Talk or poster submission
January 15 - March 10

Please provide an abstract for your presentation.
One figure including legends can be included. This has to be uploaded in an independent file on the submission platform.

Write here (max 250 words).

Humans are often optimal in multisensory cue integration. Are humans also optimal Bayesian observers when reporting their confidence in multisensory estimates? Here, we explore how observers use varying uncertainty across different stages in the causal-inference process to report confidence in audiovisual spatial estimation. The causal-inference process involves three stages: observers make noisy auditory and visual location measurements corrupted by sensory noise, compute intermediate location estimates for common- and separate-cause scenarios, and derive a final estimate by averaging these intermediate estimates, weighted by the probability of the corresponding causal scenarios. We compared models that derive confidence based on the uncertainty at each stage of this process. An optimal observer bases confidence on the final percept's uncertainty, considering the discrepancy between estimates in common and separate causal scenarios. A suboptimal observer derives confidence from the uncertainty of the more probable intermediate estimate. A heuristic observer relies on sensory noise alone. These models make qualitatively different predictions for binary confidence reports, depending on cue discrepancy and reliability. We carried out an audiovisual spatial ventriloquist paradigm, varying the audiovisual spatial discrepancy and the reliability of visual stimuli. Participants were presented with a simultaneous audiovisual stimulus pair and received a post-cue to localize either the auditory or visual stimulus. Then, they reported whether they are confident or not about their location estimate. We found distinctive participants that align with the qualitative predictions of each model, suggesting individual differences in employing optimal and suboptimal strategies for confidence judgment in multisensory integration.

University of Nevada, Reno

Student Travel Award

Note: Applicants must be the first author on an abstract at the 2024 meeting. Applications will be evaluated on scientific quality of the submitted abstract.

Please provide a statement about the contribution of your study to multisensory research and innovation.

Write here (max 150 words).
This study advances the understanding of metacognition in multisensory perception by examining the "Bayesian confidence hypothesis" in multisensory perception. The hypothesis suggests that confidence is based on the same posterior distribution that people use to make estimates or decisions. The Bayesian account of confidence reports has been widely tested in decision-making studies. However, it remains underexplored how this framework can be applied to conceptualize confidence in multisensory perception, which involves more complex posterior distributions. The innovation is that we used the Bayesian modeling approach to bridge the gap between metacognition and multisensory research.

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