

Publication

Abnormal effective connectivity and psychopathological symptoms in the psychosis high-risk state

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 3720859**Author(s)** Schmidt, André; Smieskova, Renata; Simon, Andor; Allen, Paul; Fusar-Poli, Paolo; McGuire, Philip K.; Bendfeldt, Kerstin; Aston, Jacqueline; Lang, Undine E.; Walter, Marc; Radue, Ernst-Wilhelm; Riecher-Rössler, Anita; Borgwardt, Stefan J.**Author(s) at UniBasel** [Schmidt, André](#) ; [Riecher-Rössler, Anita](#) ;**Year** 2014**Title** Abnormal effective connectivity and psychopathological symptoms in the psychosis high-risk state**Journal** Journal of psychiatry & neuroscience**Volume** 39**Number** 4**Pages / Article-Number** 239-48**Mesh terms** Adult; Bayes Theorem; Brain Mapping; Computer Simulation; Female; Frontal Lobe, physiopathology; Humans; Magnetic Resonance Imaging; Male; Memory, Short-Term, physiology; Models, Neurological; Neural Pathways, physiopathology; Neuropsychological Tests; Parietal Lobe, physiopathology; Psychiatric Status Rating Scales; Psychotic Disorders, physiopathology; Risk

Recent evidence has revealed abnormal functional connectivity between the frontal and parietal brain regions during working memory processing in patients with schizophrenia and first-episode psychosis. However, it still remains unclear whether abnormal frontoparietal connectivity during working memory processing is already evident in the psychosis high-risk state and whether the connection strengths are related to psychopathological outcomes.; Healthy controls and antipsychotic-naïve individuals with an at-risk mental state (ARMS) performed an n-back working memory task while undergoing functional magnetic resonance imaging. Effective connectivity between frontal and parietal brain regions during working memory processing were characterized using dynamic causal modelling.; Our study included 19 controls and 27 individuals with an ARMS. In individuals with an ARMS, we found significantly lower task performances and reduced activity in the right superior parietal lobule and middle frontal gyrus than in controls. Furthermore, the working memory-induced modulation of the connectivity from the right middle frontal gyrus to the right superior parietal lobule was significantly reduced in individuals with an ARMS, while the extent of this connectivity was negatively related to the Brief Psychiatric Rating Scale total score.; The modest sample size precludes a meaningful subgroup analysis for participants with a later transition to psychosis.; This study demonstrates that abnormal frontoparietal connectivity during working memory processing is already evident in individuals with an ARMS and is related to psychiatric symptoms. Thus, our results provide further insight into the pathophysiological mechanisms of the psychosis high-risk state by linking functional brain imaging, computational modelling and psychopathology.

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