**Threshold versus Accumulator frameworks of Steering Action Initiation**

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**Abstract (200 words)**

Vehicle control requires complex sensorimotor actions. To safely keep in lane, drivers must monitor error development and initiate steering corrections that are appropriately timed. However, the perceptual mechanism determining how a driver processes visual information and initiates a correction is currently unclear. The literature on perceptual-motor action suggests two potential alternative mechanisms: (i) perceptual evidence (error) satisficing fixed constant thresholds (Threshold), or (ii) the integration of perceptual evidence over time (Accumulator). Using computer generated virtual environments, a steering correction task was designed to distinguish between these mechanisms. Drivers steered towards an intermittently appearing ‘road-line’ across brief, randomised trials. During each trial, the driver’s starting position was manipulated and the road-line was offset relative to the driver’s trajectory, generating errors that required correction. Threshold and Accumulator accounts predict different steering response patterns for these conditions: a Threshold account predicts a fixed absolute error response across conditions regardless of the rate of error development, whereas an Accumulator account predicts drivers respond to larger absolute errors when error signal develops at a faster rate. Results suggest that steering corrections are in line with an Accumulator account, thus we propose that steering models should integrate perceptual error over time to capture human perceptual performance.