

## **The breakdown of predictive coding in schizophrenia: Insights from language**

Gina Kuperberg, MD PhD

Department of Psychology at Tufts University and Department of Psychiatry at Massachusetts General Hospital and the Martinos Center of Biomedical Imaging

Language dysfunction impacts multiple clinical, cognitive and social aspects of schizophrenia. However, the literature on language processing in schizophrenia has been somewhat disjointed. One line of research has focused on abnormalities in comprehending the high-level structure and meaning of sentences and discourses. A largely separate literature has examined low-level sensory and perceptual deficits that affect the processing of the acoustic and visual features that make up spoken and written language. A third line of research has focused on auditory verbal hallucinations and the ability to distinguish one's own thoughts and actions from external stimulation. These different dimensions of language understanding have often been investigated by different researchers with theoretical foci and different investigative tools, and there have been few efforts to link them. In this talk I will articulate one possible approach for bringing these literatures together. This approach is based on an emerging framework for understanding the neurocognitive basis normal language processing that posits tight reciprocal links between the neural networks mediating perception, action and understanding. Within this framework, I explore the hypothesis that abnormal language processing in schizophrenia results primarily from a disruption of the *predictive and belief-updating generative circuitry* that links prior knowledge and the interpretation of incoming stimuli through neural *predictive coding*. This framework provides novel insights into relations between neurocognitive abnormalities in the processing of multiple dimensions of language in schizophrenia, and paves the way towards the development of novel remediation methods to improve real-world social communication in schizophrenia.