

2. Methods

2.5.2 Choice reaction time

Participants were instructed that they were to press one of 3 buttons on the computer keyboard as quickly as possible in response to letters or digits that appeared on the screen. The 3 response buttons were labelled “X”, “Y” and “N”, where “X” was to be pressed if “X” appeared on the screen, “Y” was to be pressed if “Y” appeared, and “N” was to be pressed if any single digit number appeared on the screen. Inter stimulus intervals (ISI) varied randomly between 2000 and 7000 msec. This relatively large range of ISIs was intended to require participants to sustain attention in the ISI periods in order to avoid missing stimuli or making late responses. The task was made up of 60 trials divided into two phases. In the first phase, which was made up of 18 trials, stimuli alternated between “X” and “Y” in a predictable sequence. In the second phase the sequencing of “X” and “Y” became unpredictable and single digit numbers appeared as stimuli with a low frequency (12% of second phase trials). It was intended that the unpredictability of the sequence in the second phase would additionally require participants to engage inhibitory processes in order to prevent incorrect responses. The measures produced by this test were reaction time (RT) in the predictable phase, RT to the stimuli “X” and “Y” in the unpredictable phase, and the overall percentage of correct responses. Incorrect trials were excluded from RT calculations. RT to the single digit stimuli was not calculated due to the small number trials, which was further reduced by the high error rate on this trial type. Two alternative versions of this test were produced, and half of the participants were tested with each version on visit one, switching to the other version for visit two.

**Reference:** Field, D. T., Williams, C. M., & Butler, L. T. (2011). Consumption of cocoa flavanols results in an acute improvement in visual and cognitive functions. *Physiology & Behavior, (103)* 3-4, 255-260.