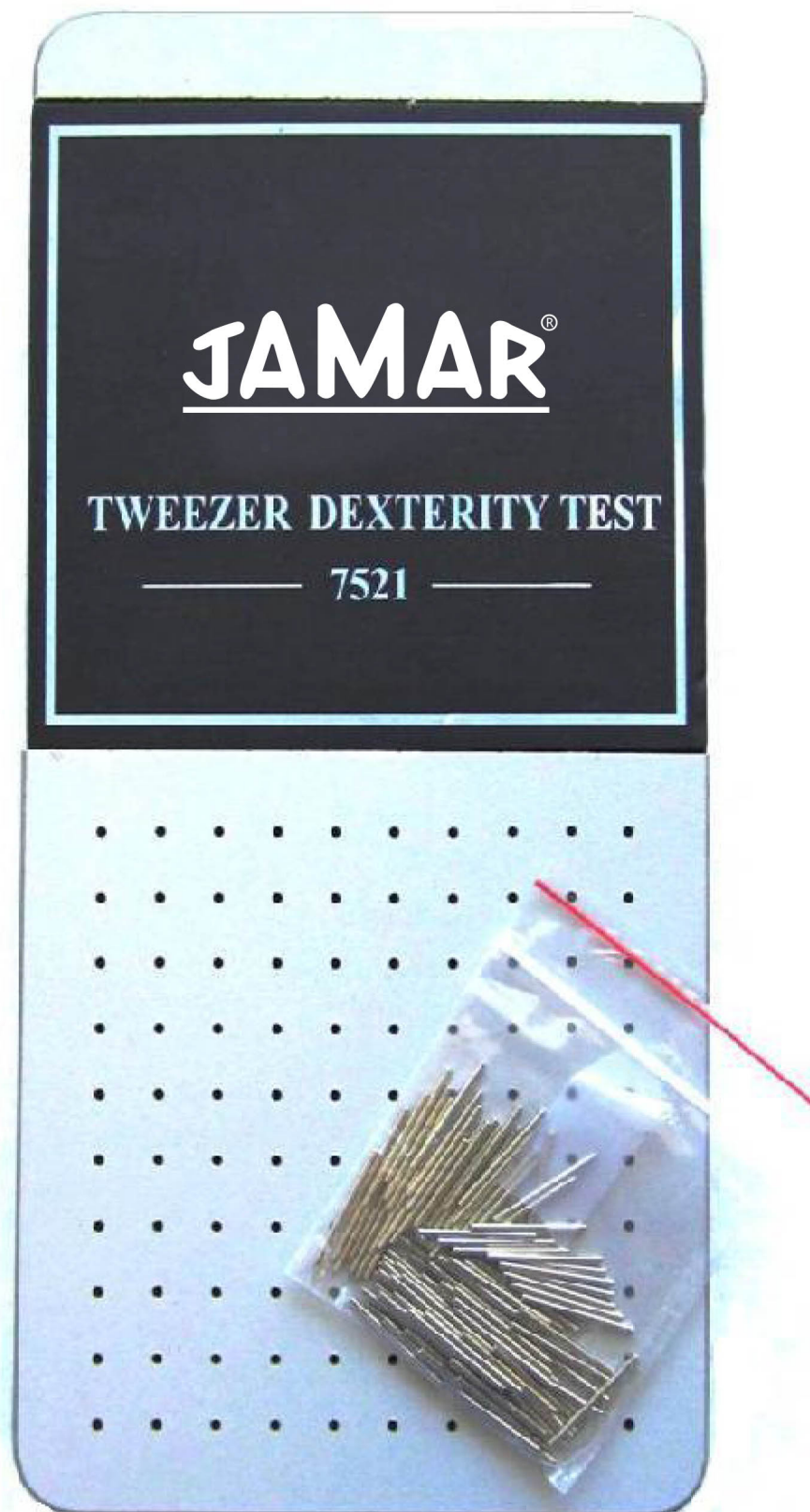


# Instruction Manual

## Tweezer Dexterity Test

### Item #7521



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INSTRUCTIONS FOR THE 7521

TWEEZER DEXTERITY TEST

DESCRIPTION

The Tweezer Dexterity Test consists of a 5-7/8"W x 11-5/8"L board. Located in the top half of the board is a pin well measuring 4-3/4 inches in diameter and 1/2 inch deep. The board has 100 holes 1/16 inch in diameter arranged in 10 rows of 10 holes each spaced 1/2 inch apart. Into these holes, the subject can insert one pin 1 inch long and 1/16 inch in diameter.

