.	Vocabulary
X, 1.	Vocabulary	SA-III, 1.	Vocabulary
X, 3.	Abstract Words I	SA-III, 3.	Opposite analogies IV
X, 5.	Word naming	SA-III, A.	Opposite analogies V
JUDGEMENT & REASONING: The ability to comprehend and respond appropriately in specific situations requiring discrimination, comparison, and judgement in adaptation.			
II-6, 1.	Identifying objects by use	VIII, 3.	Verb. absurdities I
III-6, 1.	Comparison of balls	VIII, 4.	Similarities & diff.
III-6, 2.	Patience: pictures	IX, 1.	Paper cutting
III-6, 3.	Discrim. of animal pictures	IX, 2.	Verb. absurdities II
III-6, A.	Comparison of sticks	IX, 4.	Rhymes: new form
IV-3.	Opposite analogies I	X, 2.	Block counting
IV-4.	Pictorial identification	X, 4.	Finding reasons
IV-5.	Discrimination of forms	X, A.	Verbal absurdities III
IV-6, 1.	Aesthetic comparison	XI, 2.	Verbal absurdities IV
IV-6, 2.	Opposite analogies I	XI, 5.	Prob. situation II
IV-6, 3.	Pictorial sim. & dif. I	XI, 6.	Similarities
IV-6, A.	Pictorial identification	XI, A.	Finding reasons II
V, 5.	Pictorial sim. & dif. II	XII, 2.	Verb. absurdities I
V, 6.	Patience: rectangles	XIII, 1.	Plan of search
VI, 2.	Differences	XIII, 4.	Problems of fact
VI, 3.	Mutilated pictures	XIII, 5.	Dissected sentences
VI, 5.	Opposite analogies II	XIII, A.	Paper cutting
VI, A.	Response to pictures	XIV, 2.	Induction
VII, 1.	Pictorial absurdities I	XIV, 3.	Reasoning
VII, 2.	Similarities II	XIV, 4.	Ingenuity I
VII, 4.	Comprehension IV	XIV, 5.	Direction I
VII, 5.	Opposite analogies III	XIV, 6.	Recon. of opposites



RECORD FORM

Pictorial Test of Intelligence — JOSEPH L. FRENCH

Name Sex Date of Test YEAR MONTH DAY
 Address Date of Birth
 School Grade Age
 Parent Examiner
 Occupation of Father of Mother

CA
SCORE
DIQ
MA
PR

SUBTEST	SCORE	MA	SUBTEST	SCORE	MA
Picture Vocabulary.....			Similarities.....		
Form Discrimination.....			Size and Number.....		
Information and Comprehension.....			Immediate Recall.....		

OBSERVATIONS OF BEHAVIOR

OVERALL RATING

Optimal Good Average Detrimental Seriously Detrimental

I. Reactions Toward

A. EXAMINER

Tries to help..... Sits quietly
 Maintains independent attitude..... Extremely dependent
 Talks to examiner freely..... No spontaneous speech

B. TASK

Fixes attention on each card..... Attention must be directed to each card
 Studies each card carefully..... Must be told to look at cards more carefully
 Chooses answers quickly..... Very hesitant in answering
 Attempts to answer each request..... Readily says, "I don't know!"
 Views all pictures on card before choosing response..... Frequently selects one (T L B R) position
 Needs little praise and encouragement..... Demands constant encouragement

II. Motor Reactions

Sits quietly..... Moves about constantly
 Moves rapidly..... Moves slowly
 Skillful with gross movements..... Very awkward with gross movements
 Skillful with fine movements..... Very awkward with fine movements

III. Verbalization

Talks at length about some of the pictures..... Never talks about pictures
 Speaks intelligibly..... Speaks unintelligibly
 Uses superior diction..... Uses poor diction
 Uses sentences of average length..... Uses single words

SCORING DIRECTIONS

Long Form: Administer All Items

Short Form: Discontinue Each Subtest at the Heavy Line

The positions of the drawings on the Response cards are coded as follows:

T — Top drawing

L — Drawing on the Examiner's left when the card is being presented
(with the Examiner sitting across from the child)

B — Bottom drawing

R — Drawing on the Examiner's right when the card is being presented

Make a slash (/) through the letter corresponding to the Subject's choice. The correct response is printed in the column to the right of the possible choices (T L B R) and this column serves as a key. There are but six exceptions to the above mode of marking. In the case of Information 8 (I 8) and Size and Number 2, 5, and 6 (N 2, N 5, N 6), where there are multiple parts to each question, there is a place to record + (plus) if the child answered the appropriate number of parts correctly or a - (minus) if he did not. For Size

and Number 1a and 1b there is also a place to record + or - for success or failure on the item. It is the + or - that is taken into account in scoring these questions. A slash through the + indicates one point credit.

After the testing is completed, find the raw score for each subtest by totaling the correct responses. Record subtest scores and total score on the cover of the Record Form.

