

S41-01 - The neural organization of the hippocampus and schizophrenia

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The disturbances of explicit memory functions in schizophrenia are widely recognized. More precisely the mechanisms related to the episodic memory subsystem seem to play a significant role in the pathophysiology of the disease. Errors during the encoding phase could be responsible for this dysfunction even if retrieval per se is not totally spared. The main process in encoding episodic memory is contextual binding as evidenced by numerous neuropsychological studies. Since the hippocampal formation is considered to be the central element for contextual binding the neural support of this last mechanism is most likely rooted in the hippocampus. This assumption is confirmed by numerous neuroanatomical, neurodevelopmental, biochemical and genetic studies reporting a significant disorganization of the neural network and its scaffolding structure at the level of the hippocampus. More precisely a synaptic disorganization within the CA3 and CA1 regions (pyramidal cells and neurons) could explain for which reason episodic memory processes are impaired in schizophrenia. Associative binding occurred at the CA3 the level of the hippocampus. This corresponds to the crucial role of this region for acquiring representations of stimulus conjunction. In particular the spatial characteristics of a stimulus are probably bound thanks to the activity of the CA3 area. We hypothesize that separated CA3 representations are not correctly formed in schizophrenia. Consequently the flow which comes to the cortex into the entorhinal pathway and then to the dentate gyrus and CA3 does not result in a pattern of separated representations. Evidences supporting this hypothesis will be presented.