Weak Fusion of Cue Predictions in Context-Based Decisions

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Presentation Abstract Summary Context (such as our location or current goal) informs everyday decisions, both by predicting stimuli and by determining relevant responses. How do we develop priors that are general enough to apply in various contexts yet specific enough to maximize reward in a given context? We investigated this using the AX-CPT, a task in which a cue determines which button to press for a probe that appears seconds later. We manipulated the frequency of the probe given the cue across participants and built a diffusion model to estimate how the cue informs subjects' response priors for the decision. We found that subjects' context-dependent priors were closer to each other and less extreme than those predicted by a model that maximizes reward rate given the true stimulus frequencies. However, participants' priors were nearly optimal given their subjective frequency estimates. Indeed, subjects' explicit frequency estimates revealed that they averaged response probabilities across cues when the cues made sufficiently similar predictions.

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