

Minds in motion: Inferring mental states from observed kinematics

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Perceiving Other Minds

How do we know other minds?

We have access to static cues (expressions, gaze), but also *dynamic movements* (head turns).

How do we infer mental states from kinematics?

A Case Study: Head Turns

We turn our heads for varied reasons:

Exogenously: Triggered by external events (e.g., a sudden stimulus).

Endogenously: Driven by internal goals or intentions (e.g., choosing to look).

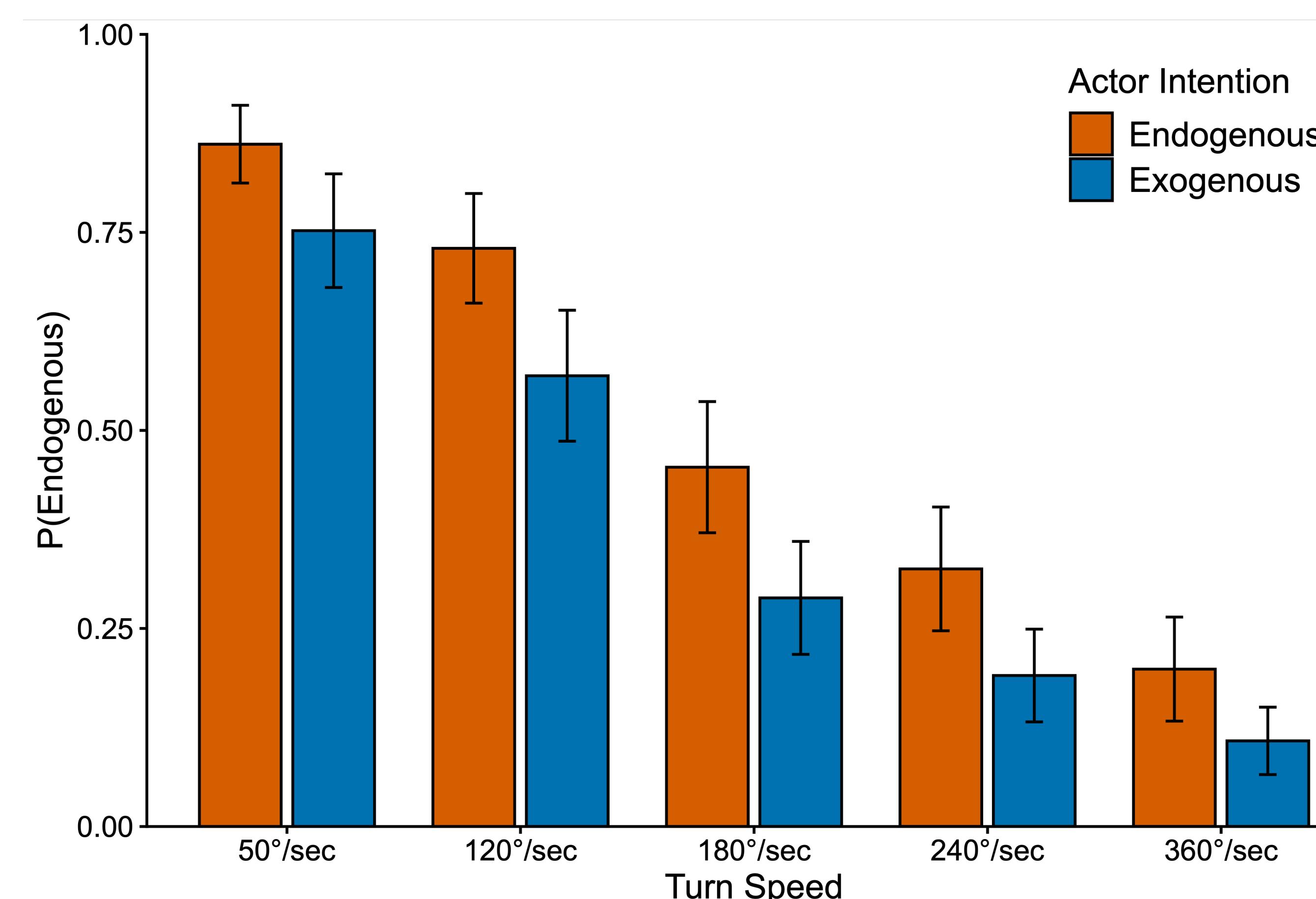
Does turn speed signal turn intent?

