When to Switch? Understanding How Performance Tradeoffs Shape Dual-Task Strategy

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Abstract: We use a novel dual-task paradigm to investigate how people adapt their strategy for interleaving attention between tasks to meet varying performance objectives. The study required participants to encode and enter a series of route instructions from a secondary display while driving a simulated vehicle. Experimental instructions were given to encourage participants to either prioritize safe driving or the secondary navigation task. Results show that participants met the required task objective by varying the frequency that they interleaved tasks and by varying the amount of time they spent in between visits to the secondary display. We explain these data using a framework for modeling driver distraction effects. The model explained the observed change in performance measures between the two priority conditions and also the observed change in strategy. Taken together these results support the idea that people can strategically allocate attention in multitask settings to meet specific performance criteria.