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A STUDY OF THE RELATIONSHIP BETWEEN TYPEWRITING ACHIEVEMENT  
AND SCORES OBTAINED ON THE DOWNEY GROUP  
WILL-TEMPERAMENT TEST

BY

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# Joseph Ruzicka

Baltimore, Md. - Greensboro, N. C.

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## CHAPTER I

### INTRODUCTION

#### Origin of the Problem

It has been observed by teachers of beginning typewriting that pupils who achieve distinction in academic subjects do not always excel in typewriting, even when they put forth their best efforts. This often constitutes a real problem to the individuals who are anxious to maintain their high grades throughout their school life. It also challenges the typewriting teacher to discover and take account of factors other than intelligence and general scholastic abilities which may affect attainment of typewriting skill. Studies which have been reported on the relationship between typewriting and mechanical ability<sup>1</sup>, finger dexterity<sup>2</sup>, reading ability<sup>3</sup>, occupational interests<sup>4</sup>, and other

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1. Florence Woodward Lackey, "A Study of the Prognostic Value of the MasQuarrie Test for Mechanical Ability in First-Year Typewriting Speed." Master's thesis, Oklahoma A. and M. College, 1938.

2. Francis Martin Lohan, "Prognostic Testing in Typewriting Through Manual Dexterity and Intelligence Quotients." Master's thesis, Massachusetts State College, 1935.

3. Emma Katherine Cobb, "The Relation Between Certain Phases of Reading Ability and Speed and Accuracy in Typewriting." Master's thesis, University of North Carolina, Greensboro, 1944.

4. Anne Barksdale, "A Comparison of Achievement in Typewriting and Interest as Measured by the Occupational Interest Inventory, Intermediate, Form A, by Lee and Thorpe." Master's thesis, in process, University of North Carolina, Greensboro, 1945.



measured factors<sup>5</sup> have revealed no reliable indexes of relationship.

Discussion of the problem with the pupils themselves may elicit the response that they get extremely nervous, or go "all to pieces," especially on speed tests or production work where the time element is involved. They also report that they get "disgusted" or "angry" when their work does not meet their own standards or those set for the class. A frequent comment is that after the first error is made in a typewriting task, other errors follow in rapid succession and it seems futile to try to prevent errors. Is there, then, some intangible factor, which might be called "nervous temperament" or "nervous tension" that affects the pupil's success in mastering typewriting? This question gave rise to an endeavor in the present study to obtain some measure of "temperament" and determine its relationship to typewriting achievement.

The preliminary task was an investigation of the field of personality and adjustment testing for appropriate measures of "nervous tension" or "temperament." Through correspondence with the following individuals and agencies, published tests were obtained and examined: Dr. G. M. Ruch, U. S. Office of Education; Dr. Mark A. May, Yale University; Mrs. Ruth Toothaker, Oklahoma

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5. Florence Katherine Simmons, "A Prediction of Typewriting Success," Master's thesis, Ohio State University, 1934.

College for Women, Chickasha, Oklahoma; The Psychological Corporation; World Book Company; and Bureau of Publications, Teachers College, Columbia University. The following tests were examined and considered:

Allport and Allport, A-S Reaction Study  
 Bell, The Adjustment Inventory, Student Form  
 Bell, The School Inventory  
 Bernreuter, The Personality Inventory  
 Daryl and McNamara, Minnesota Personality Scale  
 Downey, Group Will-Temperament Test  
 Downey, Individual Will-Temperament Test  
 Haggerty-Olson-Wickman, Behavior Rating Schedules  
 MacNitt, Personality and Vocational Guidance Test  
 McFarland and Seitz, Psycho-Somatic Inventory  
 Pintner, Aspects of Personality  
 Rogers, A Test of Personality and Adjustment  
 Root, New Introversion-Extroversion Test  
 Symonds, Adjustment Questionnaire, Form A  
 Thurstone and Thurstone, Personality Schedule  
 Washburne, Social-Adjustment Inventory

#### Selection of Temperament Test

The following considerations were kept in mind in the selection of a test to be used in this study: (1) the "popular" conception of personality or social success is not the thing to

be measured, and tests purporting to measure this were therefore excluded. (2) It is not the purpose of this study to discover or consider only individuals who deviate from the normal and are psychopathic or emotional cases. (3) Self-rating scales were avoided because of their subjectivity and insufficient reliability. (4) The test should be fairly easy to administer in a classroom situation. (5) The scoring must be objective. (6) The test must be suitable to the age group concerned. (7) The test must be of such a nature that it would offend neither the pupils nor the patrons of the participating schools.

It was recognized that there is probably no known test which actually measures the trait or combination of traits called "temperament." Nevertheless, a serious effort was made to find some measure of what Downey describes as "the amount of energy at the disposal of the individual and the tendency of such nervous energy to discharge immediately into the motor areas."<sup>6</sup>

All but three of the tests examined employ self-rating by the pupils. Of the remaining tests, the Haggerty-Olson-Wickman Behaviour Rating Schedule requires ratings by the teacher; the Downey Will-Temperament Test, in both the Individual and the Group form, makes use of handwriting exercises and requires no self-rating or introspective responses. The latter form was therefore chosen as the test most nearly meeting the requirements of this investigation.

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6. June E. Downey, The Will-Temperament and Its Testing (New York: World Book Company, 1923), p. 59.

### Purpose of the Study

The purpose of this study is to ascertain the relationship between the scores obtained on the Downey Group Will-Temperament Test and the best and poorest net speed scores obtained on typewriting tests administered to 135 first-year typewriting pupils in three high schools.

The best and poorest typewriting scores rather than the entire range of scores are used because the extremes should reveal more clearly any distinguishing differences in the results obtained by the measure of "temperament."

### Description of the Downey Group Will-Temperament Test

Downey, in her book "The Will-Temperament and Its Testing," defines "temperament" thus:

The word "temperament" is used to refer to an innate, relatively permanent disposition. The word "will" is prefixed to it to indicate the nature of the particular disposition that is tested. This limitation in the meaning of the word "temperament" is necessary in order to avoid a possible misunderstanding; namely, the notion that the test is concerned with emotional reactions. By "will", however, no mysterious power is to be understood; it refers merely to the dynamic pattern of the individual. . . . The will-temperament determines the form assumed by character, although it does not determine its content. Similarly, the will-temperament determines the use that will be made of general intelligence, although it does not determine the degree of intelligence.<sup>7</sup>

Individuals are grouped according to three main classifications by Downey: (1) the speedy, "hair-trigger," fluidic type;

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7. Ibid., pp. 60-61.

(2) those reacting in a forceful, decisive way; and (3) those characterized by carefulness and persistence of response.

The Downey Group Will-Temperament Test utilizes handwriting reactions, but Downey has stated emphatically that "although handwriting was used (as a common motor activity that leaves a permanent record), no graphological assumptions whatever are made."<sup>8</sup>

The test consists of twelve subtests, representing three phases of activity: (1) those pertaining to speed and fluidity of reaction; (2) those pertaining to forcefulness and decisiveness of reaction; and (3) those pertaining to carefulness and persistence of reaction.

The first phase, speed and fluidity of reaction, includes tests for Speed of Movement, Freedom from Load, Flexibility, and Speed of Decision. The second phase, forcefulness and decisiveness of reaction, is composed of tests for Motor Impulsion, Self-Confidence, Non-Compliance, and Finality of Judgment. The third phase, carefulness and persistence of reaction, consists of tests for Motor Inhibition, Interest in Detail, Coordination of Impulses, and Volitional Perseveration. Uhrbrock analyzed the Downey Will-Temperament Tests in a doctoral dissertation and concluded that there is little evidence that the traits are named correctly.<sup>9</sup>

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8. Ibid., p. 4.

9. Richard Stephen Uhrbrock, "An Analysis of the Downey Will-Temperament Tests," Doctor's dissertation, Teachers College, Columbia University, 1928, p. 64.

The trait names are defined by Downey as follows:

Speed of Movement. Amount of physical work that one can put through in a given time.

Freedom from Load. Suggests that the psychic machinery runs with little friction; it is not necessary to oil it continually in order to keep it going smoothly and speedily; its own inherent energy holds it at top speed. It suggests a thrifty management and is of great practical importance.

Flexibility. The capacity to do things differently, to be able to modify one's habitual procedure, to depart from routine.

Speed of Decision. Speed of reaction in making decisions or choices. Mode of reaction and not its accuracy is the point in question.

Motor Impulsion. "Drive" in a person's make-up. It involves the idea of energy and the focusing of energy. Two factors to be tested for: first, the energy available when brakes or inhibitions are off; secondly, the ease with which the brakes or inhibitions may be thrown off.

Non-Compliance. Measures docility rather than intellectual suggestibility.

Self-Confidence. Reliance in one's own ability to make correct response.

Finality of Judgment. Measures tendency of subject to revise a decision already made.

Motor Inhibition. The power to hold back a motor discharge, to keep an impulse under control, to achieve a purpose slowly.

Interest in Detail. Measured by exactness with which a model is imitated when instructions are given to copy it as exactly as possible.

Coordination of Impulses. Person's success in handling a problem that involves a double mental-set.

Volitional Perseveration. Native tendency to "keep on working," psychic momentum, rather than

perseverance or sticking at a task until a certain end is achieved.

A ten-point scale for scoring is provided in the Manual of Directions for each of the twelve subtests. Individual "will-profiles" show graphically the scores made on the various subtests.

Speed of Movement is measured by the number of times a person can write the phrase "United States of America," at his normal speed, in twenty seconds. Scoring is based on the number of letters written at normal speed within the time limit.

Freedom from Load is measured by the number of times the subject writes the phrase "United States of America" in twenty seconds when writing just as rapidly as possible. It is scored according to the number of letters written during the speeded trial in relation to the number written at normal speed (Speed of Movement).

Flexibility is measured by the way subjects disguise their handwriting on three separate attempts. They are told first to write the phrase "United States of America" in a hand very unlike their own. On the second trial, they are told to practice disguising their handwriting so that it would fool a handwriting expert, and then to write the phrase "United States of America" in a designated place on the test paper. On the third trial, the subjects are told to imitate a model of the phrase "United States of America" just as rapidly as they can and as many times as they can in one minute. The first and second trials of the test on Flexibility are rated according to their quality: a

good disguise is rated 2, a fair disguise is rated 1, and a poor disguise is rated 0. In the third trial, the quality of the rapid imitation of the model is rated A, B, C, D, or E, and the number of letters written is counted. A combined score for this third trial is then obtained from a table in the Manual of Directions by referring to the proper letter and speed group. The scores on the three trials are then totaled to obtain the score on Flexibility.

Speed of Decision is measured by the number of choices the subject makes in thirty pairs of character traits. It does not matter how accurate the choices are. The important thing is how many decisions are made in the time limit of twenty seconds. This test is scored on the number of decisions made.

Motor Impulsion consists of four parts. The subjects are first told to write their names at their usual speed and in their usual style as many times as possible in twenty seconds. On the second trial they are told to write their names just as they did on the first trial, but with their eyes closed. They are to write their names again and again, with their eyes closed, until the signal is given to stop. On the third trial, the subjects are to write their names in their usual way, but while they are writing they are to keep their eyes fixed on the examiner's pencil and are to count aloud with him the number of times he taps the table with the pencil. On the fourth trial, the subjects are asked to write their names repeatedly from the signal to begin until the signal to stop. While they are writing, the examiner reads a list of words that rhyme with "fly", and they are asked to note



the number of times the word "fly" is repeated. Each trial is scored by noting the size of the writing under distraction as compared with normal size. The ratio of the number of letters written under distraction to the number of letters written at normal rate is computed and converted into a derived score given in the Manual of Directions. The mean of these three scores constitutes the final score for this subtest.

Self-Confidence is measured by having the subjects check a list of sixteen statements as true or false according to what they remember from a list of words which was read to them earlier in the test. They are asked to draw two lines under their choice if they are absolutely sure that they are right. There is no time limit on this test. The score for Self-Confidence is based on the number of items doubly underlined.

Non-Compliance is measured by the number of changes the subjects make in the way they answered the test for Self-Confidence. They are told that eight of the statements are true and eight of the statements are false and are allowed to make any changes they wish to make their answers that way. This test is scored on the number of changes made after the suggestion has been given by the examiner. The ratio is found between the number of changes actually made (numerator) and the number of changes necessary for complete acquiescence to the suggestion that "Eight of the statements are false; eight, true" (denominator). The latter number is found by subtracting from 8 the number of statements marked "false" before the suggestion is given, and shows to what extent memory was at

fault. The numerator of the fraction is increased by one for every change in which the original decision was doubly underscored and is also increased by one for any change in marking particular statements. The ratio obtained is given a score from the Scoring Table in the Manual of Directions.

