Cognitive Task Workflow Overview: TestMyBrain Vocabulary (Standard Length - Hard Difficulty)

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TMB Test Name: TestMyBrain Vocabulary (Standard Length - Hard Difficulty)
TMB Test Version: Vocab_Main.Dec20
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The Many Brains Project

The Many Brains Project is a US-based 501(c)3 non-profit focused on the development of digital cognitive testing tools. 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.org 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 2.5 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 400 sites worldwide as well as support for over 1200 clinicians or clinical sites engaged in remote digital neuropsychological assessment. For more information contact info@manybrains.net.

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

Document Contents

The Many Brains Project

General Test Overview

Detailed Test Activities
- Flow Diagram
- 1) Instructions
  - Description
  - Screenshots
- 2) Practice Trial
  - Description
  - Screenshots
- 3) Test Trials
  - Description
  - Screenshots

Trial Level Data

Full Test Outcome Data

General Test Overview

Background:
TestMyBrain Vocabulary (Hartshorne & Germine, 2015; Richler et al., 2017) is a vocabulary test designed for remote, unsupervised, web-based administration, and is modeled after the Wordsum test used in the General Social Survey (Smith, Marsden, & Hout, 2013).

Task Parameters:
On each trial, participants select which of five response option words are closest in meaning to a probe word. For example, for a probe word "dreary," with response options "old," "bloom," "gloomy," "correct," and "possible," the correct response would be "gloomy." The standard length, hard version of the test contains one practice trial and 20 test trials. All participants complete the trials in the same order.

Primary Outcome:
The suggested primary outcome is the proportion of test trials answered correctly.

Input Device:
Participants using touch-compatible devices select their responses by touching the desired response option, whereas participants without touch-compatible devices make their response by selecting their desired response option with a mouse click.

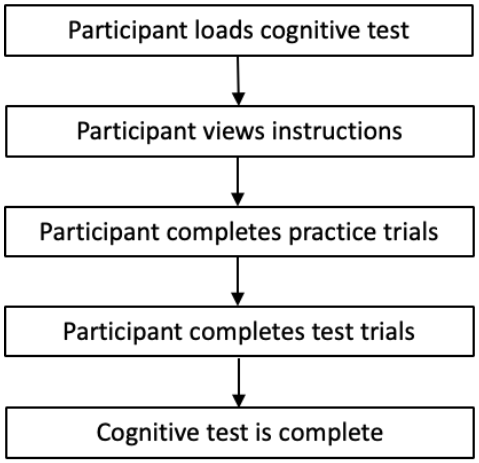
References:
Hartshorne, J. K., & Germine, L. T. (2015). When does cognitive functioning peak? The asynchronous rise and fall of different cognitive abilities across the life span. *Psychological Science*, *26*(4), 433-443.

Richler, J. J., Wilmer, J. B., & Gauthier, I. (2017). General object recognition is specific: Evidence from novel and familiar objects. *Cognition*, *166*, 42-55.

Smith T. W., Marsden P. V., & Hout, M. General Social Surveys, 1972–2012: Cumulative Codebook. *National Opinion Research Center;* Chicago, IL: 2013.

Detailed Test Activities

Flow Diagram

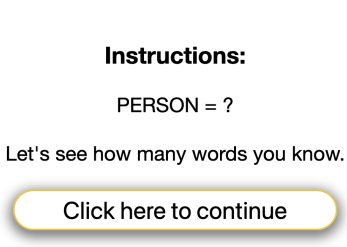


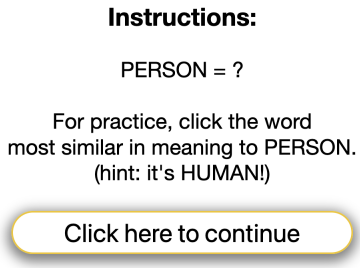
1) Instructions

Description

The participant views brief instructions for the test and clicks a button when ready to start the practice trial. No data is generated during the instructions phase.

