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Hippocampal network dysfunction in early psychosis: A 2-year longitudinal study

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Background: Hippocampal networks are disrupted in schizophrenia. Specifically, modularity—a measure of network cohesion—is abnormally low, indicating signaling deficits exist between the hippocampus and its cortical targets. However, little is known about the progression of hippocampal-cortical network dysfunction over the course of illness. **Methods:** We examined resting-state connectivity in 159 participants (86 early psychosis, 73 healthy control), with 85 participants examined longitudinally over 2 years. Modularity was calculated for two networks: 1) a core hippocampal-medial temporal lobe cortex (MTLC) network; and 2) an extended hippocampal-cortical network. Group and time effects were tested in a linear mixed effects model; secondary analyses tested anterior and posterior network divisions. **Results:** Hippocampal-MTLC modularity was higher in the early psychosis group compared to controls and decreased over time in both groups (no group-by-time interaction). Group effects were driven by the posterior hippocampal-MTLC network, while time effects were driven by the anterior hippocampal-MTLC network. Modularity in the extended hippocampal-cortical network did not differ between groups. **Conclusions:** These results show abnormally elevated modularity in a core hippocampal-MTLC network in early psychosis, suggesting selectively increased hippocampal signaling within a localized, but not widespread, cortical circuit in the early stage of illness.