Finality of Judgment is measured by the number of changes the subjects make in the decisions made in Test I (Speed of Decision) when given an opportunity to do so. The test is scored on the basis of the time spent in rechecking Test I.

Motor Inhibition is measured by the time subjects take to trace dotted scrolls when told to do so just as slowly as they can and still keep the pencil moving. There is a time limit of thirty seconds for the first trial, one minute and thirty seconds for the second trial, and two minutes and thirty seconds for the third trial. Only the third trial is scored. The scroll is divided into thirty-three equal units and the score is based on the number of units traced.

Interest in Detail consists of two parts. In Part 1, subjects are directed to copy Model A of the phrase "United States of America" just as exactly as possible. Speed does not count. They are told to work carefully and make just as good a copy as they can. If they finish the phrase before the signal to stop, they are to begin a second time. In Part 2, subjects are told to copy Model B of the phrase "United States of America" as well as they can, rapidly or slowly, as they prefer. If they finish one copy, they are to begin a second, and if they finish a second, they are to begin a third

time. This subtest is scored on the success of the examinee in copying the writing and on the time he gives to the task as compared with his speed in the rapid imitation of the model in the third part of the test for Flexibility (VIII, 3). Imitations of Model A and Model B are rated jointly as A, B, C, D, E, or F, according to accuracy in details. About fifteen details are noted in the two imitations--such as, for example, proper placing of the i-dot, form of t-bar, etc. Quality A means no penalizing and other quality ratings involve a penalty of one letter-grade for each three bad failures. The difference is found between the number of letters written for rapid imitation (VIII, 3) and for slow imitation of Model A. The score for this test is found by locating the obtained letter and obtained number in the schedule provided in the Manual of Directions.

Coordination of Impulses is measured by the way in which subjects write the phrase "United States of America" on a very short line and at high speed. This test is scored on the number of letters omitted or over the line.

Volitional Perseveration is measured by the amount of time the examinee spends in practicing the disguise for the second part of the test for Flexibility (VIII, 2).

The norms for the Downey Group Will-Temperament Test were established on the results obtained from a small number of adults. They were published in 1923, with the announced expectation that they would be revised after more extensive application. Uhrbrock, however, in 1928, made no mention of revised norms.

### Typewriting Test

The tests used to measure typewriting achievement consisted of printed straight-copy material of the type commonly used in typewriting instruction and testing. All the pupils were thoroughly familiar with this type of test and the testing procedures. The September, October, and November, 1944, issues of the Competent Typist Speed Tests, published by The Gregg Writer, were used in this study in order to provide unpracticed and uniform copy for all pupils.

Typewriting achievement in this study is limited to speed and accuracy attained on five-minute writings.

In general practice, five minutes is considered a reliable time limit for determining speed and accuracy when endurance and production activities are not to be measured. No attempt was made in this study to measure knowledge of machine parts or their manipulation, spacing arrangement, the use of special symbols, or applied related knowledge such as spelling, proofreading, wherein the pupils' varying backgrounds in English and general scholastic ability might be conditioning factors.

### Participating Schools

Four schools participated in the testing program for this study: DeLand High School, DeLand, Florida; Mainland High School, Daytona Beach, Florida; New Hanover High School, Wilmington, North Carolina; and John W. Hanes High School, Winston-Salem, North Carolina. These schools will hereafter be designated as School No. 1, School No. 2, School No. 3, and School No. 4.

The schools ranged in size from 317 to 1700 pupils. The size of the typewriting classes ranged from 21 to 30 pupils, and the class periods ranged from 50 to 55 minutes in length.

In School No. 1, four beginning typewriting classes were tested; in School No. 2, three beginning typewriting classes were tested; in School No. 3, one beginning typewriting class was tested; and in School No. 4, two beginning typewriting classes were tested.

All the individuals tested were in the tenth, eleventh, or twelfth grades. The pupils were from 16 to 18 years of age, with the exception of three over-age pupils whose scores did not place them in any of the groups of data selected for treatment.

#### Testing Procedures

The Downey Group Will-Temperament Test was given to 65 first-year typewriting pupils in School No. 1 and to 17 second-year typewriting pupils; in School No. 2, to 62 first-year typewriting pupils; in School No. 3, to 30 first-year typewriting pupils; and in School No. 4, to 46 first-year typewriting pupils. The tests were given in School No. 1, School No. 2, and School No. 3 in November and December, 1944. They were given in School No. 4 in January, 1945. They were given during the first semester in order to expedite the scoring of the tests. A Manual of Directions was sent to each of the teachers administering the tests. Attention was called to the fact that the parts of the test must be timed accurately to insure uniform results. A copy of the test and a Manual of Directions are included in the Appendix.

In April, 1945, copies of the three straight-copy typewriting tests were sent to the schools participating. Specific instructions on how and when to give the tests were also sent. A copy of the letter of instructions is included in the Appendix. The tests were five-minute tests and were given on three successive days as near the end of the year's work as was possible to secure a good attendance. The September test copy was to be given on the first day, the October copy on the second day, and the November copy on the third day. Teachers were asked to have their pupils use double spacing, margins of 5 and 80, a five-space paragraph indentation. Pupils were asked to have the following information on their papers: name, date, number of test, gross words written, number of errors, net words written, and net words per minute.

Although this study is concerned with first-year typewriting pupils, the tests were given to the second-year typewriting pupils in School No. 1 who were enrolled in the same classes with the first-year pupils. Data on these cases are not involved in the groups selected for analysis. The typewriting test data from School No. 4 were necessarily excluded because the instructions for administering the typewriting tests had not been followed.

## CHAPTER II

### TREATMENT OF THE DATA

The basic data of this study consist of (1) scores obtained on the subtests of the Downey Group Will-Temperament Test, (2) will-profiles, and (3) net words per minute in typewriting.

Net words in typewriting is the established measure in most school practices. It combines speed of writing and accuracy of writing into one score, computed according to the International Typewriting Contest Rules. A copy of these rules is provided in the Appendix. A typewriting "word" represents five typewriting strokes. Gross words are the total number of typewritten words with no deduction for errors. Net words are computed by deducting from the gross words ten words for each error.

The testing procedure provided for three samplings of typewriting achievement. In the school with which the investigator is familiar, School No. 1, the scores on these typewriting tests were, in many cases, not up to the standard consistently maintained by the pupils. This was attributed to the fact that the tests were given at the close of the school year when the pupils were distracted by the activities accompanying the close of school. It is also possible that, in School No. 1 at least, the pupils' scores were affected by the fact that they knew these tests were to be used for a special purpose. For these reasons, the best net score obtained in the three samplings was selected as being most representative of the pupils' ability.

Table I shows the distribution of the net typewriting scores for each of the three schools contributing in this study.

The will-profiles obtained from the Downey Group Will-Temperament Test were first examined to see if any definite patterns of "temperament" were apparent for classification. Specimen profiles of two pupils making good scores in typewriting are shown in Figure I on page 19. When this and an examination of the frequency distributions failed to yield results, the profiles of the ten individuals in each school who scored highest in typewriting in terms of net words per minute and the profiles of the ten individuals in each school who scored lowest in typewriting were isolated for detailed study on the assumption that the extremes would be more likely to reveal contrasts and discernible differentiation. The ten individuals who scored highest in typewriting in each school will hereafter be referred to as the good group of that school and the ten individuals who scored lowest in typewriting in each school will hereafter be referred to as the poor group of that school. The arbitrary selection of ten cases in the sampling of extremes provided data for correlations of rank differences.

When no relationships were apparent in the preliminary inspection, the will-profiles were submitted to a seminar composed of six graduate students actively engaged in research and two university professors. This examination also failed to reveal definite patterns for either extreme. It seemed, however, that there was a tendency toward greater variability among the pupils who made low scores in typewriting. Their profiles fluctuated between the extremes more



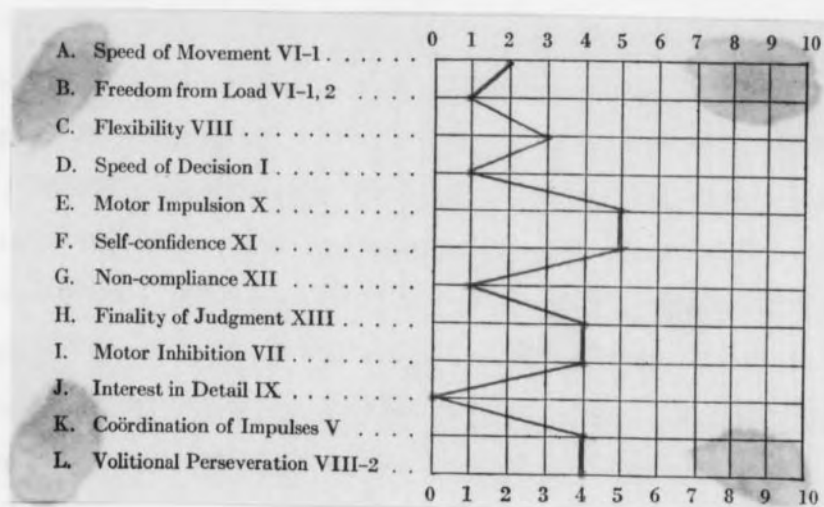
TABLE I

## DISTRIBUTION OF TYPEWRITING SCORES FOR EACH SCHOOL

Net Words	Number of Pupils		
	School No. 1	School No. 2	School No. 3
59-57	2		
56-54	1		
53-51			
50-48	1	1	2
47-45	2	1	4
44-42	5	1	3
41-39	6	4	4
38-36	9		5
35-33	9	3	3
32-30	3	4	1
29-27	7	2	2
26-24	8	6	4
23-21	1	7	1
20-18	1	4	
17-15	2	6	
14-12	3	1	
11-9		2	
8-6		2	
5-3			
2-0		2	
<b>Total</b>	<b>60</b>	<b>46</b>	<b>29</b>

FIGURE I

SPECIMEN PROFILES OF PUPILS MAKING  
GOOD SCORES IN TYPEWRITING



**44 net words per minute**  
**258 gross words**

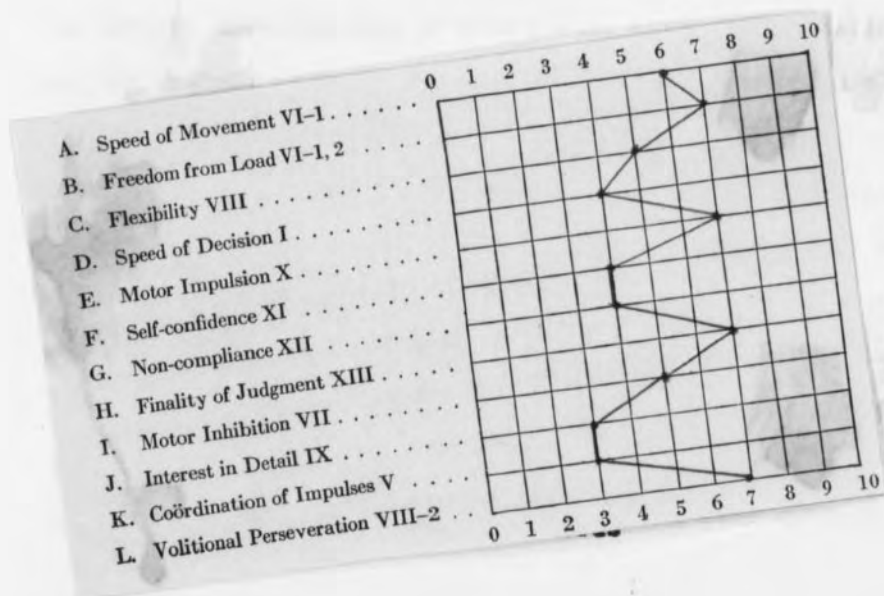
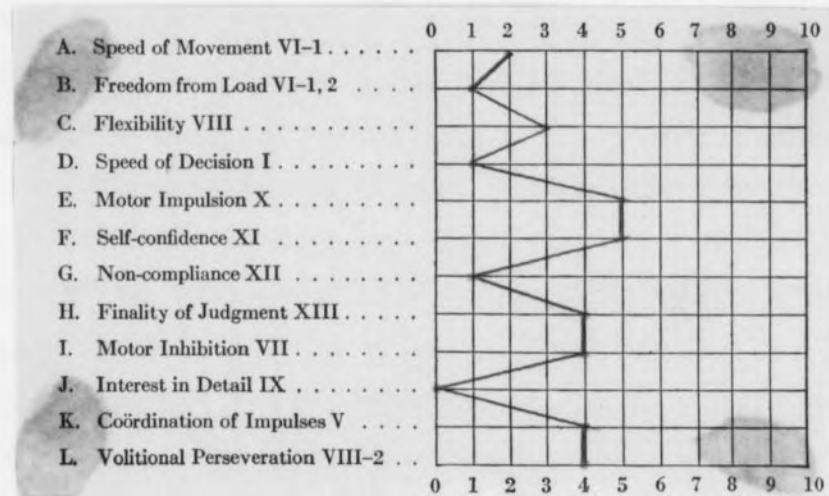
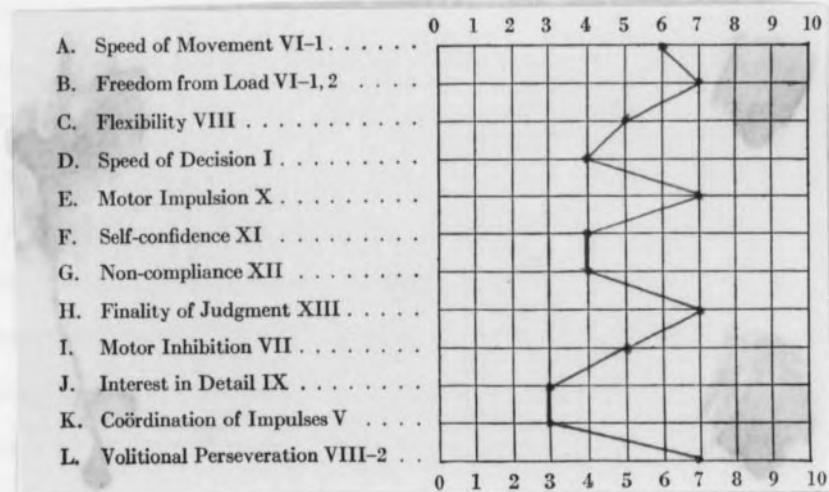