Screenshots





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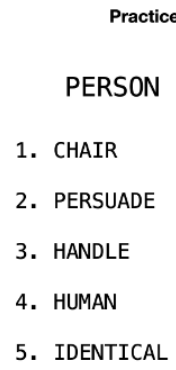
2) Practice Trial

Description

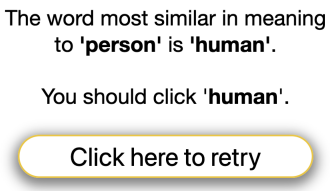
The participant completes one practice trial. The probe word (PERSON) and five response options remain on the screen until the participant selects a response, or 10 seconds elapse and the trial times out. If the wrong answer is selected or the trial times out, the participant is informed that they should click the correct answer (HUMAN), and are required to retry the practice trial. The practice trial is recorded in the trial level data for the test, but does not contribute to full test outcomes.

Screenshots

- Practice trial probe word and response options:



- Feedback following incorrect response or timeout:



3) Test Trials

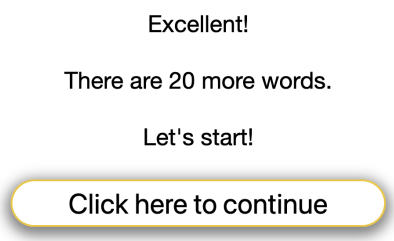
Description

After completing the practice trial, the participant views a screen informing them the test trials are about to begin. The participant then completes 20 test trials without receiving response feedback. On each trial, the participant has 10 seconds to make a response before the trial times out and a message appears informing them they are taking too long to respond; when this occurs, the participant must press a button to restart the trial. The participant's progress through the test is presented at the top of the screen throughout the test trials. Test trials are recorded in the trial

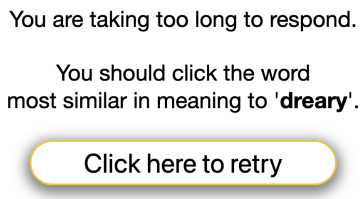
level data for the test, and also contribute to full test outcomes. The test ends when participants have made responses for all 20 test trials.

Screenshots

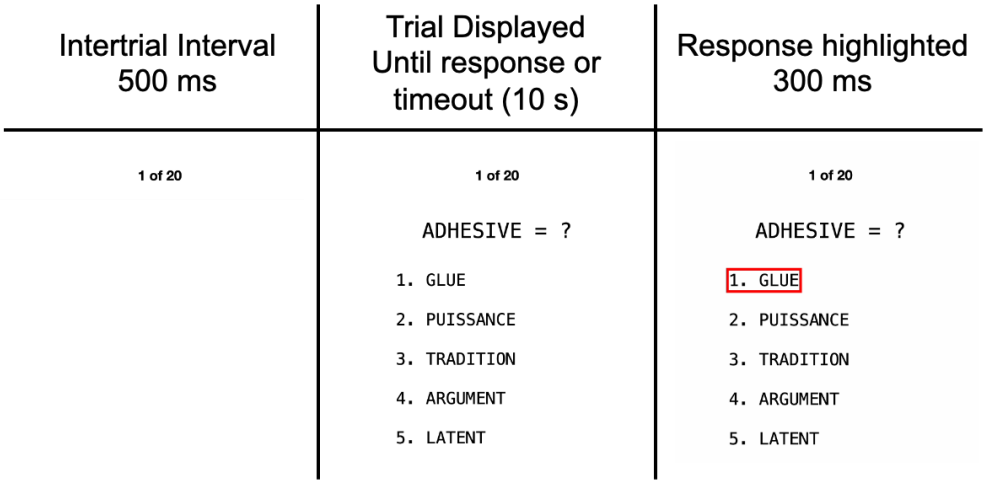
- Message before test trials:



- Timeout message:



- Test trial structure:



Trial Level Data

Variable	Description
type	Trial type ['practice', 'test']
probe	probe word
target	target word
response	word chosen by the user
correct	response correctness, boolean [0,1]
rt	reaction time (ms)
state	event triggered by the response: timeout => no response until timeout touchend, pointerup.touch => touchscreen touch mouse, pointerup-mouse => mouse

Full Test Outcome Data

Variable	Description
score	number of correct 'test' trials
accuracy	Proportion correct responses for 'test' trials. Recommended primary test outcome.
meanRTc	Average reaction time of correct responses to 'test' trials (ms)
medianRTc	Median reaction time of correct responses to 'test' trials (ms)
sdRTc	Standard deviation of reaction times of correct responses to 'test' trials (ms)
responseDevice	User's response device: touch mouse pen
testVersion	Test's script version