**Deciding when to correct: threshold versus accumulator models of steering action initiation – Human Factors abstract**

Vehicle control requires complex sensorimotor actions. To safely keep in lane a driver needs to monitor error development and initiate steering corrections that are appropriately timed. However, the perceptual mechanisms determining how a driver decides when to initiate a correction is currently unclear. The literature on perceptual-motor decision-making 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, repeated trials that produced perturbations to the relative trajectory, causing errors that required correction. Threshold and Accumulator accounts predict different 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 will respond to lower absolute errors when there has been more time over which to integrate evidence. The results suggest that steering corrections are in line with an evidence accumulation account of decision-making, and so we propose that steering models should integrate perceptual error over time to better match human perceptual performance.