This test measures the speed with which an employee using tweezers or some similar instrument is able to pick up pins or similar small items one at a time and place them in small holes on a board or other metal plate. It very much resembles the Finger Dexterity Test but since a finer eye-hand coordination is required in the Tweezer Dexterity Test, some employees can make good scores in the Finger Dexterity Test but not in this test. A high score indicates manual aptitude for work involving precision and steadiness in the use of small hand tools, such as the forceps in the hands of the anatomist, or surgeon, or biological laboratory worker, or the tweezers in the hands of a watch repairer or stamp collector.

ADMINISTERING THE TEST

1. The subject should be seated comfortably at a table about 30 inches in height. The Tweezer Dexterity Test is placed before him about one foot from the edge of the table with the tray at the right, if the right hand is to be used, and at the left if the left hand is preferred. It should be at an angle of about 90 degrees with the subjects working hand, but may be changed if so desired.
2. The examiner should read the following instructions: "The board in front of you has of 100 holes each large enough to hold one pin. Pick up one pin at a time with the tweezers and fill the holes, placing one pin in each as fast as you can. "PICK UP THE PINS BY THE END OPPOSITE OR FARTHEST AWAY FROM YOU. USE ONLY THE HAND IN WHICH YOU HOLD THE TWEEZERS." (Illustrate). Continue giving this explanation so as to subject the fullest possible understanding of the best technique for placing the pins.

Say, for example, PICK UP THE PIN LIGHTLY, SO IT WILL FALL INTO A VERTICAL POSITION BY ITSELF, ALL READY TO DROP INTO THE HOLE, -- SO. (Place a pin in upper left-hand corner from subject). THAT IS THE BEST WAY. YOU SEE IF YOU HOLD THE PIN TIGHTLY LIKE THIS (placing pin), OR PICK IT UP BY THE MIDDLE, LIKE THIS (placing pin), OR PICK IT UP BY THE MIDDLE, LIKE THIS (placing pin), OR BY THE WRONG END, LIKE THIS (placing pin), IT TAKES AN AWKWARD TWIST OF THE WRIST TO GET IT IN. BUT THIS WAY IT GOES NATURALLY. Illustrate while you are talking, filling three more holes in the correct manner. IT IS EASIEST TO START IN THE FARTHEST CORNER AND WORK TOWARD YOU LIKE THIS (gesturing). IF YOU START IN THIS CORNER (the nearest) YOUR SLEEVE (or fingers) WILL CATCH THE PINS. THERE ARE ENOUGH EXTRA PINS IN THE TRAY SO THAT IF YOU DROP ONE OR TWO ON THE FLOOR YOU WILL STILL HAVE ENOUGH LEFT. DO NOT STOP TO PICK THEM UP.

3. Show by gesturing, that the holes are to be filled left to right, for a righthanded subject, and each row completed before the next is started. Explain that the elbow can rest on the table, but do not give this or any of the other suggestions in a mandatory form; say, for example, "Some people like to ... etc." Have the subject put ten (10) pins, thus filling the top line of ten holes, for practice.
4. Allow neither more nor less than the prescribed practice of filling the top ten holes, since this affects performance on the test. Tip the pins out, allow a moments rest, and then time accurately with a stopwatch the number of seconds needed to fill the board from placing the first pin to placing the last. Total administration time varies, according to a person's speed, from about 8-10 minutes.
5. Instruct the subject to start. We recommend any of the stopwatches in the Sammons Preston Catalog for accurate timing of the test interval.

#### SCORING

The score equals the number of seconds elapsing between the placement of the first and last pins.

#### INTERPRETATION OF PERFORMANCE

The early norms were based for the most part on the performance of factory employees and applicants. According to these figures, men scored higher in these early norms and women scored distinctly lower as can be seen in the following tables. Claims have been made that the higher degree of dexterity presumably measured by this test may belong to persons who are successfully engaged in doing very minute work requiring delicate assembling such as in watch-making, in making precision instruments, cutting small dies, making fine glass work, setting jewels, microscopic laboratory work and wood engraving, in fact all kinds of employment requiring very delicate and skillful manipulation of small tools at a fast rate. With the exception of workers engaged in fine instrument assembling, no norms, however, have been published involving large enough groups of employees which are in any way related to their success or failure.

The majority of manual occupations do not require this level of dexterity because semi-skilled workers and even skilled manual operators make an average standard score of about 5 thus equalling the average of the general population.

The test is adapted for use with individuals over 13 years of age. Therefore, boys and girls as young as 14 years of age can have their scores interpreted as the scores for adults.