FIGURE I

SPECIMEN PROFILES OF PUPILS MAKING  
GOOD SCORES IN TYPEWRITING



**44 net words per minute**  
**258 gross words**



**44 net words per minute**  
**229 gross words**

frequently than did the profiles of the pupils with high typewriting scores. This observation led to an attempt to construct a composite profile by superimposing the will-profiles of the four highest-ranking pupils in each school on one profile blank and a similar composite for the four lowest-ranking pupils in each school. The number was limited to four in each case because more than that number obscured the graphic record.

The resulting composites, shown in Figures 2, 3, and 4, reveal little differences in frequencies at the extremes (i.e., at points 0 and 10 on the profile form) for the poor group and for the good group in all schools. In School No. 1, the ratio is 5 times for the poor group to 6 times for the good group. In School No. 2, the corresponding ratio is 7 to 4. In School No. 3, the ratio is 9 to 6.

The results do not provide a dependable criterion for distinguishing good pupils from poor pupils. The analysis was not extended to further investigation of this phase, since any selection posited on the incidence of extremes in the will-profiles would eliminate good as well as poor cases.

Since none of the foregoing examinations and comparisons revealed an appropriate basis for statistical procedure to measure the degree of relationship, the gross words were used as a basis for comparison. All typewriting scores were rearranged in a frequency distribution according to the number of words written regardless of errors, and the ten highest and ten lowest of each school were selected for comparison with the four subtests of the

FIGURE 2

COMPOSITE PROFILES OF FOUR BEST TYPEWRITING PUPILS AND  
FOUR POOREST TYPEWRITING PUPILS IN SCHOOL NO. 1

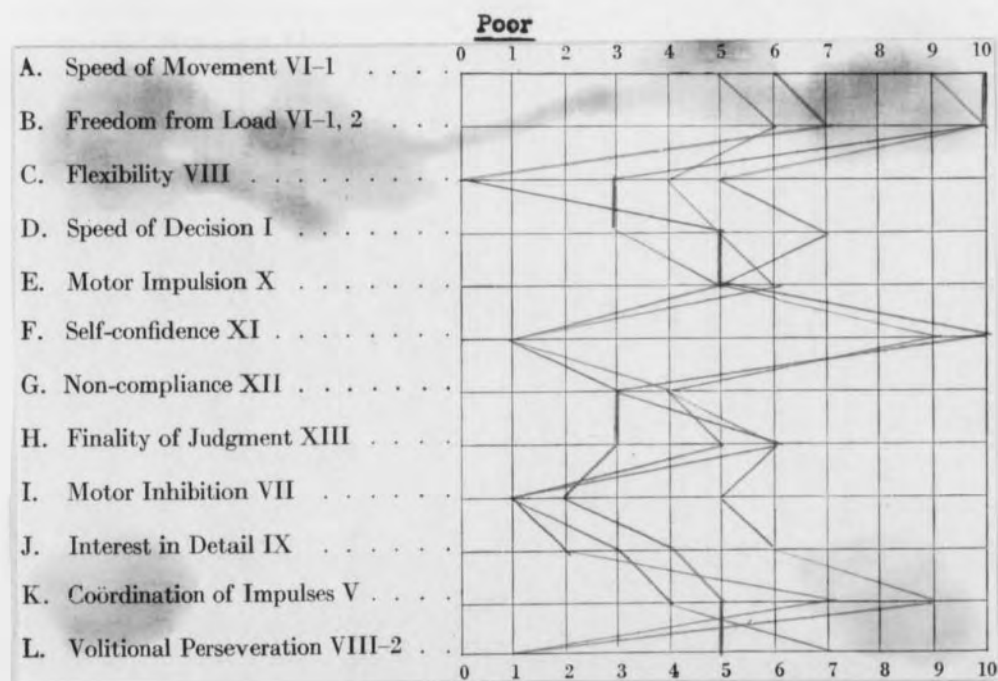
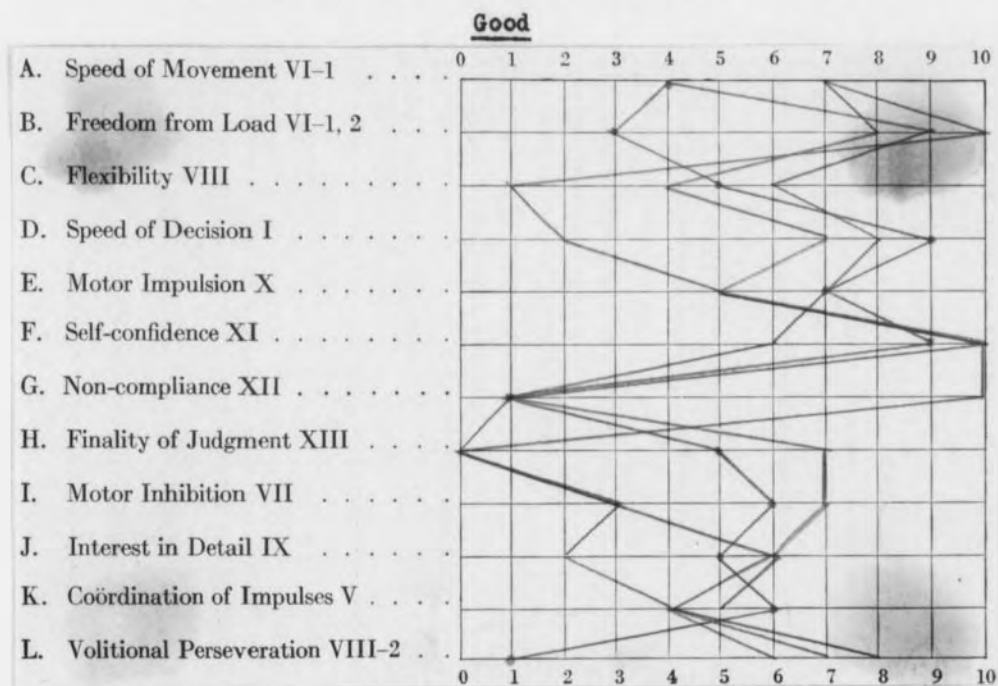
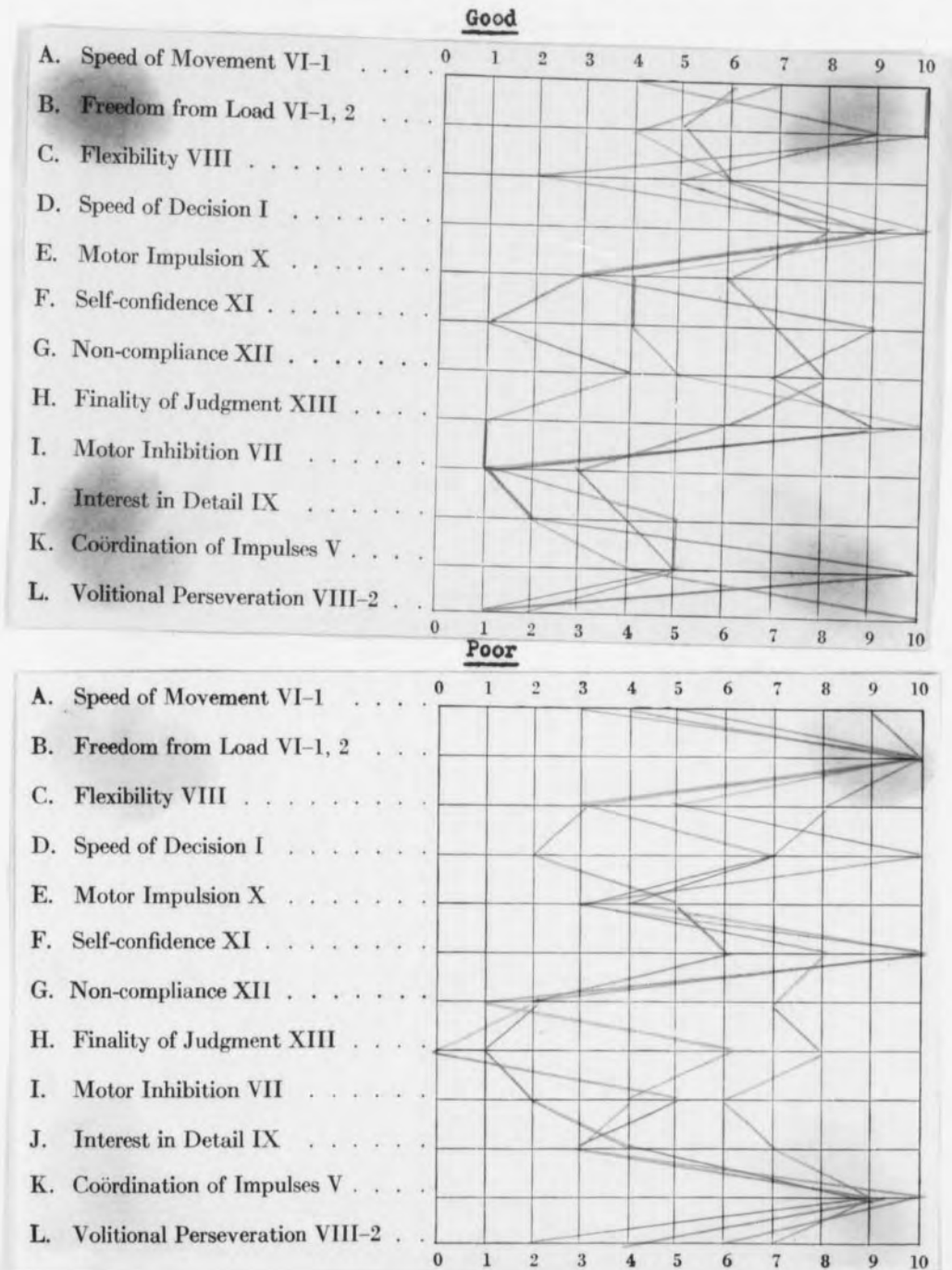




FIGURE 4

COMPOSITE PROFILES OF FOUR BEST TYPEWRITING PUPILS AND  
FOUR POOREST TYPEWRITING PUPILS IN SCHOOL NO. 3



"temperament" test pertaining to speed (Speed of Movement, Freedom from Load, Flexibility, and Speed of Decision). Table II shows the gross typewriting words for the good and poor groups in each of the three schools and the "temperament" scores on the subtests pertaining to speed for each of the three schools.

Inspection of the scores on the speed items showed no relationship between the number of gross words written and the "temperament" scores. In the good group of School No. 1, the individual at the top of the list in gross words scored 7 on Speed of Movement, whereas the individual who ranked lowest scored 6 on Speed of Movement and the individual who was second from the bottom in rank on gross words scored 10 on Speed of Movement. Similar disparities throughout the distributions in all three schools reflect lack of direct relationship between high scores on the "temperament" subtests pertaining to speed of movement and ability to write rapidly on the typewriter.

Comparison of the gross typewriting words written and the "temperament" scores on Freedom from Load and Speed of Decision in each of the three schools also failed to reveal relationships between gross typewriting words written and these items.