Picture Vocabulary

V-1	Chair	T	L	B	R	R
V-2	Stool	T	L	B	R	R
V-3	Axe	T	L	B	R	T
V-4	Farm	T	L	B	R	B
V-5	Pitcher	T	L	B	R	L
V-6	Horse	T	L	B	R	L
V-7	Dessert	T	L	B	R	R
V-8	Arm	T	L	B	R	L
V-9a	Sill	T	L	B	R	R
V-9b	Cord	T	L	B	R	L
V-10a	Tree	T	L	B	R	B
V-10b	Shrubbery	T	L	B	R	T
V-11	Refreshment	T	L	B	R	B
V-12	Weapon	T	L	B	R	L
V-13	Finished	T	L	B	R	R
V-14a	Uniform	T	L	B	R	L
V-14b	Collision	T	L	B	R	T
V-15	Autumn	T	L	B	R	B
V-16	Padlock	T	L	B	R	R
V-17	Anchor	T	L	B	R	L
V-18	Nose	T	L	B	R	T
V-19	Manufacturing	T	L	B	R	T
<hr/>						
V-20	Swift	T	L	B	R	L
V-21	Ascend	T	L	B	R	L
V-22	Clock	T	L	B	R	R
V-23	Coat	T	L	B	R	R
V-24	Retire	T	L	B	R	T
V-25	Knot	T	L	B	R	T
V-26	Plunge	T	L	B	R	L
V-27	Bolt	T	L	B	R	R
V-28	Astonishment	T	L	B	R	R
V-29	Acquiring	T	L	B	R	T

P V TOTAL.....

Form Discrimination

F-1a	T	L	B	R	B
F-1b	T	L	B	R	R
F-2a	T	L	B	R	R
F-2b	T	L	B	R	B
F-3	T	L	B	R	T
F-4a	T	L	B	R	T
F-4b	T	L	B	R	R
F-5	T	L	B	R	B
F-6	T	L	B	R	T
F-7	T	L	B	R	R
F-8	T	L	B	R	L
F-9	T	L	B	R	T
F-10	T	L	B	R	L
F-11	T	L	B	R	R
F-12	T	L	B	R	R
F-13	T	L	B	R	R
<hr/>					
F-14	T	L	B	R	T
F-15	T	L	B	R	L
F-16	T	L	B	R	B
F-17	T	L	B	R	L
F-18	T	L	B	R	T
F-19	T	L	B	R	L
F-20	T	L	B	R	L
F-21	T	L	B	R	B
F-22	T	L	B	R	L
F-23	T	L	B	R	R
F-24	T	L	B	R	T

F D TOTAL.....

Information and Comprehension

I-1a	Cuts	T	L	B	R	R	I-11	W/Broom	T	L	B	R	L						
I-1b	Presses Clothes	T	L	B	R	T	I-12	Run fastest	T	L	B	R	L						
I-2	Pour	T	L	B	R	L	I-13	Milk people	T	L	B	R	R						
I-3	Temperature	T	L	B	R	L	I-14	Heaviest	T	L	B	R	B						
I-4a	Keeps dry	T	L	B	R	T	I-15	Carry most	T	L	B	R	L						
I-4b	Used to fight	T	L	B	R	L	I-16	Seal eats	T	L	B	R	L						
I-5a	See	T	L	B	R	L	I-17	Real smallest	T	L	B	R	L						
I-5b	Smell	T	L	B	R	T	I-18	Real biggest	T	L	B	R	T						
I-6a	Grow ground	T	L	B	R	B	<hr/>						I-19	Man always	T	L	B	R	B
I-6b	Eat most	T	L	B	R	T	I-20	Quarter past 8	T	L	B	R	T						
I-7a	Man rides	T	L	B	R	L	I-21	Paper made	T	L	B	R	R						
I-7b	I carry	T	L	B	R	B	I-22	Not eyelid	T	L	B	R	R						
I-8	G Y R B 3/4		+		-	+	I-23	House must	T	L	B	R	R						
I-9	Butterfly	T	L	B	R	B	I-24	Closest	T	L	B	R	L						
I-10	W/Needle	T	L	B	R	L													

I C TOTAL.....

Similarities

S-1	T	L	B	R	L	S-9	T	L	B	R	R	S-17	T	L	B	R	T
S-2	T	L	B	R	B	S-10	T	L	B	R	L	S-18	T	L	B	R	R
S-3	T	L	B	R	T	S-11	T	L	B	R	L	S-19	T	L	B	R	B
S-4	T	L	B	R	T	S-12	T	L	B	R	T	S-20	T	L	B	R	B
S-5	T	L	B	R	L	S-13	T	L	B	R	R	S-21	T	L	B	R	R
S-6	T	L	B	R	T	S-14	T	L	B	R	B	S-22	T	L	B	R	B
S-7	T	L	B	R	T	S-15	T	L	B	R	T						
S-8	T	L	B	R	L	<hr/>						S TOTAL.....					
						S-16	T	L	B	R	T						

