

# UK Biobank

## Touch screen test of Prospective memory (Shape)

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Version 1.1

<http://www.ukbiobank.ac.uk/>

28<sup>th</sup> February 2012



This manual details the procedure for the touch-screen part of the Prospective memory test (using Shapes) at an Assessment Centre of the UK Biobank

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## 1 Introduction

**1.1:** This manual details the procedure for the touch-screen part of the Prospective memory test (using shapes) at an Assessment Centre of the UK Biobank. This takes place at the 2nd 'station' of the Assessment Centre visit, as listed in Table 1.

**Table 1:** Sequence of assessment visit

|   | Visit station                | Assessments undertaken  |
|---|------------------------------|---|
| 1 | Reception                    | <ul style="list-style-type: none"> <li>• Welcome &amp; registration</li> <li>• Generating a USB key for Participants</li> </ul>   |
| 2 | Touch screen Section         | <ul style="list-style-type: none"> <li>• Consent</li> <li>• Touch screen questionnaire</li> <li>• Hearing Test</li> <li>• Cognitive function tests</li> </ul>   |
| 3 | Interview & blood pressure   | <ul style="list-style-type: none"> <li>• Interviewer questionnaire</li> <li>• Blood pressure measurement</li> <li>• Measurement of arterial stiffness</li> </ul>  |
| 4 | Eye measurements             | <ul style="list-style-type: none"> <li>• Visual acuity</li> <li>• Refractometry</li> <li>• Intraocular pressure</li> <li>• Optical Coherence Tomography</li> </ul>  |
| 5 | Physical measurements        | <ul style="list-style-type: none"> <li>• Height (Standing and Sitting)</li> <li>• Hip &amp; Waist measurement</li> <li>• Weight and Bio-impedance measurement</li> <li>• Hand-grip strength</li> <li>• Ultrasound Bone Densitometry</li> <li>• Spirometry (Lung function test)</li> </ul> |
| 6 | Cardio-respiratory test      | <ul style="list-style-type: none"> <li>• Exercise/fitness ECG test</li> </ul>   |
| 7 | Sample collection            | <ul style="list-style-type: none"> <li>• Blood samples collected</li> <li>• Urine sample collected</li> <li>• Saliva sample collected</li> </ul>  |
| 8 | Web-based diet questionnaire | <ul style="list-style-type: none"> <li>• Dietary assessment</li> </ul>  |

**1.2:** Throughout this document, the term 'Participant' signifies 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:** The collection of data from assessment visits uses the direct data entry system of the Assessment Centre Environment (ACE).

**1.4:** At the start of their visit, each participant is issued with a USB key at the Reception station. This contains Participant ID, name, date of birth and gender. As the participant progresses between stations the USB key acts as an identifying token. The USB key is encrypted so can only be read by assessment centre computers. None of the participant's

test data is transferred to the USB key. At the end of the assessment visit all identifying data on the USB key is removed.

## 2 Staff

This procedure is performed by the Receptionist or any staff member who has received suitable training and has been granted the relevant module permissions. These staff can include: Study Interviewer, Duty Manager, Phlebotomist, Laboratory Technician or Measurement Technician. Two members of staff are always present to oversee the touch screen and web diet questionnaire areas. The Assessment Centre Manager oversees that all staff work in accordance with this procedure.

## 3 Prospective Memory (Shape) test

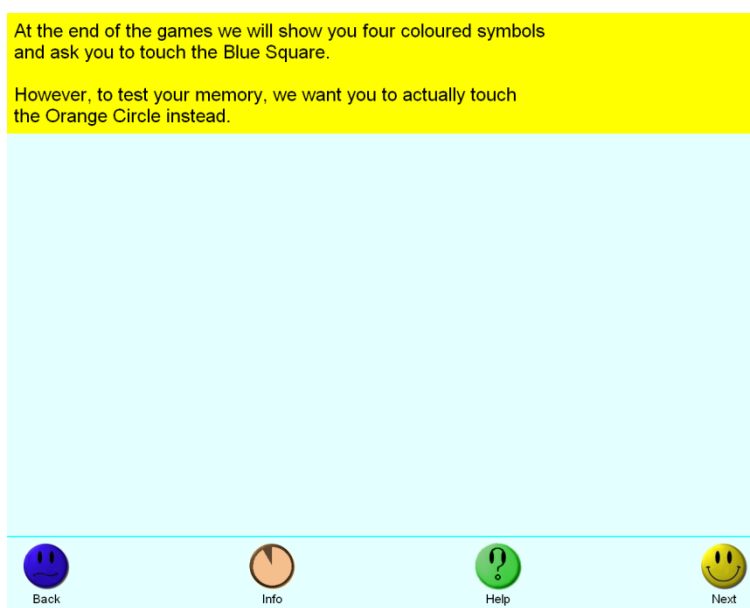
**3.1:** During the main phase of recruitment, several cognitive function tests were performed in the following order:

