

## 14. Neuroimaging, Functional

### THE INTEGRITY OF THE HEMODYNAMIC RESPONSE IN VISUAL AND MOTOR CORTEX IN SCHIZOPHRENIA

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Recent advances in functional neuroimaging allow one to use rapid event-related designs to examine cortical brain activation in a variety of populations. However, the validity of using such methods in populations with disorders such as schizophrenia is dependent on the integrity of the basic hemodynamic response in these individuals. In such designs, the relevant properties of the hemodynamic response include attributes such as time to onset, time to peak, the magnitude of the response, and whether responses summate in a roughly linear fashion. Such factors have not been systematically examined in individuals with schizophrenia. In the current study, we examined the nature of the hemodynamic response in visual and motor cortex in individuals with schizophrenia, focusing on properties relevant to the valid application of rapid event-related imaging designs. We examined brain activity in demographically matched samples of individuals with schizophrenia and healthy controls using functional magnetic resonance imaging. A paradigm involving repeated presentation of sensory-motor response trials (flickering checkerboards with motor responses) was administered to all participants. A single sensory-motor event was presented on half of the trials, while two consecutive sensory-motor events were presented on the other half of the trials. We used the data from the single-event trials to examine basic hemodynamic response properties in both the individuals with schizophrenia and the controls. We used the two-event trials to examine the summation properties of the hemodynamic response in each group. In addition, on half of the imaging runs, all events started at the beginning of a trial, while on the other half of the imaging runs all events started halfway through a trial. This "jittering" allowed us to better characterize the shape of the hemodynamic response in each group. All data were analyzed using a general linear model. The results presented will focus on quantitative comparisons of individuals with schizophrenia and controls on time to onset, time to peak, response magnitude, linear summation properties and response variance. All comparisons will be performed both on group-averaged data and individual subject data, for visual and motor cortex regions.

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