Multisensory integration at the time of saccades

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During saccades (rapid gaze shifts) visual perception is distorted, while other senses remain accurate; saccades therefore cause conflicts between visual and non-visual signals. Perisaccadically, brief visual stimuli are spatially mislocalized; however, the mislocalization is reduced in the presence of auditory stimuli – contrary to what happens during fixation, we observe auditory spatial capture. This is predicted by the Bayesian model. During fixation, visual localization is more reliable than auditory localization; saccades dramatically reduce the reliability of visual spatial information, making auditory information dominant.

For time perception, audition normally dominates over vision (auditory signals determine about 80% of multimodal perceived timing); we find that the same is true during saccades. Again, this is consistent with the Bayesian predictions since saccades do not alter the precision of perceived timing for visual events. Since the perceived timing of visual stimuli is biased, the time-course of perisaccadic visual mislocalization could also be altered in the presence of an auditory stimulus. We find that this is not the case, suggesting that perisaccadic mislocalization occurs independently from auditory temporal capture. From these results, we conclude that saccades represent a useful tool to investigate multimodal perception, and that the Bayesian model provides a valid account for multisensory integration.