

# Psychiatric Symptoms and Abnormal Neural Oscillations During Visual Stimulation: A Transdiagnostic EEG Study

Lauren Vassiliades<sup>1</sup>, Jeffrey Bedwell<sup>2</sup>

1. Medical Student III, University of Central Florida College of Medicine 2. Psychology Department, University of Central Florida

✉ **Corresponding author:** Lauren Vassiliades, vassiliades@knights.ucf.edu

**Categories:** Psychiatry

**Keywords:** psychosis, neural oscillations, eeg, visual stimulation, schizophrenia, parietal lobe, gamma frequency, inhibitory neurons, eeg analysis

**How to cite this poster**

Vassiliades L, Bedwell J (2016) Psychiatric Symptoms and Abnormal Neural Oscillations During Visual Stimulation: A Transdiagnostic EEG Study . Cureus 8(3): e.

## Abstract

### Introduction

Visual perception is often disrupted in psychiatric illness. Examination of abnormalities in electroencephalography (EEG) oscillatory power following visual stimuli has been used to explore the underlying neuropathology. EEG studies have demonstrated abnormal high-frequency gamma activity during visual stimulation in individuals with schizophrenia and related disorders.

The current study examined the relationship between visually-evoked EEG oscillation power and 2 measures indicative of psychiatric state: diagnostic class and clinician rating of current symptom severity.

### Methods

EEG data was collected from a transdiagnostic sample of 45 participants: 15 with no diagnosis, 15 with a history of psychosis, and 15 with nonpsychotic mood disorders. To evaluate psychiatric symptoms, participants completed the Structured Clinical Interview for Positive and Negative Syndrome Scale (PANSS). During EEG recording, participants completed a visual task in which transient repeated arrays of high-contrast checks were presented on a gray background.

### Results

The 3 diagnostic classes did not differ in parietal lobe oscillatory power across the beta and gamma ranges during the P1 visual-evoked potential component (VEP) time window. In only participants with a history of psychosis, there was a significant positive relationship between positive symptom severity (e.g., hallucinations, delusions) and left parietal oscillatory power in the gamma range of 44 to 56 Hz during the P1 VEP component time window.

### Discussion

#### Open Access

Published 03/17/2016

#### Copyright

© Copyright 2016

Vassiliades et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 3.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Distributed under

Creative Commons CC-BY 3.0

The symptom relationship was confined to 1 frequency bin spanning the mid gamma range which suggests that positive symptom presentation in psychotic disorders may relate to faulty inhibitory neuronal regulation in the left parietal lobe.

65