All scores on Flexibility were low. The scoring of this subtest was subjective and little reliance can be placed on its accuracy.

Since none of the foregoing examinations and comparisons revealed an appropriate basis for statistical procedures to measure the degree of relationship, the combined or total score for the



TABLE II

GROSS TYPEWRITING WORDS AND SCORES ON DOWNEY SPEED SUBTESTS FOR TEN  
BEST AND TEN POOREST TYPEWRITING PUPILS IN EACH SCHOOL

School No. 1					School No. 2					School No. 3				
Gross Words	SM	FL	F	SD	Gross Words	SM	FL	F	SD	Gross Words	SM	FL	F	SD
334	7	8	4	7	276	4	9	5	5	322	10	10	2	9
308	4	9	6	8	267	2	7	2	10	312	7	4	6	10
306	4	3	5	9	261	5	10	2	8	278	10	7	4	8
284	9	10	5	5	261	4	5	6	1	267	7	10	5	10
279	5	5	3	6	261	8	9	2	3	265	6	9	8	4
258	2	1	3	1	247	5	5	4	7	260	4	10	7	9
253	8	9	2	9	239	7	8	4	9	258	7	2	3	9
252	7	4	3	5	237	2	1	4	6	255	4	9	5	8
238	7	10	1	2	236	10	9	8	6	250	9	4	2	9
237	4	7	3	8	233	10	9	5	9	247	7	8	5	3
177	4	9	4	1	175	5	2	5	4	221	5	8	4	4
175	4	7	4	4	174	3	10	2	5	216	8	10	4	7
172	9	9	4	6	166	9	10	4	9	208	3	10	6	10
172	4	10	0	7	163	2	3	5	9	199	4	2	2	9
171	9	10	5	7	162	2	1	3	6	199	5	10	5	8
169	3	7	3	2	159	2	7	0	7	199	5	10	3	7
169	4	9	5	5	152	10	10	7	10	192	8	8	7	10
168	2	1	2	3	126	4	10	2	5	168	3	10	8	7
163	10	10	3	3	121	4	9	1	1	168	9	10	3	2
130	6	7	0	5	120	4	5	3	3	132	4	10	5	10

SM Speed of Movement  
FL Freedom from Lead

F Flexibility  
SD Speed of Decision

"temperament" test was computed and utilized for comparisons of ranks. Downey has made little use of the total score obtained by taking the sum of the scores on all the subtests. She states, however, that "a very high score undoubtedly reveals a forceful personality, and a very low score a weak or colorless or psychopathic personality. For an adult a total above 85 is distinctly high, and one below 55 is low."<sup>1</sup>

Table III gives the comparative data on total "temperament" scores and typewriting scores and the coefficients obtained when the Spearman formula for rank-difference correlation was applied.

$$r = 1 - \frac{\sum D^2}{N(N^2 - 1)}$$

No individual in any school achieved a temperament score of 85, specified by Downey as "distinctly high." The good groups in the three schools fell into approximately equal ranged (49-74, 49-76, and 46-74). In each school the lower limit for both the good group and the poor group was below the score of 55, which Downey considers "low" for adults. Greater variation between schools and a slightly greater variation in the range within each school is noted for the poor groups (38-67, 43-76, and 48-83). School No. 1 shows lower range limits for the poor group than for the good group, and School No. 2 shows approximately equal ranged. In School No. 3, however, the poor group attained the highest score in the entire distribution, with a score of 83, which approaches the figure set by Downey as high for adults.

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1. June Etta Downey, The Will-Temperament and Its Testing (New York: World Book Company, 1923), p. 73.

TABLE III  
NET TYPEWRITING WORDS AND TOTAL TEMPERAMENT SCORES FOR THE TEN  
BEST AND TEN POOREST TYPEWRITING PUPILS IN EACH SCHOOL

School No. 1		School No. 2		School No. 3	
Net Words	Total Temperament	Net Words	Total Temperament	Net Words	Total Temperament
59	61	49	56	48	63
58	57	45	49	48	57
55	72	42	63	47	66
48	67	41	64	45	68
47	74	41	69	45	65
45	59	41	67	45	46
44	34	40	76	44	69
44	62	33	69	43	73
43	66	33	72	42	74
43	49	32	67	41	70
Rho .19		Rho -.76		Rho -.73	
28	55	24	48	34	68
27	64	18	47	33	48
26	56	16	56	32	64
24	67	12	71	29	71
18	38	11	59	29	63
17	45	10	76	26	66
15	58	7	55	25	83
13	57	6	63	25	69
13	64	0	43	24	63
12	55	0	52	23	57
Rho .02		Rho -.02		Rho .05	

The rank-difference coefficients shown in Table III reveal negligible relationship for the poor group. The fact that fairly high negative coefficients were obtained on the scores for the good groups in two schools does not suggest that, for the purposes of this study, low scores on the temperament test may serve as a predictive index of success in typewriting. Instead, when viewed with the figure obtained on the same measures in School No. 1 and the indeterminate results obtained in preceding comparisons, they indicate the futility of attempting to measure probable success in typewriting by means of the "temperament" test.

While establishing norms for the will-temperament test, Downey obtained will-profiles of twenty men and women who were eminent enough to be included in American Men of Science, in Who's Who, or both. In general, the total score on the will-profiles ran high. Nearly three-fourths of the group gave a consistently high profile but with relative emphasis of either speed and aggressiveness, or carefulness and aggressiveness. It seemed, therefore, that it was high aggressiveness that gave force both to the careful and the speedy reaction.

The total scores on each of the three phases of the "temperament" test were determined in an effort to characterize an individual as predominantly of the speedy, fluidic type (as shown by Speed of Movement, Freedom from Load, Flexibility, and Speed of Decision), the dominant, aggressive type (as shown by Motor Impulsion, Self-Confidence, Non-Compliance, and Finality of Judgment).

or the careful, persistent type (as shown by Motor Inhibition, Interest in Detail, Coordination of Impulses, and Volitional Perseveration). These scores were compared with the net words per minute written by the pupils in the good and poor groups in each school. This comparison yielded no apparent relationship.

Tables IV, V, and VI show the net typewriting words and the total scores on each of the three divisions of the Downey Group Will-Temperament Test for the ten best and the ten poorest typewriting pupils in each school.

Examination of Tables IV and V would seem to indicate that individuals in the poor group show a greater tendency to rank relatively high in speed and aggressiveness than those in the good group, but Table VI shows six individuals in the good group ranking high in speed and aggressiveness, while only one in the poor group ranks high in this combination. In all three schools, the individuals in the good groups show a slight tendency to rank higher in carefulness and aggressiveness than do those individuals in the poor groups, but this tendency is not conclusive enough to be considered of value in predicting success in typewriting.

Table VII shows the rank-difference coefficients obtained between net typewriting scores and the Downey Group Will-Temperament Test scores on the speed, aggressiveness, and carefulness divisions for the ten best typewriting pupils and the ten poorest typewriting pupils in each school.

The rank-difference coefficients for relationship between net scores in typewriting and the "temperament" scores for speed,

TABLE IV

NET TYPEWRITING WORDS AND DOWNEY GROUP WILL-TEMPERAMENT  
 TEST SCORES FOR SPEED, AGGRESSIVENESS,  
 AND CAREFULNESS IN SCHOOL NO. 1

Net Words	Speed	Aggressiveness	Carefulness
59	21	22	18
58	27	14	16
55	26	23	23
48	20	25	22
47	28	21	25
45	22	18	19
44	7	15	12
44	22	22	18
43	28	14	24
43	17	14	18
28	21	15	19
27	28	16	22
26	23	16	17
24	26	18	23
18	14	19	5
17	19	17	9
15	20	17	21
13	31	15	11
13	26	23	15
12	18	21	16

TABLE V

NET TYPEWRITING WORDS AND DOWNEY GROUP WILL-TEMPERAMENT  
 TEST SCORES FOR SPEED, AGGRESSIVENESS,  
 AND CAREFULNESS IN SCHOOL NO. 2

Net Words	Speed	Aggressiveness	Carefulness
49	23	21	12
45	21	19	9
42	25	21	17
41	16	24	24
41	13	21	35
41	25	20	22
40	33	21	22
33	34	17	18
33	25	23	24
32	12	23	32
24	25	17	6
18	15	17	15
16	16	17	23
12	37	18	16
11	22	14	23
10	39	23	14
7	22	21	12
6	16	18	29
0	20	12	11
0	15	18	19

TABLE VI

NET TYPEWRITING WORDS AND DOWNEY GROUP WILL-TEMPERAMENT  
 TEST SCORES FOR SPEED, AGGRESSIVENESS,  
 AND CAREFULNESS IN SCHOOL NO. 3

Net Words	Speed	Aggressiveness	Carefulness
48	27	23	13
48	31	9	17
47	26	27	13
45	26	28	14
45	23	19	23
45	11	15	20
44	29	26	14
43	32	29	12
42	30	25	19
41	21	25	24
34	26	16	26
33	24	9	15
32	24	31	19
29	33	19	19
29	19	24	20
26	28	16	22
25	28	26	29
25	25	21	23
24	29	15	19
23	24	14	19



TABLE VII

RANK-DIFFERENCE COEFFICIENTS OF NET TYPEWRITING WORDS AND DOWNEY GROUP  
WILL-TEMPERAMENT TEST SCORES ON SPEED, AGGRESSIVENESS,  
AND CAREFULNESS FOR EACH SCHOOL

Trait	School No. 1	School No. 2	School No. 3
Speed:			
Good	.16	-.13	.06
Poor	.16	.24	-.13
Aggressiveness:			
Good	.48	-.17	-.29
Poor	-.57	-.19	.11
Carefulness:			
Good	-.03	-.62	-.39
Poor	.44	-.16	.15

aggressiveness, and carefulness ranged from negative  $-.62$  to positive  $.48$ . The highest positive coefficient obtained on any of the three phases of the temperament test was  $.48$  for aggressiveness and typewriting in the good group of one school, but this was offset by negative coefficients of  $-.17$  and  $-.29$  in the good groups of the other two schools. A positive coefficient of  $.44$  was obtained for carefulness in the poor group of one school, but coefficients of  $.15$  and  $-.16$  were obtained for this group in the other two schools. Consistently negative coefficients of  $-.62$ ,  $-.39$ , and  $-.03$  were obtained for this phase of temperament in the good groups of all three schools.

Correlations were made, using the rank difference method, between net typewriting scores and the scores made on each of the

twelve subtests of the Downey Group Will-Temperament Test. Table VIII shows the rank-difference coefficients of net typewriting scores and scores on the subtests of the Downey Group Will-Temperament Test for the ten best typewriting pupils and the ten poorest typewriting pupils in each school.

Examination of Table VIII reveals no consistency of relationships among the three schools reported. The highest positive coefficient is .68. This is the relationship between Self-Confidence and typewriting in the good group of School No. 1. In the good group of School No. 3, however, there is a negative coefficient between these two items almost as high,  $-.61$ , as the positive coefficient in School No. 1. There is also a negative coefficient of  $-.42$  between these two items for School No. 2.

Motor Impulsion, in the good group, and Interest in Detail, in the poor group, are the only two items that show positive coefficients in all three schools. The coefficient for Motor Impulsion and typewriting of .62 in School No. 1 and of .50 in School No. 2 are comparable, but in School No. 3 the coefficient of .08 is much lower. The coefficient for Interest in Detail and typewriting are consistently low and positive for all three schools.

In School No. 1, there is a positive coefficient of .55 between Speed of Decision and typewriting in the good group. There is a somewhat lower positive coefficient of .31 between these two items for School No. 3, and a small negative coefficient of  $-.04$  for School No. 2.

TABLE VIII

RANK-DIFFERENCE COEFFICIENTS OF NET TYPEWRITING SCORES AND SCORES  
ON THE SUBTESTS OF THE DOWNEY GROUP WILL-TEMPERAMENT TEST  
FOR THE TEN BEST TYPEWRITING PUPILS AND THE TEN  
POOREST TYPEWRITING PUPILS IN EACH SCHOOL

Trait	School No. 1	School No. 3	School No. 3
Speed of Movement:			
Good	-.26	-.32	.31
Poor	-.32	.18	-.08
Freedom from Load:			
Good	.18	.29	-.23
Poor	.28	-.13	-.39
Flexibility:			
Good	.35	-.28	.06
Poor	.07	-.06	.35
Speed of Decision:			
Good	.55	-.04	.31
Poor	.23	.40	-.04
Motor Impulsion:			
Good	.52	.50	.08
Poor	.45	-.11	.07
Self-Confidence:			
Good	.68	-.42	-.61
Poor	-.23	.19	-.53
Non-Compliance:			
Good	-.08	.28	-.45
Poor	-.31	.03	.65
Finality of Judgment:			
Good	-.01	-.22	.20
Poor	-.56	.11	.35
Motor Inhibition:			
Good	.09	-.23	-.10
Poor	.48	-.14	-.48
Interest in Detail:			
Good	-.07	.10	.14
Poor	.12	.06	.10
Coordination of Impulses:			
Good	-.13	-.62	-.64
Poor	-.09	-.35	.35
Volitional Perseveration:			
Good	.18	-.53	.05
Poor	.24	-.01	-.05

In School No. 3, there is a positive coefficient of .65 between Non-Compliance and typewriting in the poor group. There is a very slight positive coefficient of .03 between these two items for School No. 2 and a negative coefficient of  $-.31$  for School No. 1.

