Transportation Learning Network
A partnership with MDT, NDDOT, SDDOT, WYDOT and the Mountain-Plains Consortium Universities

David Sanbonmatsu, Ph.D., Professor
University of Utah, Department of Psychology

MPC Research: Cell Phone Use Diminishes Self-Awareness of the Adverse Effects of Cell Phone Use on Driving

February 14, 2018 – 10:00 AM – 11:00 AM CT (9:00 AM – 10:00 AM MT)

Thank you to our partners:

NDSU | UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
TRANSPORTATION LEARNING NETWORK

- **Center for the Prevention of Distracted Driving, University of Utah**

- David M. Sanbonmatsu and David L. Strayer
- Arwen A. Behrends, Francesco Biondi, Shannon Moore, Nathan Ward, & Jason M. Watson

- This research was supported by a grant from the **Mountain Plains Consortium**, a regional University Transportation Center (UTC) sponsored by the United States Department of Transportation, Research and Innovative Technology Administration.

- 1. Cell phone use while driving is commonplace
- Examples:
  - The National Highway Traffic Safety Administration (2011) estimates that at any point during the day, 9 percent of drivers are using cell phones in the U.S.
  - Even in countries such as Australia and the United Kingdom where there are strong regulations, 1-2% of drivers are observed using hand-held mobile phones

- 2. Major public safety issue
  - Cell phone use substantially increases crash risk
  - Both epidemiological and lab studies have shown that the crash risk may rise to the level associated with the legal limit of alcohol

- 3. Major public safety issue
  - Research at the Center for the Prevention of Distracted Driving and other labs show that both hands free and hand held cell phone use contribute to unsafe driving.
  - When people are talking on a cell phone, inattention blindness occurs in which as much as 50% less information about the driving environment is processed.

- 4. People are generally aware that talking or texting on a cell phone while driving is hazardous.
- Given the risks, why do they do it?

- 5. The Center for the Prevention of Distracted Driving was funded by the **Mountain Plains Consortium (**MPC) to:
  - understand why people use cell phones and engage in other distracting activities while driving
  - further investigate how distractions such as cell phones affect driving safety

6. Today we are going to review two studies funded by MPC.

- The first study addressed two important questions:
  - **Why do people use cell phones while driving?**
  - **Why do people support legislation to limit the usage of cell phones while driving?**

- 7. Survey
- a. Respondents: Two hundred and forty-nine University of Utah undergraduates (141 female and 108 male).
- 18 to 44 years old, with an average of 22 years.

- 7. Survey
- b. Respondents answered a series of questions about:
  - Use of cell phones while driving
  - Perceived ability of drivers including self to drive safely while using a cell phone
  - Support for legislation restricting cell phone use while driving
  - Perceived benefits of talking on a cell phone while driving.
  - Perceived risks of talking on a cell phone while driving including risks relative to drinking and driving.

- 8. **Cell phone usage and support for legislation**
- Most participants (77.5%) reported using cell phone while driving occasionally, almost always, or always.
- Most participants (61.8%) supported legislation to restrict the usage of cell phones behind the wheel (they agreed with statements such as “Talking on a cell phone is a matter of public safety; laws should be passed to restrict the usage of cell phones while driving”)

- 8. **Cell phone usage and support for legislation**

- 44% reported using cell phones AND supporting legislation to limit the use of cell phones
- Thus, 44% of participants stated that people shouldn't be using cell phones while driving even though they used cell phones behind the wheel.
- A large portion of participants appeared to be **hypocrites.** Why is there an inconsistency between what drivers do and what drivers say people should do in terms of cell phone usage?

- **9. Perceived Ability to Drive Safely While Using a Cell Phone**
- Participants ranked their ability to drive safely while distracted relative to others on a percentile scale on which 0% indicated *I'm at the bottom,* 50% indicated *I'm exactly average,* and 100% indicated *I'm at the very top.*
- Of the 249 total participants, 35 (14%) estimated their ability was below average, 54 (22%) estimated they were exactly average, and 160 (64%) estimated they were above average.

