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| Woolcock Institute of Medical Research |
| Digital Symbol Substitution Task |
| Technical Specifications for Research Tools |

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| 5/11/2018 |

**Digit Symbol Substitution task (DSST)**

The Digit Symbol Substitution Task (DSST) is a test of attention. The participant is presented with a table of symbols which are numbered 1 to 9. When a stimulus symbol is presented the participant is required to press the correct number on the keyboard in association with that symbol. As soon as a response is made a new symbol is presented. The same symbol will not be presented twice in succession. The test terminates automatically after a total time of 90 seconds.

The Digit Symbol Substitution Task (DSST) is a test of attention, perceptual speed, motor speed, visual scanning, memory and ability to remember and operate on complex symbols. The DSST is an adapted sub-test of the Wechsler Adult Intelligence Scale (Wechsler, 1997). A higher score on the DSST is thought to represent an increased accuracy and speed of visuospatial processing skills. That is, to copy more symbols in the given time period corresponds to a greater ability to use working memory or to “keep in mind” the shape and orientation of the symbols of the DSST. A paucity of this ability causes the participant to look back and forth between the table of symbols and the stimulus. Thus, producing a slower performance or coping less symbols in a given period of time.

In the Woolcock Institute of Medical Research version once the test begins participants are presented with a table of symbols which are numbered 0 to 9. A symbol is presented randomly, below the table, and then the participant will be required to press the number on the keypad that matches the corresponding symbol in the table as quickly as possible. Primary outcomes measured in this test are the speed and accuracy in which participants respond. As soon as the participant responds a new symbol will be presented. The same symbol is never presented twice in succession.

**DSST - Input parameters**

FULL

testtime=90000, total duration in milliseconds

examplequestions=2

PRACTICE

testtime=20000, total duration in milliseconds

examplequestions=3

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| Variable | Variable Code |
| Total number of symbols presented | TestCount |
| total number correct (count) | CorrectCount |
| accuracy (measured by calculating the number of attempts made and the number correct or incorrect) | (100 divided by TestCount) multipled by CorrectCount |

