

UK Biobank

Trail Making Test

Version 1.1

<http://www.ukbiobank.ac.uk/>
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This manual details the procedure for the Trail making test, administered at an Assessment Centre of the UK Biobank and via the internet

1 Introduction

1.1: This manual details the procedure for the Trail making test. This was administered as web-based questionnaires and participants were invited to complete them remotely. The UK Biobank has written consent from participants to re-contact for this purpose.

1.2: Throughout this document, the term 'Participant' refers to a study participant who is taking part in the Assessment Centre process, regardless of whether they eventually give or withhold consent to take part in the UK Biobank study.

1.3: Cognitive function was first assessed at the baseline assessment when participants were recruited. This web-based questionnaire involves repeating the baseline assessment and to add two further tests to broaden the cognitive phenotype covered in UK Biobank. Table 1 shows tests that are being repeated and tests that are being added.

Measurement status	Test	Cognitive domain	Estimated Time (Mins)
Tests to be repeated	Reaction time	Simple Processing speed	3
	Pairs	Episodic memory	4
	Reasoning	Fluid intelligence	3
	Digit recall	Working memory	4
Tests to be introduced	Trail making	Visual attention	4
	Digit-symbol substitution	Complex processing speed	3

1.4: Tests have been selected which are related to dementia. All tests have been constructed specifically for use in UK Biobank and other epidemiological studies in order to conform to the constraints of conducting large population-based studies. All tests have been constructed using established testing paradigms that have been shown to produce valid scores and to be acceptable to participants.

1.5 This questionnaire was administered between Dec 2014 and Feb 2015 to all 340,000 UK Biobank participants with an email address, with a reminder email sent to non-responders. Overall, a total of 143,000 participants completed at least one of the tests and 120,000 completed all of them.

2 Trail Making Assessment

2.1: For this task circles must be linked in numeric order. Linkage is made using a computer mouse by clicking the next circle. There are two presentations: one using numbers and one using numbers and letters. The instructions are:

“We now want to measure your coordination. Beginning with number 1, join all the circles in numeric order by clicking over the next numbered circle using the mouse. Please work as quickly and accurately as you can.”

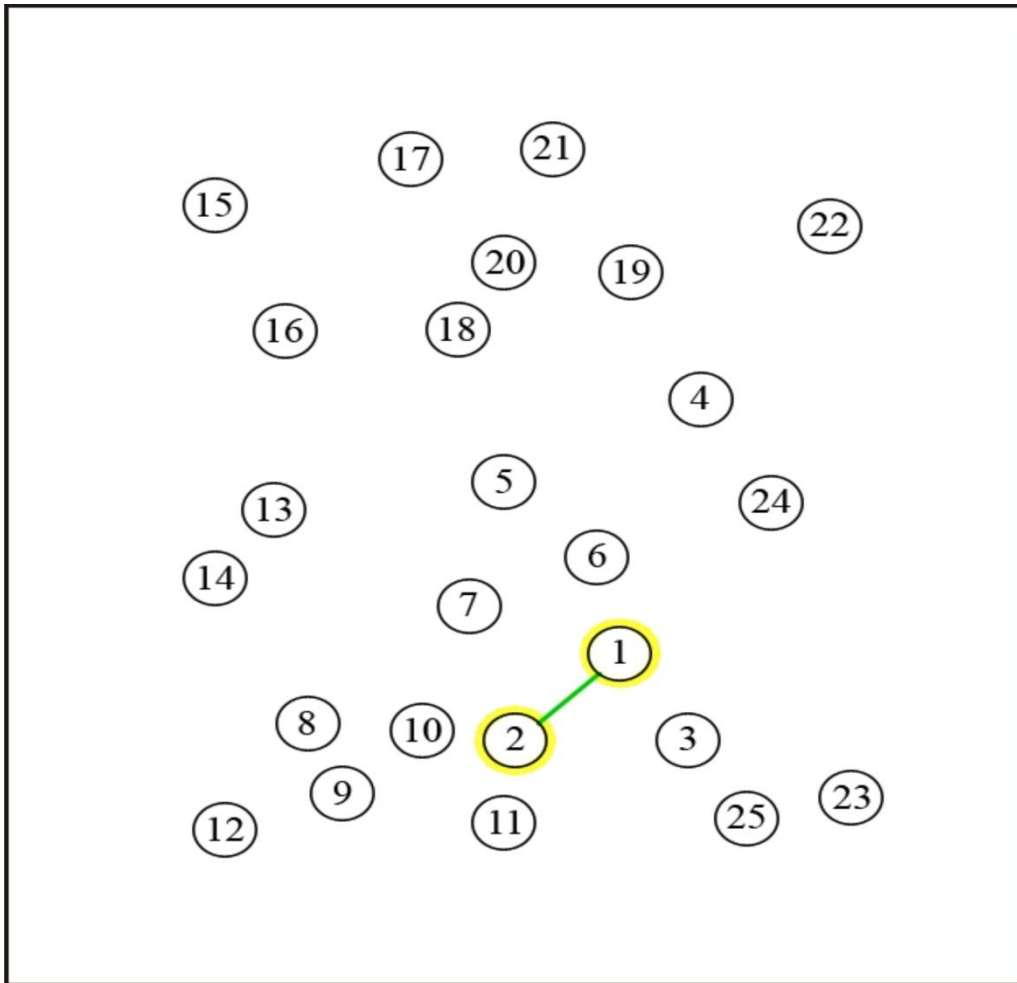
2.2: The timer starts when the participant clicks the first item so the result is measured in each trail from the second item. The duration to complete the numerical path is measured in seconds.

2.3: A practise test screen is presented to the participants before they attempt the first trail making test.

2.4: In the second part of the test the circles include both numbers and alphabets and participants were instructed to touch the circles alternating between the numbers and alphabets.

2.5: A practise session is also presented to the participants before they attempt the second trail making test.

2.2: Only correct answers are accepted, but incorrect answers are recorded. The score is the time taken to correctly link all the circles



First trail making test