All of these results were characterized by lack of consistency and variations within each school and among the schools. None of the findings reported in this chapter are decisive enough to use in predicting success in typewriting.

## CHAPTER III

### SUMMARY AND CONCLUSIONS

This study has attempted to measure a phase of temperament and determine its relationship to success in typewriting achievement. The Downey Group Will-Temperament Test was selected as the one most nearly meeting the criteria formulated for the purposes of this study. This test purports to measure three phases of activity--speed, aggressiveness, and carefulness--and provides data for individual will-profiles representing twelve so-called traits: Speed of Movement, Freedom from Load, Flexibility, Speed of Decision, Motor Impulsion, Self-Confidence, Non-Compliance, Finality of Judgment, Motor Inhibition, Interest in Detail, Coordination of Impulses, and Volitional Perseveration. The data are reported in numerical scores and will-profiles.

Typewriting achievement was measured in terms of net words per minute on the best of three samplings of five-minute testing at the close of the first year of typewriting in three schools.

Complete data from the "temperament" test and typewriting tests were obtained on 135 pupils in three schools. In addition, scores from 13 second-year typewriting pupils were obtained in one school and were reserved as supplementary data for projected comparison with the main data. As the study progressed, these data served, along with the middle range of the distributions, to differentiate the "best" scores and the "poorest" scores in typewriting.

Preliminary examination of the comparative data revealed the futility of applying correlation techniques to the entire range of

scores, and the problem was therefore resolved into a comparison, by rank-difference method, of the ten best and the ten poorest typewriting scores in each school with the corresponding data from the Downey Group Will-Temperament Test.

The following generalizations seem justified from the results obtained:

No patterns of similarity were found in the Downey Group Will-Temperament Test to afford a grouping of the individuals on the basis of any of the named "temperament" traits or combinations of these traits.

When the poorest and best scores in typewriting were used as a basis of comparison, no distinguishable differences in will-profiles were revealed in analyses of separate subtests, of grouped phases of "temperament" activities, and of total test scores.

Comparison of rapidity of action measured in terms of gross words in typewriting with no consideration given to errors and scores on the Downey Group Will-Temperament Test dealing with speed failed to give any definite results.

Comparison of net typewriting scores and scores on the sections of the Downey Group Will-Temperament Test dealing with speed, aggressiveness, and carefulness yielded equally indeterminate findings.

The rank-difference coefficients for relationship between total "temperament" scores and net scores in typewriting ranged from negative  $-.64$  to positive  $.68$ . The highest positive coefficient obtained on any of the temperament traits was  $.68$  for Self-Confidence and typewriting in the good group of one school, but this finding

was offset by negative coefficients of  $-.61$  and  $-.42$  for similar groups in the other schools. Non-Compliance and typewriting yielded a positive coefficient of  $.65$  for the poor group of one school but a negative coefficient of  $-.31$  and a positive coefficient of only  $.03$  in the other schools.

All of the attempts to measure relationships were characterized by variations and inconclusiveness in the results obtained.

In view of the apparent lack of relationship revealed in these findings, the Downey Group Will-Temperament Test is not recommended as an instrument for predicting probable success in typewriting achievement as measured in the schools represented in this study.

It is hoped that further researches may result in adequate measures for the phase of emotionality which this study sought to investigate. Such an instrument should be valuable in other fields of endeavor involving skill training.

The search should be continued also for identifying factors that contribute to an individual's success in all fields involving skills. The classroom teacher should benefit from such a contribution by researchers.

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I. Q. furnishes a good indication of predicting ability to learn typewriting, as measured by final grades; substitution test a fairly good prognosis; these two factors taken together form an almost perfect prognosis of ability to learn to type.

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Korngold, Helen, Master's thesis, Washington University, 1930.

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(2) that there is some correlation between the speed of writing on the reaction test and later typing achievement.

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5. SPACES AND PUNCTUATION POINTS. Spaces and punctuation points are treated as parts of the preceding word, but if intentionally being inserted, relatively or having number changed from the printed copy, an error will be charged unless the preceding word has already been penalized. (See Rule No. 1)

6. SPACING AFTER PUNCTUATION. Two spaces must follow the period, the comma, the interrogative, and the exclamation points--one space only after all other punctuation points.

If punctuation is followed by quotation marks the spacing follows the rule laid down for the punctuation point, viz., a comma followed by quotation marks calls for two spaces, but a comma followed by quotation marks calls for but one space. (See Rule No. 1.)

After a period used to denote abbreviation, as Dr. Mr., St. St., Mrs., Mrs., initials, etc., the spacing required is that which would be used if word was written out in full, viz., one space, unless the abbreviation ends a sentence.

7. A dash must be written with two hyphens without spacing before or after. If a dash is necessary at the beginning of a line there shall be no space between it and the following word.

8. SET CHARACTERS. Any word written as close to top, bottom, or side of sheet, that a portion of any letter is cut off, must be penalized.

9. WORDS NOT FULLY WRITTEN. A word strongly sketched at the end of a line must be penalized. A word hyphenated at the end of a line

OFFICIAL INTERNATIONAL CONTEST RULES  
FOR CORRECTING TYPING TESTS

J. N. Kimball, 453 East 141st Street, New York, N. Y.

1. LINE SPACING. Work must be double spaced--"two netches." Every line singly or irregularly spaced is penalized one error in addition to all other errors in same line.
2. LENGTH OF LINE. Except at end of paragraph, any line having fewer than 61 or more than 76 characters and spaces is penalized one error in addition to all other errors in same line.
3. LENGTH OF PAGE. With paper 8 1/2" by 13", each page, except the last, must have at least 35 lines of writing; with paper 8 1/2" by 11", each page, except the last, must have at least 29 lines of writing. One error is charged for short page--not one error for each line that the page is short.
4. PARAGRAPHING. Paragraphs must be indented five spaces, and only five. An error in paragraphing is penalized in addition to all other errors in same line.
5. SPACES AND PUNCTUATION POINTS. Spaces and punctuation points are treated as parts of the preceding word, but if incorrectly made, inserted, omitted, or in any manner changed from the printed copy, an error must be charged unless the preceding word has already been penalized. (See Rule No. 6)
6. SPACING AFTER PUNCTUATION. Two spaces must follow the period, the colon, the interrogation, and the exclamation points--one space only after all other punctuation points.  
  
If punctuation is followed by quotation marks the spacing follows the rule laid down for the punctuation point, viz., a colon followed by quotation marks calls for two spaces, but a comma followed by quotation marks calls for but one space. (See Rule No. 5.)  
  
After a period used to denote abbreviation, as O. K., M. D., Mr., Mrs., initials, etc., the spacing required is that which would be used if word was written out in full, viz., one space, unless the abbreviation ends a sentence.
7. A DASH must be written with two hyphens without spacing before or after. If a dash is necessary at the beginning of a line there should be no space between it and the following word.
8. CUT CHARACTERS. Any word written so close to top, bottom, or side of sheet, that a portion of any letter is cut off, must be penalized.
9. WORDS WRONGLY DIVIDED. A word wrongly divided at the end of a line must be penalized. A word hyphenated at the end of a line

in the printed copy may or may not need the hyphen if occurring medially in the contestant's work. For instance: "Devilfish" might be hyphenated at the end of a printed line, but medially, if contestant's rendering conforms to any standard dictionary, there is no error.

10. FAULTY SHIFTING. An error must be charged against every word where the shift key is incorrectly used. If the complete character is discernible it is no error.
11. LIGHTLY STRUCK LETTERS. If the outline of any character is discernible there is no error.
12. TRANSPOSITION. Letters transposed in any word constitute an error. Words when transposed are penalized one error for the transposition, and for every error in the transposed words.
13. REWRITTEN MATTER. In rewritten matter every error must be penalized, whether in first or second writing, and one additional error charged for the rewriting.
14. CROWDING. No word shall occupy less than its proper number of spaces.
15. PILING. If any portion of the body of one character overlaps any portion of the body of another character, or extends into the space between words to the extent that it would overlap any portion of the body of a character were there a character in that space, then it is an error.
16. LEFT-HAND MARGIN. Characters beginning lines, except in paragraphs, must all be struck at the same point of the scale. If printed to the left or right of that point an error must be charged.
17. X-ING. Work in which words are x-ed will not be received.
18. ERASING. The use of an eraser is not allowed.
19. ERRORS IN PRINTED COPY. Errors found in the printed copy may be corrected or written as per copy, but in no case shall an error be charged against such words unless they are omitted.
20. LAST WORD. An error made in the last word written, whether that word is completed or not, must be charged.
21. PENALTY. For every error 10 words are to be deducted.
22. GENERAL RULE. Every word omitted, inserted, misspelled, or in any manner changed from the printed copy (save in the case of transposition and rewritten matter), must be penalized.
23. GROSS WORDS. The gross number of strokes shall be reckoned from the printed copy of matter used, and shall be divided by five, the



result being the number of gross words from which all deductions for errors shall be made. Strokes in rewritten matter are not to be counted in the gross. When a typist ends his test with an unfinished word, he shall be given credit of one stroke for each character written.

Copy should have the gross strokes printed at the end of each line, the strokes being counted per line of print, with an additional stroke at the end of each line--if the last word on that line is completed (not hyphenated). In other words, the strokes are counted as though the entire test were written in one continuous line.

Beginning a paragraph, the count commences with the first letter of that line, as actual strokes made for characters and spaces only are counted. Extra strokes made by the typist when shifting for capital letters, when paragraphing and when returning the carriage, are not counted.

In counting strokes from printed copy two strokes are given to every dash in the printed copy, and to all spaces after the colon, interrogation and exclamation points and period.

If necessary to strike a second key to complete a character--as the exclamation point, and accented letter occurring in some foreign languages--the extra stroke is counted.

C O P Y

April 9, 1945

Miss Laura Canfield  
Mainland High School  
Daytona Beach, Florida

Dear Miss Canfield:

I am mailing you today the copy for the three typewriting tests which are to be correlated with the temperament tests. This copy need not be returned to me.

These tests are to be given on three successive days just as near the end of the course as is possible to have a good attendance. If your school is like mine, everything is in a turmoil during the last two weeks. Therefore, I would like for you to use your discretion about when you give them. Just try to see that everybody gets the three trials at the completion of the typewriting course. I don't know yet exactly how I will treat them. I may average the three or I may average the best two.

Please give the tests in the following order: (1) September, (2) October, and (3) November. Have the pupils prepare their papers for the test like the sample test sheet enclosed so that there will be some uniformity about the papers. It will also help me if you will have some pupil arrange the papers alphabetically and with each person's three tests together in the order in which they are taken. If you have them checked for your own grading records, it is all right to fill in the desired information on the test papers. Otherwise, I don't want you to bother with the scoring of the tests.

I appreciate the help you have given me in getting the data for my thesis and hope that I will be able to do as much for you sometime.

Yours very truly,

(Signed) Frances McQuarrie

Enclosure

SAMPLE TEST SHEET

Name \_\_\_\_\_  
Test No. \_\_\_\_\_  
Number of strokes \_\_\_\_\_  
Gross words \_\_\_\_\_  
Number of errors \_\_\_\_\_  
Net words per minute \_\_\_\_\_

Margins: 5 and 80  
Double spacing  
5-space paragraph indentions  
5 minutes

1. Name..... *Margery* *Greens*  
First name Last name
2. Boy or girl (or man or woman)..... *Girl* Grade..... *11-2*
3. Age last birthday..... *16* years Birthday..... *March 25*  
Month Day
4. Teacher..... *Miss M. E. Swann*
5. School (or education)..... *Westland High School*
6. City or town..... *Westland* State..... *Florida*
7. Date of this test..... *November 15, 1944*

## DOWNEY GROUP WILL-TEMPERAMENT TEST

By JUNE E. DOWNEY

*Professor of Psychology, University of Wyoming*

WORLD BOOK COMPANY: PUBLISHERS  
Yonkers-on-Hudson, New York

## TEST



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2 *Downey Group Will-Temperament Test*

I Draw a line under the word in each pair which more nearly describes you. Take the pairs in order. *Don't skip any.* Speed doesn't count.

