

DIGIT VIGILANCE TEST

1. Background and Rationale

The Digit Vigilance Test (DVT) is a paper and pencil task designed to measure vigilance during rapid visual tracking and accurate selection of target stimuli. The task appears to isolate alertness and vigilance and to place minimal demands on the selectivity and capacity components of attention.

2. Equipment and Supplies

- DVT testing worksheet
- DVT sample worksheet
- Scoring Guide
- Sharpened pencils
- Stopwatch

3. Participant Room

The DVT should be administered in a setting that has adequate light and is free of distraction, administer in a closed room. The participant should be seated at a desk or have a hard, flat surface to work on.

4. Administration of the Test and Sample

The test should be administered at the beginning of the visit. If participant has fasted, collect specimen and allow them to have a snack first.

The examiner should place sample testing form in front of the participant and instruct as follows:

“On this test, I would like you to cross out every 6 that you find that is followed by a number greater than 6 (so a 7, 8, or 9) like this”. Demonstrate by crossing out an appropriate six on the sample testing form, explain that you are not crossing out the first 6 because it is followed by a 3, but you are crossing out the second 6 because it is followed by an 8. Make sure that the participant understands that they are to cross out 6’s followed only by numbers greater than 6, a 6 followed by another 6 would not be crossed out. A 6 in the farthest right column on the page is followed by a 7, 8, or 9 in the next row (farthest left column), then the 6 should be crossed out.

“Go across each row, from left to right like this.” Examiner should demonstrate by pointing finger across the page in the right direction in successive rows.

“Cross out every 6 that you come to that is followed by a number greater than 6 in the sample test and then stop.”

Be sure to reiterate that if a 6 is at the end of a line and the next line starts by a 7, 8, or 9 that they should cross it out. There is not such an example in the sample test so you should say “If this

number was a 6 (point to last number on a line) and this number was >6 (point to first number in next line) then you would cross out the 6.”

The examiner should point to the sample area and ask the subject to complete the sample test. If the subject does not appear to understand the instructions or appears to have an obviously inefficient response style, such as going too fast and missing appropriate 6s or going too slowly and focusing attention on each individual number, the examiner repeats the instructions and attempts to make any needed corrections in response style.)

The examiner then displays the test booklet and says:

“I would like you to do the same thing now on this page, and tell me when you are finished with it; and tell me when you are done with that one. I will be timing you. Cross out every 6 that is followed by a number greater than 6 as quickly as you can. Remember to go quickly but also try to be accurate and not miss any 6s. Are you ready? Begin.”

Begin timing with a stopwatch after saying “Begin”.

Observe the participant on the first five rows of the test to determine whether further corrective feedback is required to discourage an inefficient or poorly motivated response style. (Note: Horizontal marks appear in the margins of the first page to indicate the end of the fifth row.) If the subject misses more than two of the six 6s that are followed by a greater number in these rows, the examiner says:

“Make sure you don’t go so fast that you miss 6s; try to be accurate.” Do not specifically point out the errors that were made, just have them continue with the test.

If the subject appear to be performing too slowly, the examiner encourages the subject to perform as quickly as possible by saying:

“Try to go as quickly as you can. It’s all right if you miss a few; just keep going.”

Timing should not be stopped while the examiner provides corrective feedback. If a subject requires more than 400 seconds (6 minutes, 40 seconds) to complete the first page, the second page is not administered and the stopwatch should be stopped when the participant reaches the bottom of the first page. If the subject completes the first page in less than 400 seconds they should flip the page and continue immediately until they are done, do not stop the stopwatch when you turn the page, the total time for both pages to be completed will be recorded. There is no time limit to stop the participant, once they start the second page they should continue until they have reached the bottom of the page.

5. Scoring the Test

Scores are calculated for the Total Time and Total Errors. Errors include omissions (6s not marked) and commissions (numbers marked other than 6, or 6s not followed by a 7, 8, or 9). To facilitate quick and simple scoring templates are provided to help identify errors. Total Time

should be recorded as the time that the participant reaches the end of the 2nd page (or 1st page if it takes more than 400 seconds).

If the first page is not done in less than 400 seconds the examiner should indicate on the form that only the first page was completed and record the total time needed to complete the first page in the field for Total Time on the form (be sure to record in seconds, see Appendix 1 for common conversions). Likewise, the total errors on the first page (omissions and commissions) should be recorded for the first page only if they did not complete the second page. If both pages are administered you will record the Total Time for both pages in the field for time and the cumulative number of errors for (omissions and commissions) in the error fields on the form. You do not have to breakdown time or errors into page 1 and page 2 time and errors.

Scoring Refusals

If a participant completes the sample vigilance test but then refuses to do the DVT the examiner should record that the participant did not complete the sample test and mark "Refused" as the reason that the sample was not administered. Questions 2-4 should not be answered.

5.1 Training Requirements

The technician requires no special qualifications for performing this assessment. The training should include:

- Read and study manual
- Attend MrOS training session on techniques (or observe administration by experienced examiner)
- Practice on other staff or volunteers
- Discuss problems and questions with local expert or QC officer

5.2 Certification Requirements

- Complete training requirements
- Demonstrate administration of the test
- Conduct test on 2 volunteers:
 - According to protocol, as demonstrated by completed QC checklist

5.3 Quality Assurance Checklist

- Correct instructions given while demonstrating procedure
- Standard encouragement (motivation and feedback) offered to participant
- Review first 5 lines of page 1 of test for number of correct markings
- Key points from script delivered clearly
- Stops participant if first page not complete in 400 seconds
- Reviews form for completeness
- Correctly completes form

6. **References**

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APPENDIX 1.**Helpful Time Conversions (non-inclusive list)**

100 seconds=1 minute 40 seconds
120 seconds=2 minutes
140 seconds=2 minutes 20 seconds
160 seconds=2 minutes 40 seconds
180 seconds=3 minutes
200 seconds=3 minutes 20 seconds
220 seconds=3 minutes 40 seconds
240 seconds=4 minutes
260 seconds=4 minutes 20 seconds
280 seconds=4 minutes 40 seconds
300 seconds=5 minutes
320 seconds=5 minutes 20 seconds
340 seconds=5 minutes 40 seconds
360 seconds=6 minutes
380 seconds=6 minutes 20 seconds
400 seconds=6 minutes 40 seconds
420 seconds=7 minutes
440 seconds=7 minutes 20 seconds
460 seconds=7 minutes 40 seconds
480 seconds=8 minutes
500 seconds=8 minutes 20 seconds
520 seconds=8 minutes 40 seconds
540 seconds=9 minutes
560 seconds=9 minutes 20 seconds
580 seconds=9 minutes 40 seconds
600 seconds=10 minutes
620 seconds=10 minutes 20 seconds
640 seconds=10 minutes 40 seconds
660 seconds=11 minutes
680 seconds=11 minutes 20 seconds
700 seconds=11 minutes 40 seconds
720 seconds=12 minutes