

Abstract Submitted
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ALE Meta-Analysis of Schizophrenics Performing the N-Back Task ZACHARY HARRELL, SPS — MRI/fMRI has already proven itself as a valuable tool in the diagnosis and treatment of many illnesses of the brain, including cognitive problems. By exploiting the differences in magnetic susceptibility between oxygenated and deoxygenated hemoglobin, fMRI can measure blood flow in various regions of interest within the brain. This can determine the level of brain activity in relation to motor or cognitive functions and provide a metric for tissue damage or illness symptoms. Structural imaging techniques have shown lesions or deficiencies in tissue volumes in schizophrenics corresponding to areas primarily in the frontal and temporal lobes. These areas are currently known to be involved in working memory and attention, which many schizophrenics have trouble with. The ALE (Activation Likelihood Estimation) Meta-Analysis is able to statistically determine the significance of brain area activations based on the post-hoc combination of multiple studies. This process is useful for giving a general model of brain function in relation to a particular task designed to engage the affected areas (such as working memory for the n-back task). The advantages of the ALE Meta-Analysis include elimination of single subject anomalies, elimination of false/extremely weak activations, and verification of function/location hypotheses.

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