UK Biobank

Web-based version of Fluid Intelligence Test

Version 1.8

http://www.ukbiobank.ac.uk/
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Contents

1   Introduction

1.1   This manual details the procedure for the web-based fluid intelligence test (also called the verbal memory test).

1.2   The UK Biobank cognitive function tests have been selected to cover a range of cognitive domains and are believed to be sensitive to cognitive decline and 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. Tests have been constructed using established testing paradigms that have been shown to produce valid scores and to be acceptable to participants.

1.3   This test has been administered on more than one occasion. The differences between the two versions of the test are highlighted below.

1.4   Respondents were invited to complete the questions using their own devices, via touchscreen interface (tablet or phone) or traditional desktop computer.

2   Fluid intelligence test

2.1   'Fluid intelligence' describes the capacity to solve problems that require logic and reasoning ability, independent of acquired knowledge. Respondents have 2 minutes to complete as many questions as possible from the test.

2.2   When respondents start the game (select "Begin check" or "Begin test"), a timer is started and the questions (see questions in Section 3) are displayed in sequence, until 2 minutes have elapsed from the start of timing.

2.3   If the timer has not reached 2 minutes, the next question is displayed and respondents are allowed to answer. If respondents have completed the last question in the time allowed, they proceed to the next test.

2.4   In 2021, the options "Don't know" and "Prefer not to answer" were added to the 2014 online version to bring it into line with the touchscreen implementation.

3   Questions asked and data captured

Question ID	Healthy Minds (2014)			Healthy Minds 2 (2021)		
	Text	Response	Field ID	Text	Response	Field ID
Introduction	In this next test you will have a maximum of two minutes to answer as many questions as possible. Don't spend too long on any one question and you can skip any question if you wish.	*[Select one from]* 1 Begin check 2 I am unable to try this	N/A	To help you as you work your way through this module, here is an example question: Most devices will allow you to click or tap the description beside a choice button to select it. Please select one answer per question. Question 1 1 + 2 Is the answer? In this module you will have a maximum of two minutes to answer as many questions as possible. Don't spend too long on any one question and you can skip any question if you wish. ["Begin test" button is displayed]	*[Select one from]* − 0 − 1 − 2 − 3 − 4 − Do not know − Prefer not to answer	N/A
FI1: numeric addition test	**Question 1** Add the following numbers together: 1 2 3 4 5 – is the answer?	*[Select one from]* − 13 − 14 − 15 − 16 − 17	20165 20166	**Question 1** Add the following numbers together: 1 2 3 4 5 The answer is…	*[Select one from]* − 13 − 14 − 15 − 16 − 17 − Do not know − Prefer not to answer	20165 20166
FI2: identify largest number	**Question 2** Which number is the largest?	*[Select one from]* − 642 − 308 − 987 − 714 − 253	20167 20168	**Question 2** Which number is the largest?	*[Select one from]* − 642 − 308 − 987 − 714 − 253 − Do not know − Prefer not to answer	20167 20168
FI3: word interpolation	**Question 3** Bud is to flower as child is to?	*[Select one from]* − Grow − Develop − Improve − Adult − Old	20169 20170	**Question 3** Bud is to flower as child is to?	*[Select one from]* − Grow − Develop − Improve − Adult − Old − Do not know − Prefer not to answer	20169 20170

