DISTRACTION HANGOVER: Understanding the Science of Distracted Driving

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STUDY PURPOSE

- Determine effects of various distractions
- Determine whether hangover occurs
- Determine the length of the hangover on driving safety

PRELIMINARY WORK

STUDY PURPOSE

Methods

- Test 100 people ages 21+ in driving simulator
- Expose them to voice and text distraction
- Measure performance on
  - Lane deviation
  - Following speed
  - Reaction time
  - Crashes
  - Others

METHODS

- Driving simulator
  - stisim driving simulator software
  - XBox wheel/pedal control
  - Tobii 4c eye tracker
  - a phone
  - temporal sync (ms)

- Two stages during drives
  - Divided Attention, responds to
    peripheral cues by pressing paddles
  - Car Following, maintain safe distance
    between a car varying speeds

METHODS

- Two distracted drives
  - Text – respond to short text messages
  - Handsfree – listen and respond to short voice messages

"Hello. It’s your neighbor
from across the street.
I’d like to drop off some
oranges from my tree.
When will you be free
later today?"
[pause for response]
"Great! I’ll see you then.
Bye.”
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**DRIVING MEASURES**

When the phone distracts:
- More crossing lane markers
- Faster speed with lower variability
  - Less adaptive
- Slower response to cues
- No systematic differences between handsfree and text

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**DRIVING MEASURES – CAR FOLLOWING**

- Task: “Try to match the Lead Car speed.”
- Normal performance during baseline; terrible performance after.

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**DRIVING MEASURES – DUAL TASK**

- Task: “Respond to peripheral cues by pressing side-matched paddles.”
- Timeout after 3s without responding: participants miss cue completely.

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**BEHAVIORAL MEASURES – EYE MOVEMENTS**

- Passive tracking of eye movements during the drive (time synced.)

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**GAZE WHILE DISTRACTED**

- Central fixation width – Useful field of view

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**STUDY RESULTS**

- Distractions affect a number of driving safety parameters: lane deviation, speeding, poor following, delayed reaction time
- The effects of cognitive distraction are profound and can exceed impairment seen with alcohol
- The delay AFTER the distracting event is completed can last for up to 25 seconds