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Steady state visually evoked potential (SSVEP) phase change as an index of Spatial Working Memory task performance: The influence of nootropic supplementation

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Abstract

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Keywords

influence, nootropic, supplementation, task, memory, working, spatial, index, change, performance, phase, steady, ssvep, potential, evoked, visually, state

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Steady state visually evoked potential (SSVEP) phase change as an index of Spatial Working Memory task performance: The influence of nootropic supplementation

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Background: Spatial Working Memory (SWM) is a cognitive domain that has a high degree of sensitivity to pharmaceutical intervention and is one of the first domains to be adversely impacted by age-related cognitive decline. Steady State Probe Topography (SST) at a frequency of 13 Hz is a novel electrophysiological technique that enables investigation into SSVEP amplitude and phase change with a precise temporal resolution of < 80 ms.

Methods: The following presentation will detail a program of research conducted at the Centre for Human Psychopharmacology since 2009 which has involved randomized placebo-controlled nootropic intervention studies of SSVEP changes during SWM task performance (with a combined N of 200 people). Nootropic substances that have been administered include Cocoa Polyphenols, Panax quinquefolius (American ginseng), Ginkgo biloba, Hypericum perforatum, Guarana and B-vitamins.

Results: SSVEP phase lag in posterior-parietal and prefrontal brain regions during the online maintenance of spatial locations in WM has been found to be increased in response to nootropic supplementation.

Conclusions: These studies provide preliminary evidence to suggest that the typical SSVEP phase advance observed under conditions of increased WM load may be ameliorated by nootropic intervention — a finding that may be explained by increases in inhibitory neural processes.