

## A TVA-based test of visual attention

This manual contains the basic information necessary for running the whole report version of the TVA-based test of visual attention. Running the test requires the E-Prime file “*TVAwholereport.es2*” and the folder “*Images*” containing pictures in bmp-format.

The test should be run on a computer with a refresh rate of 100 Hz. Subjects should be seated approx. 60 cm from the screen in a semi-darkened room (i.e., a dark room with indirect lighting).

The test uses a classical experimental paradigm called *whole report* (WR). The task in WR is to report as many items as possible from the stimulus display shown. In this experiment, the stimulus displays contain six red letters from a set of 20 different letters (ABDEFGHJKLMNOPRSTVXZ, see Figure 3). The test is comprised of two parts: a practice part with 20 trials divided into two blocks of 10 trials, and a test part with 140 trials divided into five blocks of 28 trials each. Giving the instructions and running the test can be completed in around 20-25 minutes.

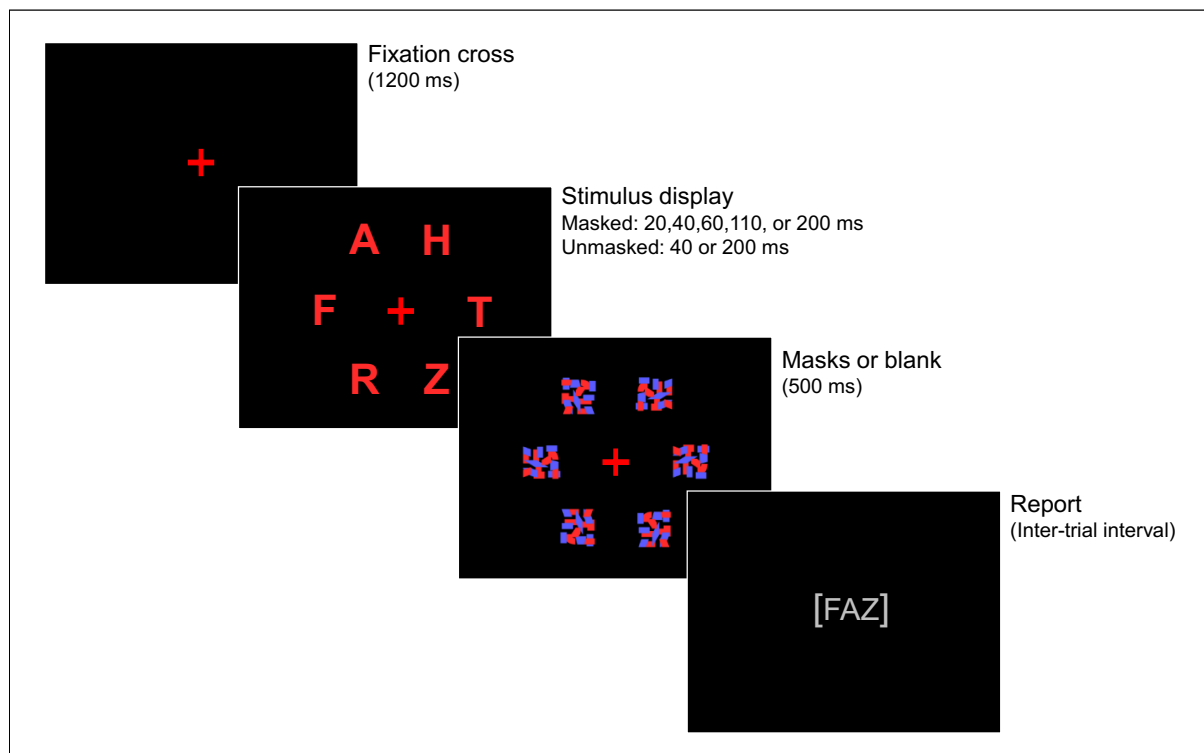


Figure 1: Timeline for a single trial.

All of the trials follow the basic design outlined in Figure 1. Each trial begins with a red fixation cross presented in the centre of the screen. Then the letter display is presented briefly and is followed by six random masks in the same positions as the letters were presented. The stimulus displays can be either masked (stimulus display followed by masks) or unmasked (stimulus display followed by a black screen).

Once the screen is black – either after the masks go off or directly after the stimulus display in the unmasked trials – the subject can verbally state the letters that he/she has seen. In the masked conditions, the letters are displayed for one of five exposure durations (20, 40, 60, 110, or 200 ms) before the masks are shown. In the unmasked conditions, the letters are followed by the black screen after either 40 or 200 ms.

### ***The TVA test***

The test is run using the TVAwholereport.es2. Before the experiment starts, the following information is prompted: Subject #, Session #.

It is crucial that the exposure durations are exactly as intended. This is only possible if the screen is set at a refresh rate of 100 Hz. To ensure this, the monitor refresh rate is automatically checked and has to be approved before the session begins.

Usually, the subject needs a few practice trials to become acquainted with the task. Two practice blocks of 10 trials are incorporated into the experiment, but these trials are removed from the analysis and will not contribute to the estimates derived from the test. Before the actual practice begins, two instruction screens are shown. These written instructions summarise the more extended “verbal instructions” on the next page that should be given orally before starting the practice part of the experiment. The instructions also include two example trials to illustrate the task and the sequence of a trial.

The verbal reports of the subject are recorded using a standard keyboard and will appear on the screen while they are being typed. Make sure that the subject is ready for the next trial before pressing [space] to continue the experiment.

Subjects are asked to aim for 80-90 percent accuracy (i.e., the percentage of correctly reported letters out of the letters reported). After each block, feedback is provided. Figure 2 shows the three types of feedback: A yellow dot at the top if accuracy is above 90%, a green dot in the middle if accuracy is between 80-90%, and a yellow dot at the bottom if accuracy is below 80%. The accuracy is also indicated by a number presented below the graphic.

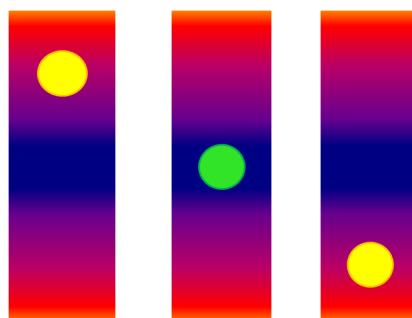


Figure 2: Feedback displays

### ***The output***

The programme automatically generates three data files with the information needed for the analysis. The files are written to the folder containing the experiment and have same file name: TVAwholereport-?-?, but different extensions (dat, txt, and edat2). The two question marks state the Subject # and the Session #. Please save all three files for later analyses!

### ***Verbal instructions***

*"In this experiment you will be shown sets of letters very briefly; your task is to report as many letters as possible. The letter sets consist of six red letters arranged in a circle around the centre of the screen. In most cases the letters are replaced by some masks and then a black screen but sometimes only the black screen is used. As soon as the screen turns black you can report the letters that you have seen. As the letters are only shown for a very short time you might not always be able to see them and sometimes you will only be able to report a few letters. This is perfectly normal. When the experimenter is finished typing in your report you will be asked if you are ready to continue.*

*You should report the letters that you are fairly certain of having seen. This means that you do not have to be 100 percent sure of the identity of a given letter to report it but you are not allowed to guess either. After the practice session and then after every 28 trials the accuracy of your reports is stated. Try to aim for 80-90 percent accuracy.*

*At the beginning of each trial, a small cross is shown in the centre of the screen. It is important that you keep your eyes exactly at this position throughout the trial. The experiment starts with a few practice trials so that you can become acquainted with the task before the test begins."*



Figure 3: Stimuli and masks used