- ②
- |                                       |                       |
|---------------------------------------|-----------------------|
| 1 <u>Careful</u> . . . . .            | Careless              |
| 2 <u>Daring</u> . . . . .             | <u>Cautious</u>       |
| 3 <u>Ambitious</u> . . . . .          | Unambitious           |
| 4 <u>Selfish</u> . . . . .            | Unselfish             |
| 5 <u>Punctual</u> . . . . .           | Tardy                 |
| 6 <u>Bad-tempered</u> . . . . .       | Sweet-tempered        |
| 7 <u>Accurate</u> . . . . .           | Inaccurate            |
| 8 <u>Industrious</u> . . . . .        | Lazy                  |
| 9 <u>Vain</u> . . . . .               | Modest                |
| 10 <u>Constant</u> . . . . .          | <u>Changeable</u>     |
| 11 <u>Indifferent</u> . . . . .       | <u>Enthusiastic</u>   |
| 12 <u>Firm</u> . . . . .              | <u>Yielding</u>       |
| 13 <u>Trustful</u> . . . . .          | Distrustful           |
| 14 <u>Cowardly</u> . . . . .          | Brave                 |
| 15 <u>Clever</u> . . . . .            | Stupid                |
| 16 <u>Good Memory</u> . . . . .       | Bad Memory            |
| 17 <u>Self-distrustful</u> . . . . .  | <u>Self-confident</u> |
| 18 <u>Hasty</u> . . . . .             | Deliberate            |
| 19 <u>Observant</u> . . . . .         | <u>Unobservant</u>    |
| 20 <u>Sociable</u> . . . . .          | <u>Unsociable</u>     |
| 21 <u>Orderly</u> . . . . .           | Disorderly            |
| 22 <u>Gloomy</u> . . . . .            | Cheerful              |
| 23 <u>Patient</u> . . . . .           | Impatient             |
| 24 <u>Quick in thought</u> . . . . .  | Slow in thought       |
| 25 <u>Quick in movement</u> . . . . . | Slow in movement      |
| 26 <u>Ready to forgive</u> . . . . .  | Holds a grudge        |
| 27 <u>Fond of a fight</u> . . . . .   | Avoids a fight        |
| 28 <u>Extravagant</u> . . . . .       | Saves money           |
| 29 <u>Humble</u> . . . . .            | Proud                 |
| 30 <u>Generous</u> . . . . .          | Stingy                |

*Downey Group W*

II Write your name as dir again until the signal to s

1 *Usual style and speed.*

*Morothy Green*  
*Morothy Green*  
*Morothy Gro*

2 *As rapidly as possible.*

*Morothy Green*  
*Morothy Green*  
*Morothy Green*  
*Morothy*

III Write your name *as slowly* the signal, begin again.

*Morothy Green*

IV Memory Test.

Test

which more nearly  
skip any. Speed

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bitious  
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tempered  
rate

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eable  
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ient  
n thought  
n movement  
a grudge  
s a fight  
money

*Downey Group Will-Temperament Test* 3

II Write your name as directed below. Write it again and again until the signal to stop.

1 Usual style and speed.

M Dorothy Grooms  
M Dorothy Grooms  
M Dorothy Gro

2 As rapidly as possible.

M Dorothy Grooms  
M Dorothy Grooms  
M Dorothy Grooms  
M Dorothy

III Write your name *as slowly as possible*. If you finish before the signal, begin again.

M Dorothy Gro

IV Memory Test.

## 4 Downey Group Will-Temperament Test

- V Write "United States of America" on the line below as quickly as possible. Both speed and not running over the line count.

*United States of America*

- VI Write "United States of America" as directed below. Write it again and again until the signal to stop.

1 Usual style and speed.

*United States of America*  
*United States of America*

42

2 As rapidly as possible.

*United States of America*  
*United States of America*  
*Unite*

46

110

.91

## Downey Group Will

- VII Trace as slowly as possible

1

*United States of America*

*United States of America*

2

*United States of America*

*United States of America*

3

*United States of America*

*United States of America*

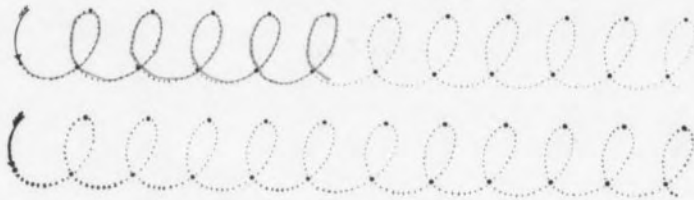
*United States of America*

Downey Group Will-Temperament Test

5

VII Trace as slowly as possible the scroll below. 3 trials.

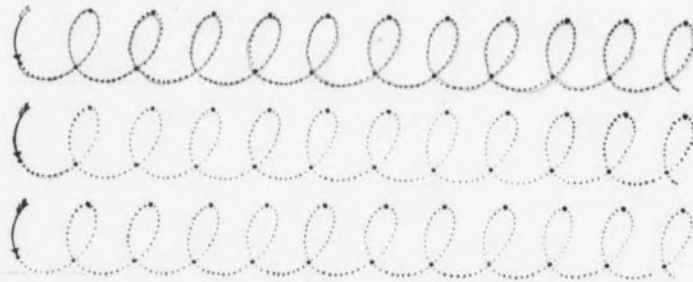
1



2



3



33

nt Test

the line below as  
anning over the line

ected below. Write

42

46

110

92



## 6 Downey Group Will-Temperament Test

## VIII Disguised writing.

- 1 Write "United States of America," in a hand very unlike your own. You need not hurry.

United States of America  
United

- 2 Practice disguising your hand, and then write "United States of America" again. Change your writing as much as possible.

United States of America

Downey Group V

Use this p

United States of Am  
United States of Am  
United States of Am  
United States of Am  
United States of Am  
United States of Am  
United States of Am

Number

160

al Test

*Downey Group Will-Temperament Test*

7

Use this page for practice.

" in a hand very

merica)

United States of America  
 United States of America  
 United States of America  
 United States of America  
 United States of America  
 United States of America  
 United States of America  
 United States of America

then write "United  
 your writing as much

Number

160

8

## Downey Group Will-Temperament Test

- 3 Imitate Model A, writing as rapidly as possible. Copy it as many times as you can before the signal to stop.


  
 A United States of America

c-21

- IX Copy the handwriting below as directed.

- 1 Copy Model A as exactly as you can. Go slowly and work carefully. If you finish before the signal to stop, begin again.


  
 A United States of America

Downey Group W

2

IX Copy the handwriting below as directed.

D-

- 1 Copy Model A *as exactly as you can*. Go slowly and work carefully. If you finish before the signal to stop, begin again.

United States of America

<sup>A</sup> United States of America

Unite States of America

- 2 Copy Model B *as well as you can*. Choose your own speed. If you finish before the signal to stop, begin again.

United States of America,

<sup>B</sup> United States of America

United States of America

Unite

Downey Group Will-Temperament Test

9

## 10 Downey Group Will-Temperament Test

(7) X Write your name *repeatedly* in the spaces below as directed. Keep writing until the signal to stop.

1 Eyes open, usual style and speed. (13)

Morothy Grooms  
Morothy Grooms 37  
Morothy Groom

(5) 2 Eyes closed, usual style and speed.

Morothy Grooms 34

Morothy Grooms (59)

(9) 3 Eyes on examiner's pencil while counting taps.

Morothy Grooms 37  
Morothy Groom (97)  
Morothy Grooms

(5) 4 Eyes open while counting number of times examiner repeats the word "fly."

Morothy Grooms 41  
Morothy Grooms  
Morothy Grooms  
Mlo (1.08)

The word "fly" was used 12 times.

## Downey Group W

## XI Memory Test.

After each one of the words "false" and "true" says is true, draw a line under "false."

Example:

I read you a list of

This is a true statement lined.

If you are absolutely lines under "true" or

Take all the time you have marked *every* that you have finished.

Don't skip any.

- 1 I read you a list of 10 words
- 2 Two words *rimed*—that is,
- 3 The *first* word in the list was
- 4 The *last* word in the list was
- 5 The word *collar* occurred *twice*
- 6 The *longest* word in the list was
- 7 The *shortest* word in the list was
- 8 Three words began with *b*.
- 9 When I read the list of words
- 10 The card from which I read
- 11 The card was white.
- 12 I held the card in my left hand
- 13 In my right hand I held a pencil
- 14 I tapped with the pencil at the
- 15 After reading the list I put the
- 16 Then I sat down.

## XII Correcting Memory Test

2.15

## Downey Group Will-Temperament Test

11

## XI Memory Test.

After each one of the following 16 sentences you will find the words "false" and "true." If you think what a sentence says is true, draw a line under "true"; if it is false, draw a line under "false."

Example:

I read you a list of words early in the test. true false

This is a true statement, and the word "true" is underlined.

If you are absolutely sure that you are right, draw two lines under "true" or "false."

Take all the time you need to mark the sentences. When you have marked *every one*, hold your pencil up to show that you have finished.

Don't skip any.

- 
- |    |   |                   |
|----|---|-------------------|
| 1  | I read you a list of 10 words.                            | <u>true</u> false |
| 2  | Two words <i>rimed</i> —that is, ended in the same sound. | <u>true</u> false |
| 3  | The <i>first</i> word in the list was <i>book</i> .       | <u>true</u> false |
| 4  | The <i>last</i> word in the list was <i>rose</i> .        | <u>true</u> false |
| 5  | The word <i>collar</i> occurred <i>twice</i> in the list. | <u>true</u> false |
| 6  | The <i>longest</i> word in the list was <i>mountain</i> . | <u>true</u> false |
| 7  | The <i>shortest</i> word in the list was <i>ice</i> .     | <u>true</u> false |
| 8  | Three words began with <i>b</i> .                         | <u>true</u> false |
| 9  | When I read the list of words, I was standing up.         | <u>true</u> false |
| 10 | The card from which I read the words was oblong.          | <u>true</u> false |
| 11 | The card was white.                                       | <u>true</u> false |
| 12 | I held the card in my left hand while reading.            | <u>true</u> false |
| 13 | In my right hand I held a pencil.                         | <u>true</u> false |
| 14 | I tapped with the pencil at every word I read.            | <u>true</u> false |
| 15 | After reading the list I put the card into an envelope.   | <u>true</u> false |
| 16 | Then I sat down.  | <u>true</u> false |

## XII Correcting Memory Test.

2.15

at Test

below as directed.

(12)

37

34

39

laps.

37

47

examiner repeats

41

(108)



---

# DOWNEY GROUP WILL-TEMPERAMENT TEST

*Devised by* JUNE E. DOWNEY, PH.D.  
*Professor of Psychology, University of Wyoming*

WORLD BOOK COMPANY: PUBLISHERS  
Yonkers-on-Hudson, New York

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## MANUAL OF DIRECTIONS

*First Revision*





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DGWTT:M-11

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## MANUAL

## INTRODUCTION

THE author advises examining the form of the test before attempting it. For a discussion of the significance of the profile, see the manual accompanying the test and the author's *The Will-Profile*.

The group form of the test is based on the amount of work done on the basis of the time required to complete the task, as in the individual form. It is necessary by this different method to make the test parallel each other. The individual form could not be used for Opposition a test for Self-Reaction to Contradiction.

## DIRECTIONS FOR GIVING THE TEST

See that each subject is given a clear break in the middle of a test.

*Always give the oral directions in the beginning say:*

"Please fill in the blank space with a letter, but do nothing more until I say so."

When all have finished, say:

"This is not an intelligence test. It is a test that you follow directions to work rapidly, sometimes slowly, sometimes fast. Follow these directions at the signal and stop immediately when finishing what you are doing. Don't take time when the stop is given. Is this clear? You are allowed to ask questions."

## TEST I.

"Turn over the page and read the columns of words. They are: Daring . . . . . cautious."

"You are to draw a line under the word that nearly describes you. Underline."

<sup>1</sup> Published by World Book Company.

# MANUAL OF DIRECTIONS

## INTRODUCTION

THE author advises examiners to give and score the individual form of the test before attempting to administer the group form. For a discussion of the significance of the tests and of the will-profile, see the manual accompanying the individual form of the test and the author's *The Will-Temperament and Its Testing*.<sup>1</sup>

The group form of the will-temperament test is scored on the basis of the amount of work done in a prescribed time, instead of on the basis of the time needed to accomplish a prescribed task, as in the individual form. Except for the modifications made necessary by this different method of scoring, the two forms of the test parallel each other very closely. Two items of the individual form could not be adapted for group use. For Resistance to Opposition a test for Self-confidence has been substituted; for Reaction to Contradiction, a Non-compliance test.