- **9. Perceived Ability to Drive Safely While Using a Cell Phone**
- Participants also judged on a 7 point scale anchored by *not at all capable* and *highly capable*:
- "To what extent are you capable of driving safely while engaging in another task such as talking on the cell phone?"
- "To what extent are adults in the general population capable of driving safely while engaging in another task such as talking on the cell phone"
- Comparisons with the midpoint on the scale (4) suggests that participants tended to believe they were capable of driving safely while using a cell phone, $M = 4.88$, $t(248) = 10.46$, $p < .001$, but that others were not capable of driving safely while using a cell phone, $M = 3.70$, $t(248) = 3.88$, $p < .001$.

- **9. Perceived Ability to Drive Safely While Using a Cell Phone**

- Individuals are overconfident about their ability to drive safely while distracted
- Not confident about other peoples' ability to drive safely while distracted

- **10. Perceived benefits**
- Participants tended to disagree with the statement “Talking on a cell phone when I am driving makes driving less boring for me”.
- They were inclined to agree with the statements “Talking on a cell phone when I am driving enables me to connect with friends and family” and “Talking on a cell phone when I am driving enables me to get work or other things done”.

- **11. Perceived risks**
- They tended to agree with the statements “Talking on a cell phone when I am driving could have severe negative legal and financial consequences for me”, “Talking on a cell phone when I am driving threatens the safety and well-being of other people”, and “Talking on a cell phone when I am driving threatens my personal safety and well-being”.

- **11. Perceived risks**
- Believed that other peoples use of cell phones was a much greater threat to their safety and public safety than their own use of cell phones
  - Their agreement with the statement "People talking on a cell phone while driving threatens my personal safety and well-being safety" was much greater than their agreement with the statement "Talking on a cell phone when I am driving threatens my personal safety and well-being",
- Believed that cell phone use while driving is a much lower threat to their safety and public safety than drinking and driving

- **12. Independent Predictors of Self-Reported Use of Cell Phones While Driving**

- A multiple regression analysis revealed that the strongest independent predictors of cell phone use while driving were:
- Perceived benefits Participants who talk on a cell phone while driving were much more likely report benefiting from the use of cell phones.
- Perceived ability Participants who talk on cell phones behind the wheel were much more likely to believe they could drive safely while distracted than participants who do not use cell phones.
- Not predicted by perceived risks to personal and public safety.

- **13. Independent predictors of support for legislation to restrict the use of cell phones while driving**

- A multiple regression analysis examined the independent predictor of support for legislation:
- Perceived risk The largest independent predictor of support for legislation was the belief that others' use of cell phones is a threat to the safety and well being of others.

- 14. **Accounting for the hypocrisy**
- Participants who use cell phones tend to be confident that they can drive safely while distracted. The perceived risks were not a strong independent predictor of cell phone use.
- The perceived risks of others' usage of mobile devices was the largest independent predictor of support for legislation to restrict cell phone use.
- Many if not most drivers believe they can drive safely while using mobile devices and downplay the risks. However, they lack confidence in others' ability to drive safely while distracted and believe that others' use of cell phones is dangerous.

- **15. Limitations**
- Self-report
- College student participants
  - Similar findings with broader samples in other studies

- **Study 2: Cell Phone Use Diminishes Self-Awareness of the Adverse Effects of Cell Phone Use on Driving**

- **1. The study addressed two important questions:**
  - How does cell phone use while driving affect self-awareness of driving performance and safety?
  - Why are people overconfident about their ability to drive safely while distracted?

