

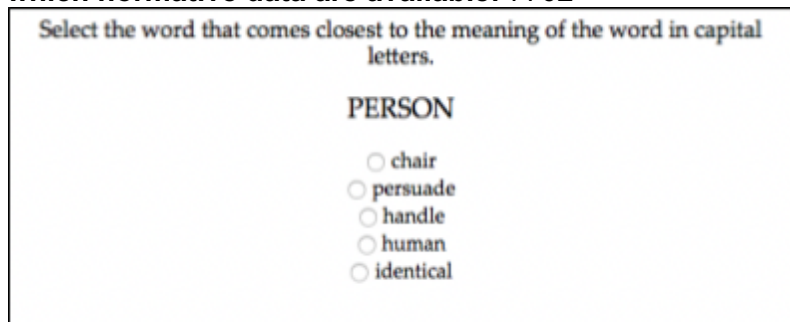
Note: this document may not describe the most recent version of this cognitive test available from TestMyBrain. TestMyBrain cognitive test documentation will be updated over the next several months to align with current test versions.

TMB Vocabulary

Constructs Measured: Cognition: Declarative memory, language, general cognitive ability, general intelligence, crystallized intelligence, and verbal reasoning

Duration: 4 minutes

Sample size for which normative data are available: 7702



Select the word that comes closest to the meaning of the word in capital letters.

PERSON

- ☐ chair
- ☐ persuade
- ☐ handle
- ☐ human
- ☐ identical

No time constraints

The test consists of 30 test items. For each item, participants are asked to select the word that is closest in meaning to the target word. Measures of vocabulary are among the best indices of verbal or crystallized intelligence, premorbid intelligence, and also of general intelligence more broadly (Carroll, 1997; Lehr et al., 1995). The TMB Vocabulary test was modeled after the well-validated Wordsum test used in the General Social Survey (Smith, Marsden & Hout, 2013).

Psychometric Characteristics

Here we focus on accuracy (proportion correct) as the primary outcome measure or score. There are other reaction time-based measures that could be derived from this test (e.g. mean response time), but since this is not a speeded test the interpretation of these measures would not be clear.

This test shows high internal reliability (split-half $r = 0.88$ with Spearman-Brown correction). Sociodemographic effects were estimated based on $N = 7702$ participants. The distribution of scores is relatively normal, with some ceiling effects, particularly for older age groups (see Figure 1). Performance is variable across the lifespan, with increases in performance across the full age range included in our analyses (see Figure 2). Based on age controlled scores, there is a small gender difference that favors females (gender differences calculated on age range 18-25) (see Figure 3) and an effect of education where participants with higher educational attainment show superior performance (see Figure 4).

Practice effects on this test would be considerable without the establishment of alternate forms, as participants can remember previous choices. Alternate forms would protect against such effects.

Validation

Vocabulary tests are widely used as measures of general cognitive ability and as a “hold” test or test of “premorbid iq”, since performance is relatively insensitive to variations in health in the

short-term, psychological state, or many forms of brain damage (Lezak et al., 2012). Vocabulary tests provide a good control or baseline measure in populations that are reasonably well-educated and where individuals would be expected to have native (English language) fluency.

Controlling for participant age, TMB Vocabulary test performance correlates with performance on TMB Verbal Paired Associates Test (age-corrected $r = 0.28$, 95% CI = [0.19, 0.36]), a test of verbal memory, as well as with other memory tests such as TMB Forward Digit Span (age-corrected $r = 0.23$, 95% CI = [0.13, 0.32]) and TMB Visual Paired Associates (age-corrected $r = 0.26$, 95% CI = [0.19, 0.34]). It also shows correlation with tests measuring fluid intelligence, such as TMB Digit Symbol Matching (age-controlled $r = 0.22$, 95% CI = [0.14, 0.29]), showing its utility as a test of premorbid cognitive function.

Appropriateness for Field Test Use

Overall, the TMB Vocabulary test is brief and relatively engaging test for participants with minimal technical barriers. Practice ensures that participants know what they are supposed to do and there are minimal barriers to completion.

Device Effects. The TMB Vocabulary test is easy to administer across a range of device and there is very little reason to believe device characteristics would influence performance. The data are consistent with this (e.g. iPhone mean = 0.77, SD = 0.14; iPad mean = 0.81, SD = 0.14; Macintosh desktop / laptop mean = 0.80, SD = 0.14).

Participant Burden. The TMB Vocabulary test is considered enjoyable by participants and is relatively brief (4 minutes for 30 item version). Ratings for batteries containing this test (3.75 / 5 stars) compare favorably with average ratings on TestMyBrain.org (3.67 / 5), with excellent completion rates compared with the rest of site (94.8% of participants who begin this test complete it).