Method: Watch and Report!

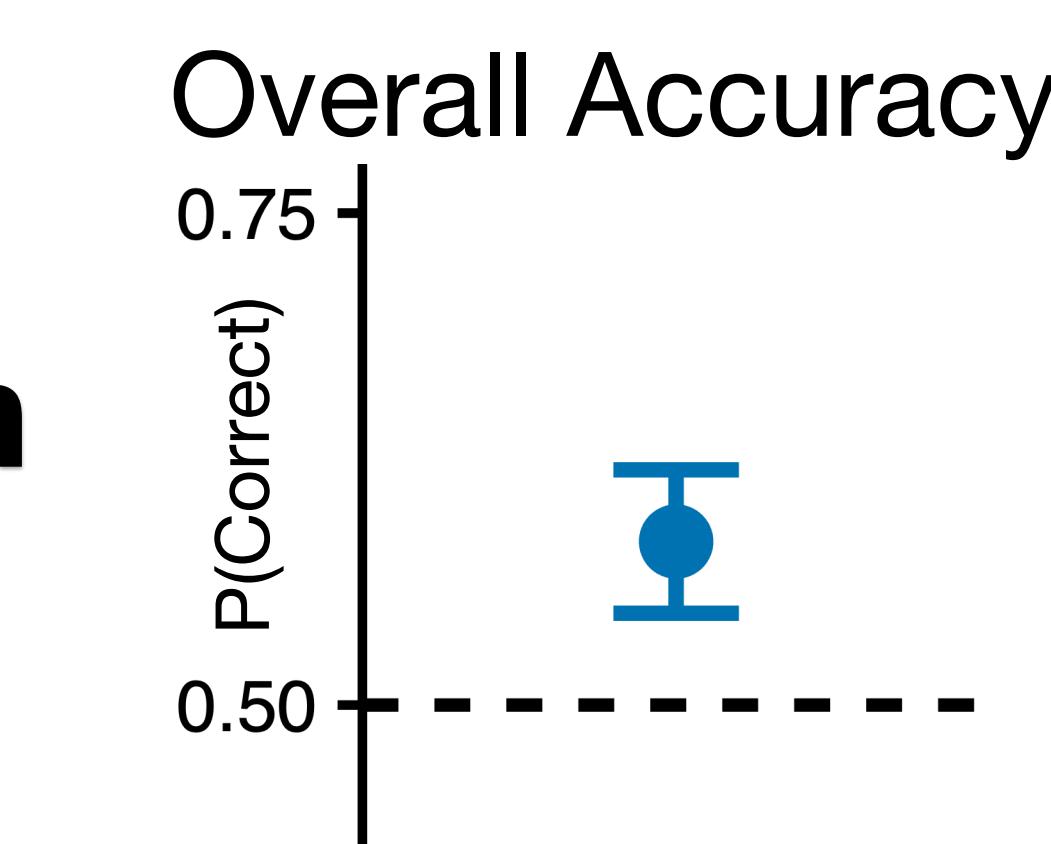
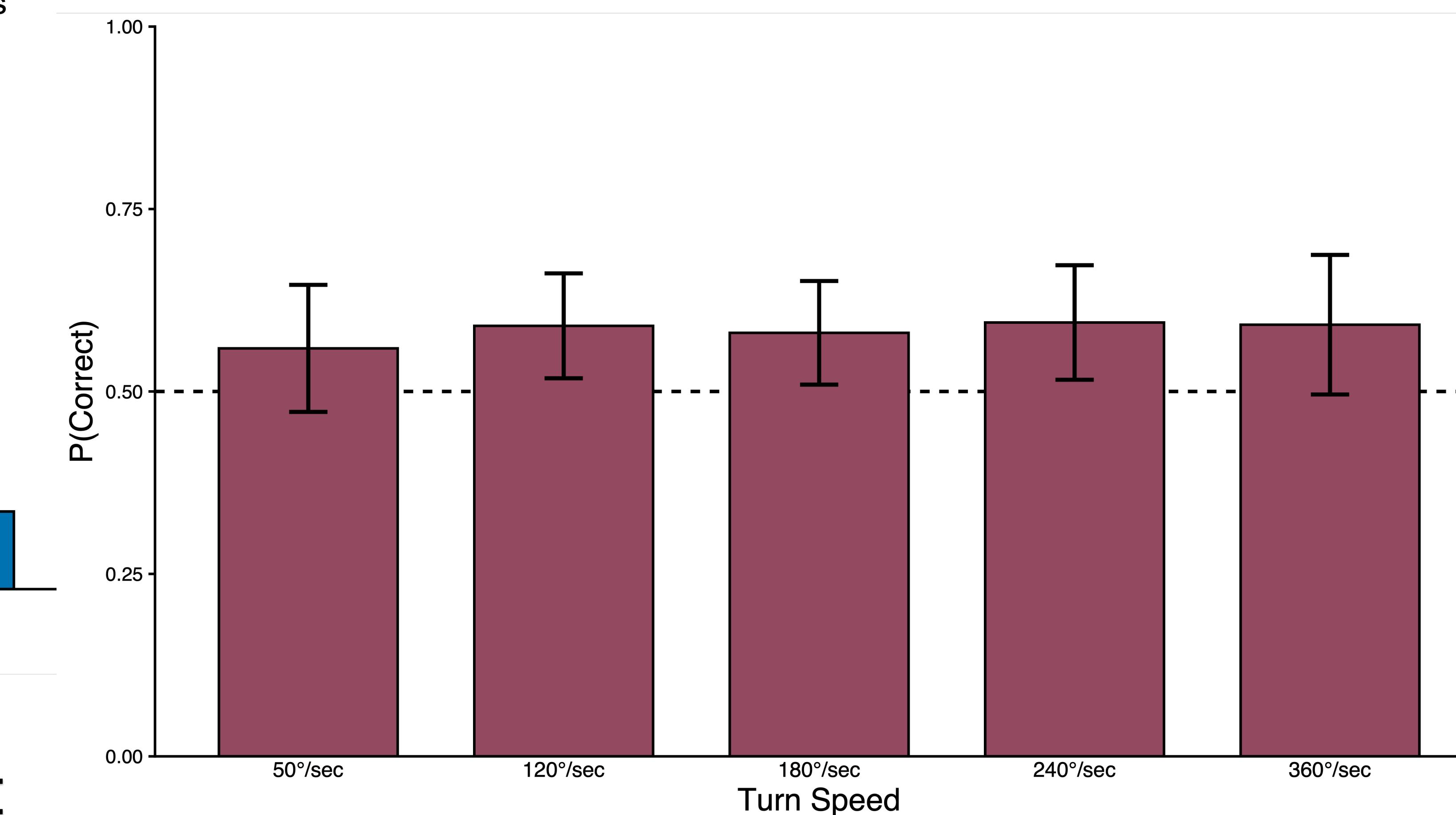
Participants ($N = 100$) watched videos of actors turning and reported each turn as **exogenous** or **endogenous**.

Variables: Turn Speed (50–360°/s); Actor Intention (**exogenous** vs. **endogenous**).

Observed Kinematics Shape Inferences About Mental Content



Accuracy was above chance for all speeds except 50°/s and 360°/s; all other $p < .028$.



After accounting for speed, overall accuracy is above chance.

Example Stimuli



Minds From Physical Cues

Speed shapes mental inference: fast turns seem externally driven, and slower turns seem internally caused.

Speed is not the only cue that humans use to infer the causes of head turns.

Is speed a **veridical** cue? What about other kinematic properties?