- 3. When people engage in a task, they monitor their performance
  - Allows them to make behavioral adjustments
  - Serves as the basis for self-knowledge

- 4. When people are distracted while performing a task, there may be less monitoring

- We hypothesized that engaging in secondary tasks (distracting activities) diminishes monitoring
  - Lowers self-awareness of performance
  - Diminishes self-knowledge of capabilities

- 5. In the context of the operation of a motor vehicle, distractions may impair awareness of driving safety

- Thus, cell phone usage may have two costs
  - impair driving safety
  - impair awareness of driving safety

- 6. Simulator study
- Compared driving self-awareness (awareness of driving performance) when using a cell phone vs. not using a cell phone (control condition)
- Also examined whether cell phone use diminished the impact of driving performance on participants' confidence in their ability to drive safely while distracted

- 7. Methods
- a. Participants (100 female and male undergraduates) drove on an 8.2 kilometer course designed to simulate city roadways.
- b. Experimental conditions:
  - Talked on a hands free cell phone
  - Did not talk on a cell phone (control condition).

- 7. Methods
- c. The number of driving errors was recorded
  - Serious errors (e.g., swerving with at least two wheels off the road, failing to stop at an intersection for a red light or stop sign)
  - Minor errors (e.g., Speeding 10 miles or more mph over the posted speed limit)

- 7. Methods
- d. After the driving session, self-report measures were taken. Participants:
  - Indicated the number of serious and minor driving errors they made
  - Rated the safeness of their driving
  - Rated their ability to drive safely while distracted

- 8. Results:
- a. Participants who talked on a cell phone made more serious driving errors than control participants who did not use a phone while driving.
- This finding replicated prior research.

- 8. Results
- b. The primary analyses examined the relation between actual driving errors and participants' assessments of the safeness of their driving.
  - Control participants' assessments of the safeness of their driving were negatively correlated with the actual number of serious errors they made when they were driving.
  - In contrast, cell phone participants' assessments of the safeness of their driving were uncorrelated with their actual serious driving errors.
  - Cell phone participants estimations of their serious driving errors were also uncorrelated with their actual serious driving errors.
  - Thus, participants who used a cell phone while driving were clueless about the safeness of their driving.

- 8. Results
- c. The final analyses examined the relation between actual serious driving errors and participants' confidence in their ability to drive safely while using a cell phone.
  - Control participants' assessments of their general ability to drive safely while distracted was negatively correlated with the actual number of serious errors made when they were driving.
  - In contrast, cell phone participants' confidence in their driving abilities were uncorrelated with their actual serious errors.
  - Thus, cell phone participants' confidence in their ability to drive safely while distracted was not based on the safeness of their driving performance.

- 9. The study shows that talking on a cell phone not only diminishes the safeness of driving, it diminishes drivers' awareness of the safeness of their driving.

- 10. The study also shows that the lack of awareness of driving safety from using a cell phone contributes to a lack of self-knowledge.
  - Because drivers are often unaware of how their cell phone use is adversely affecting their driving, their views of their ability to drive safely while distracted remain inflated.

- 11. The two studies helps us to understand why people use cell phones while driving despite knowing the risks.
- Drivers use cell phones because of benefits such as getting work done and connecting with family and friends.
- Drivers also use cell phones because they minimize the risks:
  - Most believe they are perfectly capable of driving safely while talking on a cell phone
  - This overconfidence stems, in part, from their lack of awareness of how cell phone use impairs their driving performance.

Transportation Learning Network
A partnership with MDT, NDDOT, SDDOT, WYDOT and the Mountain-Plains Consortium Universities

Thank you for participating!

You will be automatically directed to a short survey, please take a moment to provide your feedback.

Transportation Learning Network Contact Information

TLN Help Desk
Office: (701) 231-1087
Fax: (701) 231-1945
shannon.l.olson@ndsu.edu

Office: (701) 231-7766
susan.Hendrickson@ndsu.edu

Thank you to our partners: Mountain-Plains Consortium, Montana MDT Department of Transportation, NDDOT North Dakota Department of Transportation, South Dakota DOT, Wyoming DOT