EVENT ABSTRACT

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An Improved Human Anxiety-Specific Biomarker: Personality, Pharmacology, Frequency Band, and Source Characterisation.

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Anxiety disorders are among the most common mental illness in the western world with a major impact on disability. Until now their diagnosis has not been based on objective biomarkers. To solve this problem, we developed a human EEG biomarker, conflict specific rhythmicity (CSR) in the stop signal task (SST) that could identify one specific type of anxiety disorder. Here we report the characteristics of an improved version of the SST. This uses non-overlapping short and long stop signal delays (SSDs), which are set as a proportion of the average Go reaction time coupled with intermediate SSDs set, as usual, to track 50% correct stopping. This SST provided almost equal number of trials for each of three delay lengths. This SST produced CSR at F8 as expected, and with a broader frequency range (4-12Hz) than previously reported. CSR correlated with neuroticism and trait anxiety but to different extents in different trial blocks. It was reduced by three chemically distinct drugs (administered double-blind): buspirone (10mg), triazolam (0.25mg), and pregabalin (25mg). These drugs each share anxiolytic, but no other, action. sLORETA located the CSR source in the right inferior frontal gyrus (rIFG) and middle frontal gyrus, locations previously linked to SST control. This new form of the SST should be particularly suitable for generating CSR as a biomarker for one specific type of anxiety disorder.

Keywords: Anxiety, Electroencephalography, stop signal task, Behavioural inhibition system, right inferior frontal gyrus, Conflict specific rhythmicity

Conference: XII International Conference on Cognitive Neuroscience (ICON-XII), Brisbane, Queensland, Australia, 27 Jul - 31 Jul, 2014. **Presentation Type:** Poster

Topic: Emotional and Social Processes

Citation: Shadli S, Glue P, Kirk I and McNaughton N (2015). An Improved Human Anxiety-Specific Biomarker: Personality, Pharmacology, Frequency Band, and Source Characterisation.. *Conference Abstract: XII International Conference on Cognitive Neuroscience (ICON-XII).* doi: 10.3389/conf.fnhum.2015.217.00315

 Received: 19 Feb 2015; **Published Online:** 24 Apr 2015.

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