**TABLE 1**  
**Early Norms**

|                | <u>MEN</u> | <u>WOMEN</u> |
|----------------|------------|--------------|
| Upper Quartile | 300        | 324          |
| Median         | 340        | 372          |
| Lower Quartile | 372        | 438          |

**TABLE 2**

**Standard Norms for the Tweezer Dexterity Test**

| <u>RAW SCORE</u><br>(in seconds) |              | <u>STANDARD SCORE</u> | <u>PERCENTILE RANK</u> |
|----------------------------------|--------------|-----------------------|------------------------|
| <u>MEN</u>                       | <u>WOMEN</u> |                       |                        |
| 255                              | 249          | 7.5                   | 99.4                   |
| 271                              | 263          | 7.0                   | 97.7                   |
| 289                              | 279          | 6.5                   | 93.3                   |
| 309                              | 297          | 6.0                   | 84.1                   |
| 333                              | 318          | 5.5                   | 69.1                   |
| 360                              | 342          | 5.0                   | 50.0                   |
| 393                              | 369          | 4.5                   | 30.9                   |
| 432                              | 401          | 4.0                   | 15.9                   |
| 479                              | 440          | 3.5                   | 6.7                    |
| 539                              | 487          | 3.0                   | 2.3                    |
| 615                              | 544          | 2.5                   | .6                     |

The standard Error of Measurement is estimated to be about  $\pm .32$  of a unit on the Standard Scale.

For easy scoring, Table 3 presents the data depicted in Table 1 in summarized form.

TABLE 3  
for  
MEN AND WOMEN

| <u>MEN</u> | <u>WOMEN</u> | <u>MID SIGNA<br/>SCORE</u> | <u>PERCENTILE<br/>RANGE</u> |
|------------|--------------|----------------------------|-----------------------------|
| - 289      | - 279        | 7.0                        | 93.4 - 100.0                |
| 290 - 333  | 280 - 318    | 6.0                        | 69.2 - 93.3                 |
| 334 - 393  | 319 - 369    | 5.0                        | 30.9 - 69.1                 |
| 394 - 479  | 370 - 440    | 4.0                        | 6.7 - 30.8                  |
| 480 -      | 441 -        | 3.0                        | 0.0 - 6.6                   |

TABLE 4  
Statistical Constants and Difference Ratios for  
Groups of Employed and Unemployed Men and Women

| <u>GROUP</u>              | <u>TWEEZER DEXTERITY TEST*</u> |          |          |          | <u>N</u> | <u>TWEEZER DEXTERITY TEST*</u> |          |          |          |
|---------------------------|--------------------------------|----------|----------|----------|----------|--------------------------------|----------|----------|----------|
|                           | <u>N</u>                       | <u>M</u> | <u>S</u> | <u>R</u> |          | <u>N</u>                       | <u>M</u> | <u>S</u> | <u>R</u> |
|                           | <u>MEN</u>                     |          |          |          |          | <u>WOMEN</u>                   |          |          |          |
| <u>Clerical Workers</u>   |                                |          |          |          |          |                                |          |          |          |
| Unemployed                | 257                            | 16.7     | 2.7      | ....     | 181      | 17.2                           | 2.4      | ....     |          |
| Employed                  |                                |          |          |          |          |                                |          |          |          |
| Sample I                  | 24                             | 18.8     | 2.9      | 3.36     | 219      | 18.5                           | 2.7      | 5.09     |          |
| Sample II                 | 51                             | 17.6     | 2.6      | 2.22     | 32       | 18.8                           | 2.0      | 3.95     |          |
| <u>Store Salespeople</u>  |                                |          |          |          |          |                                |          |          |          |
| Unemployed                | 54                             | 17.2     | 2.4      | ....     | 29       | 16.6                           | 2.1      | ....     |          |
| Employed                  |                                |          |          |          |          |                                |          |          |          |
| Sample III                | ..                             | ....     | ...      | ....     | 31       | 17.6                           | 2.1      | 1.81     |          |
| <u>Mechanical Workers</u> |                                |          |          |          |          |                                |          |          |          |
| B Unemployed              | 46                             | 17.0     | 3.0      | ....     |          |                                |          |          |          |
| Employed                  | 40                             | 18.1     | 2.1      | 1.95     |          |                                |          |          |          |
| C Unemployed              | 30                             | 17.2     | 2.3      | ....     |          |                                |          |          |          |
| Employed                  | 41                             | 16.7     | 2.4      | 1.00**   |          |                                |          |          |          |
| D Unemployed              | 58                             | 16.6     | 2.3      | ....     |          |                                |          |          |          |
| Employed                  | 37                             | 16.8     | 2.5      | .38      |          |                                |          |          |          |

N: number of cases; M: mean; S: standard deviation; R: difference ratio between employed and unemployed groups.

\* The statistical constants are expressed in terms of reciprocals whenever the score is in terms of time.

\*\* Indicates that the difference favors the unemployed.

## REFERENCES

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