### DIRECTIONS FOR GIVING THE GROUP TEST

See that each subject is provided with two pencils. One may break in the middle of a test. Erasers are not needed. *Do not allow pupils to erase*

In the beginning say:

"Please fill in the blank on the front of the examination booklet, but do nothing more until directions are given."

When all have finished, say:

"This is not an intelligence test, but it is absolutely necessary that you follow directions exactly. Sometimes you will be asked to work rapidly, sometimes slowly, sometimes at your natural speed. Follow these directions precisely. Begin *always* exactly at the signal and stop *immediately* when I say, 'Stop,' without finishing what you are doing. If in the middle of a word, stop there. Don't take time even to finish a letter when the signal to stop is given. Is this clear? After the test begins, you will not be allowed to ask questions."

### TEST I. SPEED OF DECISION

"Turn over the page to Test I. Notice that there are two columns of words. They run in pairs, thus: Careful. . . .careless; Daring. . . .cautious; Ambitious. . . .unambitious, etc.

"You are to draw a line under the word in each pair which more nearly describes you. *Underline one word or the other in every pair;*

<sup>1</sup> Published by World Book Company, Yonkers-on-Hudson, New York.

PAGE  
3  
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9  
10  
15

Printed in Great Britain

## 4 Downey Group Will-Temperament Test

one always describes you better than the other. Take the pairs in order; *don't skip any*. Take your time. Speed doesn't count. Ready—Begin."

(Time limit: 45 seconds.)

When the time is up, say "Stop." This signal is to be given sharply and promptly at the end of each test.

## TEST II. FREEDOM FROM LOAD

1. "Now turn to Test II, Writing your Name. Under '1' you are to write your name *as you sign it ordinarily*, in your usual style and at your usual speed — just the way you naturally write it. Keep on writing your name until told to stop. When you finish it, *don't pause, but begin again at once*. Keep on writing it again and again until told to stop. Ready—Begin."

The examiner should emphasize the above instruction and enforce it absolutely. There is a strong tendency to stop at the completion of each writing of the name.

(Time limit: 20 seconds.)

2. "Under '2' you are to write your name *just as rapidly as you possibly can*. Write it just as many times as you can from the instant I give the signal to begin until I give the signal to stop. Ready—Go."

The examiner should give a suggestion of speed in reading the directions. "Ready—Go" should be given *with a snap*.

(Time limit: 20 seconds.)

## TEST III. WRITING NAME AT RETARDED SPEED

"In Test III you are to write your name *just as slowly as you possibly can* without stopping the movement of the pencil. Remember that you are to write very, very slowly. If you finish your name once, begin on it a second time. Use a sharp pencil. Ready—Start."

The examiner gives the idea of retarded movement by drawing the directions.

(Time limit: 20 seconds.)

## TEST IV. MEMORY TEST

"Now you may rest your hand a moment. Pencils up, please. Listen to me. I am going to read you a list of 10 words. You are to remember them so as to be able to report on them at the end of the test. *You must also watch very carefully everything that I*

*do while I am reading the my actions."*

Examiner now reads oblong white card the reading, holds the card right hand, and taps at follows:

Book, Collar, Muff

"Now listen again. Notice the *first and last* repeated in the list, (same sound), and *how*

After the second reading the first reading, the e deliberately and sits do

## TEST V.

"Turn the page to Test write on that short line 'United States of America' remember there are two *rapidly, and you must keep Go.*"

(Ti

## TEST VI. SPEED OF

1. "Test VI is like write 'United States of usual speed. Write on the signal to stop. Don't repeatedly until I tell y *phrases.*<sup>1</sup> Write at the s keep writing all the time

(Tim

2. "Under '2' write as you can and as many begin until the signal remember to write just a

<sup>1</sup> The examiner must be sure tendency to pause at the end of

## Manual of Directions

5

do while I am reading the words, for I shall ask you questions about my actions."

Examiner now reads slowly (one word a second) from an oblong white card the list of words given below. He stands while reading, holds the card in the left hand, holds a pencil in the right hand, and taps at every word read. The list of words is as follows:

Book, Collar, Muff, Ice, Stove, Collar, Bluff, Mountain,  
Bird, Rose.

"Now listen again. I am going to read the list a second time. Notice the *first* and *last* word; and notice also if any word is *repeated* in the list, whether any words *rime* (that is, end in the same sound), and *how many* begin with *B*."

After the second reading, which in every detail should duplicate the first reading, the examiner puts the card into an envelope deliberately and sits down.

## TEST V. COÖRDINATION OF IMPULSES

"Turn the page to Test V. Look at the short line. You are to write on that short line, *just as rapidly as you can*, the words 'United States of America.' Write out the words in full and remember there are two things you *must* do: *you must write very rapidly*, and *you must keep from running over the line*. Ready — Go."

(Time limit: 7 seconds.)

## TEST VI. SPEED OF MOVEMENT AND FREEDOM FROM LOAD

1. "Test VI is like one you have already had. Under '1' write 'United States of America' in your *usual* style and at your *usual* speed. Write continuously from the signal to begin until the signal to stop. Don't hurry, but remember to write the phrase repeatedly until I tell you to stop. *Don't pause between words or phrases*.<sup>1</sup> Write at the speed at which you naturally write, and keep writing all the time. Ready — Begin."

(Time limit: 20 seconds.)

2. "Under '2' write 'United States of America' *just as rapidly* as you can and as many times as it is possible from the signal to begin until the signal to stop. Don't pause between words;<sup>1</sup> remember to write *just as rapidly* as possible. Ready — Go."

✓ <sup>1</sup> The examiner must be sure that this instruction is understood. There is a strong tendency to pause at the end of each word and phrase.

## Downey Group Will-Temperament Test

As in Test II, the examiner should suggest speeding by voice and manner.

(Time limit: 20 seconds.)

## TEST VII. MOTOR INHIBITION

1. "Turn to Test VII. Under '1' you are to move your pencil along the dotted line *just as slowly as you possibly can* and still keep the pencil moving. Trace the scroll as if you were writing, but do it *very, very slowly*. Be sure that your pencil keeps moving all the time. Ready — Begin."

The examiner should suggest retardation by drawing the directions.

(Time limit: 30 seconds.)

2. "Now under '2' try a second time. *Move the pencil just as slowly as you can without stopping it*. Most persons go more slowly on a second trial. Ready — Begin."

(Time limit: 1 minute, 30 seconds.)

3. "Try once more. This is your last chance; do your very best. Some persons can spend 10 minutes writing their names. *Go as slowly as you possibly can*. Ready — Begin."

(Time limit: 2 minutes, 30 seconds.)

## TEST VIII. FLEXIBILITY AND VOLITIONAL PERSEVERATION

1. "Turn the page to Test VIII, Disguised Handwriting. Under '1,' write 'United States of America' in a style very unlike your usual one. Change your writing so much that none of your friends would know it. Ready — Begin."

(Time limit: 50 seconds.)

2. "Before writing under '2' you are to practice on page 7 disguising — that is, changing — your writing of 'United States of America' until you get a disguise that would deceive a handwriting expert.

"When you are satisfied with your disguise, look up at the blackboard, where I shall be writing a column of numbers, and note the first number that I write *after you look up*. Write this number in the space where it says, 'Number' on page 6.

"Then under '2' write 'United States of America' in the disguised hand you have worked out. Begin now with your practice on page 7."

At this point the examiner and at the end of 5 seconds on the blackboard. At the end of 10 seconds write the number of seconds which will appear thus:

5

10

15

20

(Time

If at the end of the 6 minutes not written the phrase omitted, but that they should appear on page 6.

3. "Turn the page to Test IX. 'States of America' is written. Write *just as rapidly as you can* a sample and copy it over and over again. Don't pause after one copy.

(Time

## TEST IX.

1. "In Test IX, 1, you are to write as fast as possible. Speed doesn't count. Write as good a copy as you can. If you are not sure to begin a second time.

(Time

2. "Under '2' copy the message as slowly as you prefer. Just after you have written one copy, begin a second copy, and so on a third time. Ready — Start."

(Time limit

## TEST X.

1. "Turn the page to Test X. Write carefully. Under '1' write the message on page 6. At the end of Test II, at your usual speed, write the message over and over again just until you receive the signal to stop. Ready — Begin."

(Time

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At this point the examiner should note the time by his watch, and at the end of 5 seconds he should write the number 5 on the blackboard. At the end of each succeeding 5 seconds he should write the number of seconds which have elapsed, in a column which will appear thus:

5  
10  
15  
20 etc., up to 360  
(Time limit: 6 minutes.)

If at the end of the 6 minutes some are still practicing and have not written the phrase opposite 2, tell them that this may be omitted, but that they shall write the number 360 in the square on page 6.

3. "Turn the page to Test VIII, 3. Observe the way 'United States of America' is written. Under '3' you are to imitate the writing *just as rapidly as you can*. Write the same size as the sample and copy it over and over until the signal is given to stop. Don't pause after one copying before beginning a second time."

(Time limit: 1 minute.)

## TEST IX. INTEREST IN DETAIL

1. "In Test IX, 1, you are to copy Model A *just as exactly as possible*. Speed doesn't count. Work carefully, and make as good a copy as you can. If you should finish before the signal, be sure to begin a second time. Ready — Begin."

(Time limit: 1 minute.)

2. "Under '2' copy Model B as well as you can, rapidly or slowly, as you prefer. Just choose your own speed. If you finish one copy, begin a second, and if you finish a second, begin a third time. Ready — Start."

(Time limit: 1 minute, 15 seconds.)

## TEST X. MOTOR IMPULSION

1. "Turn the page to Test X. You must follow directions *very carefully*. Under '1' write your name just as you wrote it in Test II, at your usual speed and in your usual style. Write it over and over again just the way you naturally write it, until the signal to stop. Ready — Go."

(Time limit: 20 seconds.)

## 8 Downey Group Will-Temperament Test

2. "Now write your name again, just as you did under '1,' but with your eyes closed. You must place your pencil in position, so that when I give the signal you will be ready to begin. Remember to write your name *again and again* during the time between signals. *Don't open your eyes until I give the signal to stop.* Ready — Close eyes — Go."

(Time limit: 20 seconds.)

3. "Under '3' you are to write your name in your usual way, but while you are doing this you are to keep your eyes fixed on this pencil and you are to count aloud with me the number of times I tap the table with the pencil. Keep your eyes on the pencil and count aloud. Keep on writing until I stop tapping. Ready — Go."

Examiner taps on the table slightly faster than once per second. He also counts aloud vigorously.

(Time limit: 20 seconds.)

4. "Under '4' you are to write your name repeatedly from the signal to begin until the signal to stop. While you are writing I am going to read you a list of words that rime with 'fly,' such as 'die,' 'sigh,' and 'lie.' You are to keep track of the number of times I say the word 'fly.'

"When I give the signal to stop, record the number of times I read the word 'fly.' *Don't forget to keep on writing your name all the time.* Ready — Go."

List to be read by examiner:

Fly, die, sigh, sky, fly, fly, fly, my, fly, lie, die, by, fly, fly, high, fly, cry, fly, sigh, sigh, fly, nye, my, fly.

The examiner should time his reading so that 20 seconds will be required to go through the list. If he fails to complete the list, he should record the number of times "fly" was read. If he finishes before the end of the 20 seconds, he should reread part of the list, recording the correct number of times "fly" was pronounced.

(Time limit: 20 seconds.)

## TEST XI. SELF-CONFIDENCE

"Turn to Test XI. After each one of the 16 sentences you will find the words 'false' and 'true.' If you think what a sentence says is true, draw a line under 'true'; if it is false, draw a line under 'false.'

"For example, 'I read you a list of words early in the test, true false.'

"This is a true statement."  
"If you are *absolute* under 'true' or 'false.'

"Take all the time you have marked *every one* finished. *Don't skip a*

## TEST

When every one has

"Of the sentences you are true. You may correct around any 'true' or 'false' and underline the other reads, 'Two of the words you underlined the word 'true' and underline 'false'."

"You may make all eight false and eight true pencil when you have finished."

The examiner should they desire. Three minutes

## TEST XII

"Turn to Test XIII. back to Test I and mark you marked your own changes, draw a circle underline the other words *in addition* to those you corrected. finished, look at the blank 'Number' on page 12 of the book."

"Now turn back to Ready — Begin."

At this point the examiner and at the end of 3 seconds blackboard. At the end write the number of sentences which will appear thus:

<sup>1</sup> With children below the 9th and explained.

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"This is a true statement, and the word 'true' is underlined.  
 "If you are *absolutely sure* that you are right, draw two lines under 'true' or 'false.'