Size and Number

N-1a	Biggest		+	-	+	N-6b	Eight	T	L	B	R	B	
N-1b	Smallest		+	-	+	N-6c	Eight	T	L	B	R	B	
N-2	Longer 3/3 or 4/5		+	-	+	N-7	3 + 2	T	L	B	R	L	
N-3a	Most	T	L	B	R	B	N-8	4 + 3	T	L	B	R	T
N-3b	Four	T	L	B	R	T	N-9	5 - 1 - 1	T	L	B	R	T
N-3c	Three	T	L	B	R	R	N-10	12 - 5	T	L	B	R	B
N-4a	Most	T	L	B	R	L	N-11	13 - 8	T	L	B	R	T
N-4b	Six	T	L	B	R	B	N-12	4/12	T	L	B	R	L
N-4c	Eight	T	L	B	R	L	N-13	Whole 1/2	T	L	B	R	R
N-5	5 3 4 2 3/4		+	-	+	N-14	Whole 1/4	T	L	B	R	L	
N-5a	Two	T	L	B	R	T	N-15	Whole 2/3	T	L	B	R	B
N-5b	Three	T	L	B	R	L	N-16	24/18	T	L	B	R	R
N-5c	Three	T	L	B	R	L	N-17	12/6	T	L	B	R	T
N-5d	Four	T	L	B	R	B	N-18	4 Jacks 1/2	T	L	B	R	R
N-6	9 7 8 6 3/4		+	-	+	N-19	35 - 10 - (2)5	T	L	B	R	L	
N-6a	Six	T	L	B	R	T							

S N TOTAL.....

Immediate Recall

R-1	T	L	B	R	R	R-8	T	L	B	R	R	R-15	T	L	B	R	L
R-2	T	L	B	R	T	R-9	T	L	B	R	L	R-16	T	L	B	R	R
R-3	T	L	B	R	T	R-10	T	L	B	R	L	R-17	T	L	B	R	B
R-4	T	L	B	R	R	R-11	T	L	B	R	B	R-18	T	L	B	R	R
R-5	T	L	B	R	L	R-12	T	L	B	R	L	R-19	T	L	B	R	T
R-6	T	L	B	R	T	R-13	T	L	B	R	R						
R-7	T	L	B	R	R	<hr/>						I R TOTAL.....					
						R-14	T	L	B	R	B						

INTERPRETATIONS OF BEHAVIOR

OVERALL RATING

Optimal Good Average Detrimental Seriously Detrimental

Attitude Toward

A. EXAMINER

Trusting Suspicious
Socially confident Shy
Compliant Antagonistic

B. TASK

Serious Playful
Enthusiastic Indifferent
Works with eagerness Performs reluctantly or unwillingly
Understands directions readily Frequently asks for repetition of instructions
Interested in all pictures Interested in a few pictures
Maintains high interest Tires easily, attention is difficult to recapture
Guesses without fear Refuses to answer
Considers response carefully Reacts impulsively

C. HIS OWN PERFORMANCE

Recognizes errors Does not recognize errors or failures
Notifies errors but is unaffected Very critical of own behavior
Unaware of inadequate answers Overemphasizes the inadequacy of answers
Does not fear a mistake Apprehensive, fearful
Is stimulated by praise Becomes self-conscious at praise
Grateful for approval Indifferent to approval
Consistent effort Inconsistent effort
Redoubles effort when puzzled Gives up easily
Persists when failure apparent Attempts to change to easier task

APPENDIX C

TABLE III

RECORD OF DATA COLLECTED

Sub- ject	C.A.	Binet	Mental Age in Months						
			Pictorial Test of Intelligence						
			F.S.	Pic.V.	Form D.	In.&C.	Sim.	S.S.No.	Io.R.
1	14-03	84	77	90	78	84	72	65	96
2	14-11	76	77	96	72	96	72	75	96
3	14-10	78	74	69	75	90	78	72	66
4	10-02	44	46	84	50	42	33	50	48
5	12-03	86	95	108	72	90	108	75	108
6	13-00	78	81	108	96	63	102	72	72
7	13-11	70	79	96	78	78	84	72	62
8	12-05	70	71	102	102	54	33	75	108
9	11-04	76	70	96	51	66	60	75	90
10	12-05	66	61	63	48	54	66	66	90
11	14-11	70	74	96	84	78	72	72	72
12	12-09	84	72	108	75	90	78	96	102
13	10-04	88	82	108	72	60	78	69	66
14	11-07	72	73	69	90	60	102	66	78
15	12-00	88	89	108	84	108	102	66	96
16	13-04	76	74	66	78	84	108	66	54
17	10-08	66	63	63	54	60	57	69	90
18	14-05	80	78	108	51	66	63	72	66
19	13-10	72	70	60	75	90	69	62	96
20	14-08	80	80	108	96	84	78	62	90
21	14-04	68	69	72	66	66	51	69	90
22	11-07	72	68	96	78	72	60	48	96
23	10-06	66	59	42	72	60	69	48	90
24	13-09	92	97	108	96	84	90	90	108
25	12-11	68	64	69	60	57	57	64	96
26	15-04	72	80	102	72	78	90	75	90
27	15-01	108	102	108	108	96	108	75	102
28	13-09	77	74	72	78	60	72	81	78

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