

## ACTIVITY 2

# Operation Span Task

Developed by  
**Turner & Engle, 1989**

### Concept

A number of tasks are used to measure working memory capacity, and a common characteristic is that working memory tasks require participants to hold information in memory while processing information, which is what you have to do when you mentally multiply 12 times 17. For example, you might first multiply 10 times 17 and get 170. You then have to hold that product in memory while you multiply 2 x 17 to get 34. You then have to add 170 and 34 to solve the problem.

### Instructions

In the Operation Span Task, participants are asked to read aloud and perform a series of operations while they remember words. For example, they might be shown the following on a computer monitor:

*Is  $3 \times 3 + 4 + 13$ ? (Yes or no) FRUIT*

They have to indicate whether or not the equation is correct and then say the capitalized word aloud. Then that equation disappears, and the participants are shown another equation and word such as:

*Is  $10/2 + 4 = 7$ ? (Yes or no) ROAD*

Again, after the participants read the capitalized word aloud, the equation disappears, and the participants are shown another equation and word such as:

*Is  $12/4 - 2 = 5$ ? (Yes or no) GREEN*

After a certain number of trials (anywhere from two to seven), participants are asked to recall the words (i.e., FRUIT, ROAD, GREEN). Their working memory capacity is measured by the number of words correctly recalled.



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Successful performance on the Operation Span Task requires that you hold onto (store) information (i.e., the words) while you process (i.e., perform the arithmetic operations). This ability is related to performance on many important cognitive tasks. Indeed, performance on working memory tasks (like the Operation Span Task) correlates highly with higher-order tasks such as reading comprehension and fluid intelligence (Engle, 2002, *Current Directions in Psychological Science*). Current conceptualizations suggest that working-memory capacity is highly related to the ability to *control attention*—that is, to keep in mind the relevant aspects of a problem and ignore distraction.

## References

- Engle, R. W. (2002). Working memory capacity as executive attention. *Current Directions in Psychological Science, 11*, 19-23.
- Turner, M. L., & Engle, R. W. (1989). Is working memory capacity task dependent? *Journal of Memory and Language, 28*, 127-154.

