

Cognitive Task Overview: TestMyBrain Letter/Number Switching

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TMB Test Name: TestMyBrain Letter/Number Switching

Test Demo: [standard version](#)

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The Many Brains Project

[The Many Brains Project](#), is a 501(c)(3) non-profit that supports TestMyBrain (TMB) in collaboration with the [Laboratory for Brain and Cognitive Health Technology at McLean Hospital](#) and Harvard Medical School. We currently support many different types of research studies through our infrastructure for cognitive assessment - these range in size from small lab-based pilot studies to large longitudinal, multisite clinical research studies with tens of thousands of participants. As TestMyBrain has been continuously in operation since 2008, we provide a stable and secure platform for hosting and delivering mobile and web-based cognitive assessment protocols. Through TestMyBrain.org, data have been collected from over 3.7 million participants in a *citizen science* framework that includes structured return of research results toward the development, validation, and normative characterization of cognitive measures. We currently support research and education at over 2,000 sites worldwide engaged in digital neuropsychological assessment.

CITATION

Please credit The Many Brains Project and TestMyBrain in any papers, posters, or publications related to the TMB tests or data collected by TMB tests.

- Example:
 - All tasks were selected from and hosted on The Many Brains Project's web-based cognitive testing platform, TestMyBrain (Germine et al., 2012; The Many Brains Project).
 - Germine, L., Nakayama, K., Duchaine, B. C., Chabris, C. F., Chatterjee, G., & Wilmer, J. B. (2012). Is the Web as good as the lab? Comparable performance from Web and lab in cognitive/perceptual experiments. *Psychonomic Bulletin & Review*, 19(5), 847-857.
 - The Many Brains Project. *TestMyBrain Cognitive Tests*. URL: www.manybrains.net

Test Overview

Background:

TestMyBrain Letter/Number Switching measures response selection/inhibition, task-switching, and cognitive control. The test was adapted from a task-cued stimulus-classification procedure used to measure task switching ability (Ophir et al., 2009).

Task Parameters:

On each trial, either the word “LETTER” or “NUMBER” appeared at the top of the screen as a task cue. After a 750 ms delay, a letter and a number were simultaneously presented next to each other below the task cue. There were six possible options for both the letter [a, b, c, x, y, z] and the number [1, 2, 3, 7, 8, 9]. At the same time the letter-number pair appeared, two response boxes were presented on the screen side-by-side beneath the letter-number pair. The left response box contained the numbers “123” and the letters “ABC,” whereas the right response box contained the numbers “789” and the letters “XYZ.” Participants were instructed to select the left response box when either the task cue word was “LETTER” and the letter in the letter-number pair was a, b, or c, or when the task cue word was “NUMBER” and the number in the letter-number pair was 1, 2, or 3. Participants were instructed to select the right response box when either the task cue word was “LETTER” and the letter in the letter-number pair was x, y, or z, or when the task cue word was “NUMBER” and the number in the letter-number pair was 7, 8, or 9. A delay of 150 ms occurred after each trial.

After completing 10 practice trials, participants completed one unscored trial, followed by 72 test trials. Each trial was equally likely to be a “LETTER” or “NUMBER” trial, equally likely to have the number in the letter-number pair be on the left (e.g., a1) or the right (e.g., 1a), and equally likely to have both the letter and number be consistent with the same response box (e.g., a1) or with different response boxes (e.g., a9).

Primary Outcome:

The suggested primary outcome of the test is *conflict slowing*: how much slower participants are when the letter and number require the different responses (e.g., letter left, number right) versus when they both require the same response.

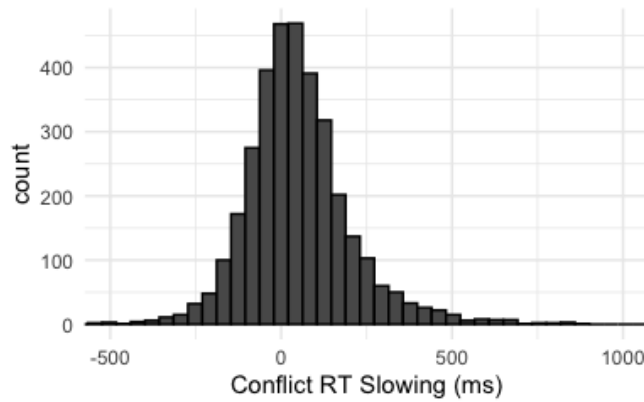
User Input:

Participants respond either by touching (touch-compatible devices) or clicking their answer selection.

Alternate Task Versions: Alternate forms of the test are available for repeated administration.

Psychometrics:

- **Reliability:** In single-session testing, variation in performance between participants has a split-half reliability of .55.
- **Score distribution:**



References:

Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences*, 106(37), 15583-15587.