"Take all the time you need to mark the sentences. When you have marked *every one*, hold your pencil up to show that you have finished. *Don't skip any.*"

TEST XII. NON-COMPLIANCE

When every one has finished Test XI, say:

"Of the sentences you have just marked, *eight* are false, *eight* are true. You may correct your work in this way: Draw a circle around any 'true' or 'false' that you made a mistake in marking, and underline the other word instead. For example, sentence 2 reads, 'Two of the words in the list rimed.' If this was false, but you underlined the word 'true,' draw a circle about the word 'true' and underline 'false' instead.<sup>1</sup>

"You may make all the corrections you care to, so as to mark *eight* false and *eight* true, *but don't erase any marks*. Raise your pencil when you have finished."

The examiner should give time for all to make any changes they desire. Three minutes is probably sufficient.

TEST XIII. FINALITY OF JUDGMENT

"Turn to Test XIII. When the signal is given you are to turn back to Test I and make any changes you care to in the way you marked your own character traits. If you want to make any changes, draw a circle around the word you marked first and underline the other word of the pair.<sup>1</sup> Do not check any traits in *addition* to those you checked in the first place. When you have finished, look at the blackboard and write in the space marked 'Number' on page 12 *the first number I write after you look up*.

"Now turn back to Test I and make what changes you wish. Ready — Begin."

At this point the examiner should note the time by his watch, and at the end of 3 seconds he should write the number 3 on the blackboard. At the end of each succeeding 3 seconds he should write the number of seconds which have elapsed, in a column which will appear thus:

3  
6  
9  
12 etc., up to 120.

<sup>1</sup> With children below the 9th grade the illustration should be put on the blackboard and explained.



10 *Downey Group Will-Temperament Test*

After reaching 114 the examiner quits writing and tells those who have not finished to write 114 in the blank. If desired, a little further time may then be allowed for the checking.

## TENTATIVE SCORING OF GROUP-TEST

The directions for scoring are to be used in conjunction with the table on page 16. The norms were obtained from an approximately small number of adults and are only *tentative*. After more extensive application of the tests, material will be at hand for establishing norms for different ages.

*Test I. Speed of Decision.* Checking of traits. Scored on number of decisions made in time limit. See table, page 16.

*Test II. Normal and Speeded Writing of Name.* Not scored; given as practice for Test VI.

*Test III. Retarded Writing of Name.* Not scored; given as preliminary practice for Test VII.

*Test IV. Memory Test.* Not scored; given in preparation for Test XI.

*Test V. Coördination of Impulses.* Writing "United States of America" in a restricted space and at speeded time. Scored on number of letters omitted or over the line. See table, page 16.

NOTE. The method of scoring used is open to the objection that it fails to reckon with variations in normal speed and that it makes no distinction between those who fail to finish writing the phrase through lack of time and those who finish but run over the line.

It is possible to correct a particular record or to note the quality of reaction by the following procedure:

Calculate from Test VI the normal and speeded time for writing the phrase once. Using these values, score the reaction on the basis of the norms given for Test V, in the Manual of Directions for the Individual Tests.

*Test VI. Speed of Movement and Freedom from Load.* Speed of Movement is scored from VI. 1 on the number of letters written at normal speed within the time limit. See table, page 16.

To score for Freedom from Load, divide the number of letters written during the speeded trial (VI, 2) by the number written at normal speed (VI, 1). Score this ratio in accordance with the norms given in the scoring table, page 16.

*Test VII. Motor Inhibition.* Scored on third trial according to norms given in table. Each scroll is divided into 33 equal units, and the scoring is based on the number of units traced.

*Test VIII. Flexibility.* Score disguised hands (VIII, 1 and 2), first and second attempts each, 0, 1, or 2, according to amount of change. (See samples below.) If the phrase was not written under 2, score the best practice attempt.

Man

Score Rapid Imitation quality and speed, as follows. Rate the quality A, B, C, D, E (see page 12), E signifying own hand.

Count the letters written. Refer to the schedule below find the group.

Find the score under the speed group.

United States of America  
Normal

United States of America  
Disguised. Scored 0

United States of America  
Normal

United States of America  
Disguised. Scored 1

United States of America  
Normal

United States of America  
Disguised. Scored 2

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Score Rapid Imitation of Model A (VIII. 3) according to quality and speed, as follows:

Rate the quality A, B, C, D, or E according to general effect (see page 12), E signifying complete reversion to the subject's own hand.

Count the letters written, and in the left-hand column of the schedule below find the group in which the speed of writing falls.

Find the score under the proper letter and opposite the proper speed group.

*United States of America*

Normal

Three examples of normal and disguised writing. Test VIII, 1 and 2

*United States of America*

Disguised. Scored 0

*United States of America*

Normal

*United States of America*

Disguised. Scored 1

*United States of America*

Normal

*United States of America*

Disguised. Scored 2

Four examples of rapid imitation of Model A. Test VIII. 3 (See page 16)

United States of America  
Quality D

United States of America  
Quality C

United States of America  
Quality B

United States of America  
Quality A

NUMBER OF LETTERS WRITTEN	
147-42	
41-21	
20-10	
Under 10	

Add partial scores to *Test VIII. 2. Volition* is determined by the average. From the number the score according to *Test IX. Interest in* the examinee in copying the task as compared with A (VIII. 3). The score Rate imitations Model jointly, A, B, C, D, E, about fifteen details in as proper placing of one letter-grade for each accompanying illustration be noted in scoring.

United States

United States

Find the difference imitation (VIII, 3) and in the left-hand column in which this number Under the proper letter the score.

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NUMBER OF LETTERS WRITTEN	A	B	C	D	E
147-42	6	6	4	2	0
41-21	6	4	3	1	0
20-10	4	3	2	0	0
Under 10	3	2	1	0	0

Add partial scores to find the total score.

*Test VIII. 2. Volitional Perseveration.* The score on this trait is determined by the amount of time spent in practice on the disguise. From the number the examinee records in the blank find the score according to the table, page 16.

*Test IX. Interest in Detail.* This test is scored on the success of the examinee in copying the writing and on the time he gives to the task as compared with his speed in Rapid Imitation of Model A (VIII. 3). The scoring procedure is as follows:

Rate imitations Model A (IX, 1) and imitations Model B (IX, 2) jointly, A, B, C, D, E, or F, according to accuracy in details. Note about fifteen details in the two imitations, — such, for example, as proper placing of i-dot, form of t-bar, etc., — and penalize one letter-grade for each three bad failures. The crosses on the accompanying illustration show the sort of details that should be noted in scoring. Quality A means no penalizing.

United States of America

United States of America

Find the difference in the number of letters written for rapid imitation (VIII, 3) and for slow imitation (IX, 1) of Model A, and in the left-hand column of the schedule below find the group in which this number falls.

Under the proper letter and opposite the proper number, find the score.

DIFFERENCE IN NUMBER OF LETTERS	A	B	C	D	E	F
36 & over	10	9	8	7	6	5
21-35	9	8	7	6	5	4
12-20	8	7	6	5	4	3
6-11 Note	7	6	5	4	3	2
2-5 Note	6	5	4	3	2	1
1 or negative	5	4	3	2	1	0

NOTE. A slight difference in number of letters written in VIII and IX may be due to preoccupation with detail. If the quality of copy is A or B for imitations in VIII and IX and less than 22 letters are written in VIII, score 10 for Detail.

*Test X. Motor Impulsion.* By means of the accompanying schedule, score writing according to size and amount written as compared with normal size and amount written at normal rate. Score 2, 3, and 4 separately and then obtain the mean score.

RATIO OF LETTERS	GREAT MAGNIFICATION (ABOUT 50%)	MODERATE MAGNIFICATION (ABOUT 25%)	SLIGHT MAGNIFICATION	NORMAL	SLIGHT DECREASE IN SIZE	GREAT DECREASE IN SIZE
1.10 or over	10	10	8	6	4	2
.90-1.09	9	9	7	5	3	1
.75-.89	8	7	6	4	2	1
.55-.74	6	5	4	3	2	1
.33-.54	4	3	2	2	1	1
.00-.32	2	1	1	1	1	1

To score each trial, note the size of the writing under distraction as compared with normal size. Then find the ratio of the number of letters written under distraction to the number of letters written at normal rate, by dividing the former by the latter, and find the proper score in the schedule. Take the mean of these for the final score.

*Test XI. Self-confidence.* Scored on number of items doubly underlined. See table, page 16.

*Test XII. Non-compliance.* Scored on number of changes made after the suggestion has been given by examiner.

Find the ratio between the number of changes actually made

(numerator) and the number of acquiescence to the suggestions are false; eight, true" (denominator).

The latter number is found by adding the number of statements marked "false" to the number of statements which show to what extent memorized.

Add 1 to the numerator and 1 to the denominator which the original decision was made. This is done for any change in marking of items 5, 7, 9, 12, 13. Tabulation of scores is rarely revised. Appropriate rationalization process that

EXAMPLE. Suppose a subject believes 4 items "true" and 4 "false." The score is 4/8 or .5. Two of the items are marked; the ratio, then, is 5/4 or 1.25. This indicates that the score would be 4.

*Test XIII. Finality of Decision.* Rechecking Test I. See table.

## THE

The will-profile shows in various tests. To plot the score for each trait by placing the name of the trait. Then compare the will-profiles and a discussion referred to must be consulted.

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(numerator) and the number of changes necessary for complete acquiescence to the suggestion that "Eight of the statements are false; eight, true" (denominator).

The latter number is found by subtracting from 8 the number of statements marked "false" before the suggestion is given, and shows to what extent memory was at fault.

Add 1 to the numerator of the fraction for every change in which the original decision was doubly underscored and also add 1 for any change in marking any of the following statements: 3, 4, 5, 7, 9, 12, 13. Tabulation of returns has shown that these decisions are rarely revised. Apparently they afford little chance for a rationalization process that justifies a change.

**EXAMPLE.** Suppose a subject before the suggestion is given marks 12 of the statements "true" and 4 "false." The suggestion that 8 are "false" brings 3 changes out of a possible 4. Two of the items changed were doubly underscored in the original marking; the ratio, then, is  $5/4$  or 1.25, and reference to the norms (see table) indicates that the score would be 4.

*Test XIII. Finality of Judgment.* Scored on time spent in rechecking Test I. See table, page 16.

## THE WILL-PROFILE

The will-profile shows in graphic form the scores made in the various tests. To plot the graph, indicate on the record blank the score for each trait by placing a dot on the line labeled with the name of the trait. Then connect the dots with a line. For sample will-profiles and a discussion of them, the publications already referred to must be consulted.

ment Test

	E	F
	6	5
	5	4
	4	3
	3	2
	2	1
	1	0

in VIII and IX may be is A or B for imitations in score 10 for Detail.

f the accompanying amount written as tten at normal rate. the mean score.

	SLIGHT DECREASE IN SIZE	GREAT DECREASE IN SIZE
	4	2
	3	1
	2	1
	2	1
	1	1
	1	1

riting under distract and the ratio of the to the number of the former by the le. Take the mean

er of items doubly number of changes examiner. ges actually made

SCORING TABLE

SCORE	TEST I	TEST V	TEST VI, 1 & 2	TEST VI, 1	TEST VII	TEST VIII, 2	TEST XI	TEST XII	TEST XIII <sup>1</sup>	SCORE
10	30	0 letters	under 1.09	56 & over	0-3	315-360	15-16	0	3-24	10
9	24-29	1-2 letters	1.10-1.15	54-55	4-5	245-310	13-14	.11-.35	27-30	9
8	21-23	3 letters	1.16-1.17	49-53	6-7	195-240	12	.36-.59	33-36	8
7	18-20	4 letters	1.18-1.21	48	8-9	160-190	11	.60-.79	39-42	7
6	17	5 letters	1.22-1.26	44-47	10-12	135-155	10	.80-1.00	45-51	6
5	15-16	6 letters	1.27-1.30	43	13-15	120-130	8-9	1.10-1.29	54-60	5
4	14	7 letters	1.31-1.32	42	16-21	100-115	6-7	1.30-1.45	63-69*	4
3	12-13	8-9 letters	1.33-1.39	38-41	22-35	85-95	4-5	1.46-1.69	72-87	3
2	10-11	9.5-12	1.40-1.50	35-37	36-59	65-80	1-3	1.70-2.0	90-171	2
1	1-9	Over 12	Over 1.50	0-34	Over 59	5-60	0	Over 2	120	1
Item on Profile	Speed of Decision D	Coördination of Impulses K	Freedom from Load B	Speed of Movement A	Motor Inhibition I	Volitional Perseveration L	Self-confidence F	Non-compliance G	Finality of Judgment H	Item on Profile

<sup>1</sup> Cut the score one for every change in decision made during revision.