Inattentional Blindness in Simulated Driving Environments
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**Background**
- Distracted Drivers will adjust driving habits to accommodate secondary tasks (e.g. cell phones, radio, or GPS) (Young & Regan, 2007).
  - Reduce speed
  - Greater headway
  - Allocate attention to other duties (e.g. checking mirrors, traffic patterns, etc.)
- Distractions are not limited to within the vehicle, as distractions outside the vehicle can also attract attention (Land & Lee, 2004).
- Distractions requiring attentional resources outside the vehicle can lead to Inattentional Blindness: the inability to detect or delayed detection of information presented directly in front of the observer (Simons & Chabris, 1998; Hyman et al., 2009).
- Attentional resources used while driving
  - Target/Vehicle tracking load (Lochner & Trick, 2011)
    - Object tracking utilizes attentional resources that prevent completion of other tasks (Tombu & Seiffert, 2008).
  - Visual clutter in the environment
    - Environmental complexity can cause participants to miss critical information (Stinchcombe & Gagnon, 2010).
    - Increasing visual clutter slows reaction times (RT) (Beck et al., 2010).
- How do these loads on attention affect detection of critical objects (e.g., a pedestrian entering the roadway)?

**Hypotheses**
- H₁: Higher tracking loads (more vehicles) will impair reactions to an unexpected pedestrian.
- H₂: Densely cluttered environments will impair reactions to an unexpected pedestrian

**Conclusions**
- H₁: Tracking load increases braking RT and steering deviations to the pedestrian.
  - Drivers may over compensate with steering deviations due to slower braking.
- H₂: Densely cluttered environments cause an overall smaller change in velocity, indicating the tendency to brake less.

**Independent Variables**
- Tracking Load
  - 1 of 2 cars vs. 2 of 4 cars
  - Clutter
  - Sparse vs. Dense

**Dependent Variables**
- Response to Unexpected Pedestrian
  - Braking measures
  - Change in Velocity
  - Brake RT
  - Steering Deviations

**References**

**Method**
- Realtime Technologies Inc. driving simulator

**Results**

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**H₁**: Tracking Load - \(F(1,134) = 5.08, p = .03, \eta_p^2 = .04\)

*Participants who did not brake were removed from RT analysis*