Figure 1. Distribution of scores

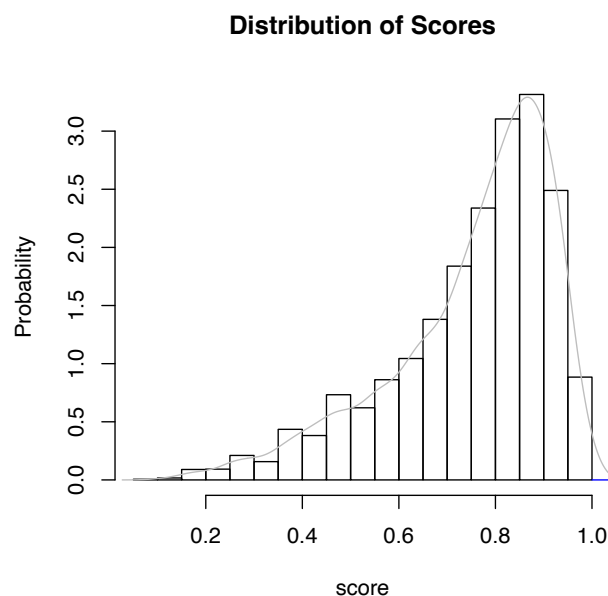


Figure 2. Age-related differences in performance

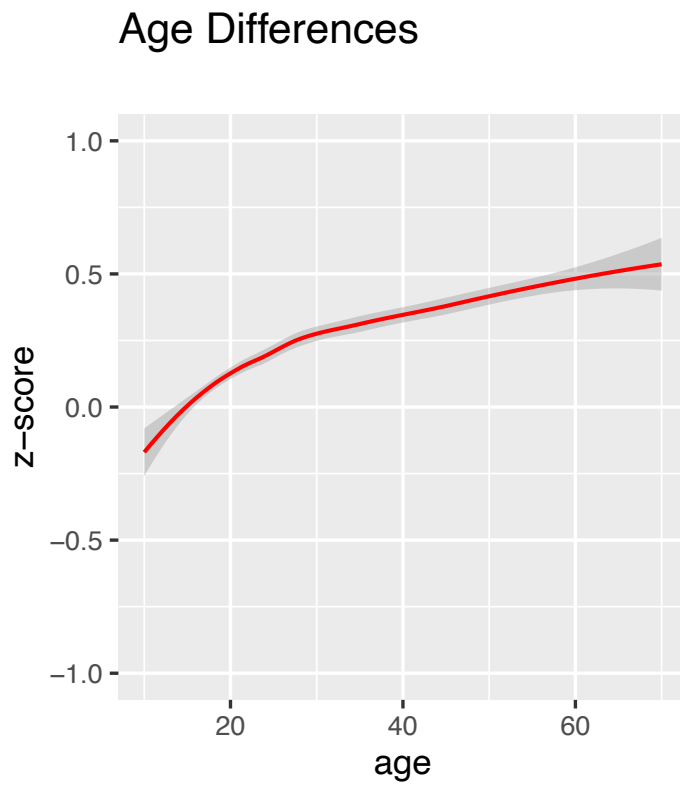


Figure 3. Sex differences in performance

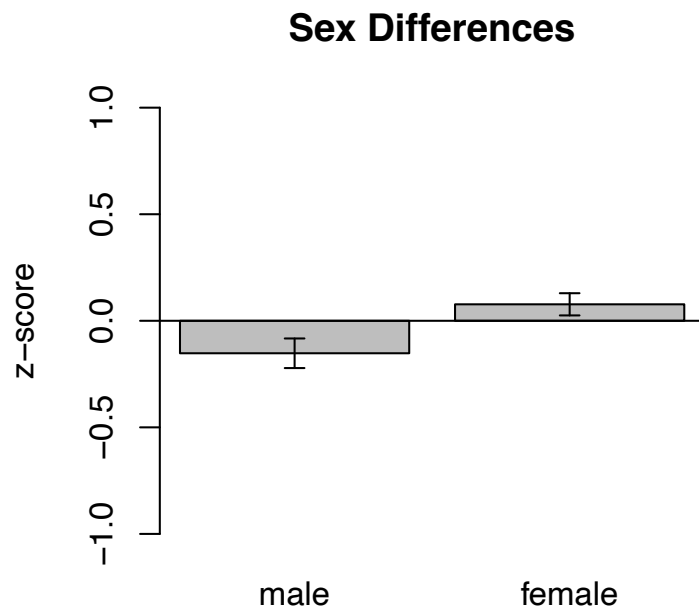


Figure 4. Education-related differences in performance