FI4: positional arithmetic	**Question 4** 11 12 13 14 15 16 17 18 Divide the sixth number to the right of twelve by three. Is the answer?	*[Select one from]* − 5 − 6 − 7 − 8	20171 20172	**Question 4** 11 12 13 14 15 16 17 18 Divide the sixth number to the right of twelve by three. The answer is…	*[Select one from]* − 5 − 6 − 7 − 8 − Do not know − Prefer not to answer	20171 20172
FI5: family relationship calculation	**Question 5** If Truda's mother's brother is Tim's sister, what relation is Truda to Tim?	*[Select one from]* − Aunt − Sister − Niece − Cousin − No relation	20173 20174	**Question 5** If Truda's mother's brother is Tim's sister's father, what relation is Truda to Tim?	*[Select one from]* − Aunt − Sister − Niece − Cousin − No relation − Do not know − Prefer not to answer	20173 20174
FI6: conditional arithmetic	**Question 6** If sixty is more than half of seventy-five, multiply twenty-three by three. If not, subtract 15 from eighty-five. Is the answer?	*[Select one from]* − 68 − 69 − 70 − 71 − 72	20175 20176	**Question 6** If sixty is more than half of seventy-five, multiply twenty-three by three. If not, subtract 15 from eighty-five. The answer is…	*[Select one from]* − 68 − 69 − 70 − 71 − 72 − Do not know − Prefer not to answer	20175 20176
FI7: synonym	**Question 7** Stop means the same as?	*[Select one from]* − Pause − Close − Cease − Break − Rest	20177 20178	**Question 7** Stop means the same as?	*[Select one from]* − Pause − Close − Cease − Break − Rest − Do not know − Prefer not to answer	20177 20178
FI8: chained arithmetic	**Question 8** If David is twenty-one and Owen is nineteen and Daniel is nine years younger than David, what is half their combined age?	*[Select one from]* − 25 − 26 − 27 − 28 − 29	20179 20180	**Question 8** If David is twenty-one and Owen is nineteen and Daniel is nine years younger than David, what is half their combined age?	*[Select one from]* − 25 − 26 − 27 − 28 − 29 − Do not know − Prefer not to answer	20179 20180
FI9: concept interpolation	**Question 9** Age is to years as height is to?	*[Select one from]* − Long − Deep − Top − Metres − Tall	20181 20182	**Question 9** Age is to years as height is to?	*[Select one from]* − Long − Deep − Top − Metres − Tall − Do not know − Prefer not to answer	20181 20182
FI10: arithmetic sequence recognition	**Question 10** 150… 137… 125… 114…104… What comes next?	*[Select one from]* − 96 − 95 − 94 − 93 − 92	20183 20184	**Question 10** 150… 137… 125… 114…104… What comes next?	*[Select one from]* − 96 − 95 − 94 − 93 − 92 − Do not know − Prefer not to answer	20183 20184

FI11: antonym	**Question 11** Relaxed means the opposite of?	*[Select one from]* − Calm − Anxious − Cool − Worried − Tense	20185 20186	**Question 11** Relaxed is the opposite of?	*[Select one from]* − Calm − Anxious − Cool − Worried − Tense − Do not know − Prefer not to answer	20185 20186
FI12: square sequence recognition	**Question 12** 100… 99… 95… 86… 70… What comes next?	*[Select one from]* − 50 − 49 − 48 − 47 − 46 − 45	20187 20188	**Question 12** 100… 99… 95… 86… 70… What comes next?	*[Select one from]* − 50 − 49 − 48 − 47 − 46 − 45 − Do not know − Prefer not to answer	20187 20188
FI13: subset inclusion logic	**Question 13** If some flinks are plinks and some plinks are stinks then some flinks are definitely stinks?	*[Select one from]* − False − True − Neither true nor false − Not sure	20189 20190	**Question 13** If some flinks are plinks and some plinks are stinks, then some flinks are definitely stinks?	*[Select one from]* − False − True − Neither true nor false − Not sure − Do not know − Prefer not to answer	20189 20190
FI14: alphanumeric substitution	**Question 14** If 'Anne' is thirty-four and 'John' is forty-seven, what number is 'that'? Is it:	*[Select one from]* − 49 − 50 − 51 − 52 − 53	20193 20194	**Question 14** If 'Anne' is thirty-four and 'John' is forty-seven, what number is 'that'?	*[Select one from]* − 49 − 50 − 51 − 52 − 53 − Do not know − Prefer not to answer	20193 20194
Fluid intelligence score	Field 20191			Field 20191		
Number of fluid intelligence questions attempted within time limit	Field 20192			Field 20192		
When fluid intelligence test completed	Field 20135			These data are only presented for the 2014 version.		
Fluid intelligence completion status	Field 20242			These data are only presented for the 2014 version.		