- **1: Prospective Memory: Shape – Part 1**
- 2: Pairs test
- 3: Fluid intelligence
- 4: Reaction time: Snap
- **1: Prospective Memory: Shape – Part 2**

### 3.2: Prospective Memory: Shape – Part 1

Before any of the other cognitive tests were performed, the following text appears:

*“At the end of the games we will show you four coloured shapes and ask you to touch the Blue Square. However, to test your memory, we want you to actually touch the Orange Circle instead”*



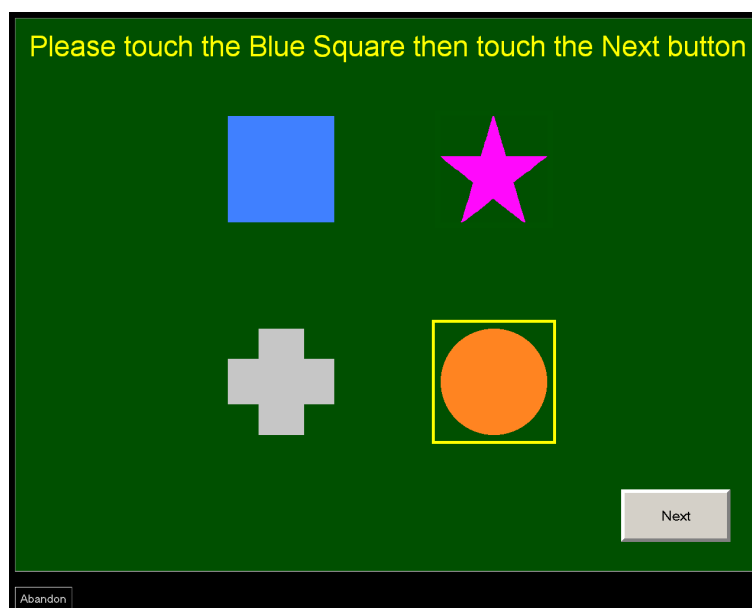
Once the 'Next' button is touched, a hidden timer is started to record the delay interval until the answer to this question (asked after the reaction time test) is requested. Then follows the Pairs matching test, the Fluid intelligence test and the Reaction time (Snap) test.

### 3.3: Prospective Memory: Shape – Part 2

After the Reaction time (Snap) test is finished, the following text appears:

*“That’s the last game. Just one more thing left to do...”*

The participant selects 'Next', then the Shapes screen appears:



The text appears:

*“Please touch the Blue Square then touch the ‘Next’ button”*

At this point the delay interval timing ends.

If the participant touches any of the symbols it is highlighted by surrounding it in a yellow box. If the participant touches the Next button without having highlighted a symbol they are shown the message:

*“Please touch a symbol (a coloured shape) before touching the ‘Next’ button”*

If the participant then touches any symbol other than the Blue Square, then Next, the test ends.

If the participant touches the Blue Square, they are prompted with the message:

*“At the start of the games we asked you to remember to touch a different symbol when this screen appeared. Please try to remember which symbol it was and touch it now”*

If the participant touches the Blue Square again then this message is repeated (ad-infinitum), otherwise the program accepts their new selection and the test ends.

**3.4:** Once the participant has completed the cognitive function tests (or decides to skip this section) a message is displayed to contact a member of staff, who will then enter their name and password to complete this section of the visit. The participant then proceeds to the Interview station.

## 4 Data Collection

The following data is stored:

- The initial answer (0=blue square, 1=pink star, 2=grey cross, 3=orange circle)
- The final answer (0=blue square, 1=pink star, 2=grey cross, 3=orange circle)
- Whether the final answer was correct
- History of attempts
- Number of attempts
- Whether the test was completed or abandoned
- Time between completing initial prompt and displaying answer
- Time the screen was visible