A closer look at prediction in multimodal environments: Examining variability across language users and the effects of iconic gestures

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Prediction has become the dominant framework for explaining the functioning of human cognition. Theories of visual and auditory perception argue that the brain is essentially a prediction machine, and that viewers and listeners engage in prediction to prepare for upcoming events. Language comprehension involves visual and auditory perception. The theoretical assumptions about these perceptual processes have thus direct implications for our conception of language comprehension. This is especially the case for language comprehension in multimodal environments, which require the rapid integration of visual and spoken input. Contemporary models of language processing assume an important role for prediction. However, do all comprehenders predict upcoming information to the same extent? What are the verbal and non-verbal cues that comprehenders exploit for generating predictions? And what are the mechanisms supporting predictive language comprehension in multimodal environments? In this talk, I will address these questions by focusing on two research strands that my collaborators and I have been pursuing in recent years. Specifically, I will present several visual world studies that examined individual differences in anticipatory language processing. Moreover, I will present two EEG studies that examined the contribution of iconic gestures, bodily signals that often accompany speech, to prediction during discourse comprehension. Our results suggest (1) that there is massive variability in prediction ability, (2) that predictive processing is subserved by multiple mechanisms, and (3) that the situational and task demands determine which (combination of) mechanisms to recruit.