

A Computational Approach towards Automated Health Research Policies: Data-Guided Screening of Impaired Mental Domains in Schizophrenia

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Presentation Abstract Summary While the pathophysiology of schizophrenia has been extensively studied over the past decades, it still remains elusive. To guide future research more systematically, our novel machine learning strategy aimed at generating strong, objective, testable hypotheses for schizophrenia research by automatically screening the most impaired mental domains in this major psychiatric disorder. The BrainMap database allows generating mental network primitives for a comprehensive set of mental domains. The primitive-based extraction of neurobiological features from the structural and resting state data in a sample of people with schizophrenia and healthy controls (n=324) could be ranked by diagnosis prediction performance. The present study provides insight into disturbed mental processes in schizophrenia, the relevant neurobiological dimensions (structure, functional connectivity, or both) they manifest in the brain, and their importance to clinical pathology. The data-guided ranking of mental impairment in schizophrenia constitutes a quantitative priority agenda for future schizophrenia research. The approach can scale to a variety of brain disorders, as a cornerstone for personalized medicine.

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