

APA citation of journal article: Wechsler, K., Drescher, U., Janouch, C., Haeger, M., Voelcker-Rehage, C., & Bock, O. (2018). Multitasking During Simulated Car Driving: A Comparison of Young and Older Persons. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.00910>.

### The Basics:

1. What was the broad question being asked by this research project? What was the specific question being asked by this research project?
  - a. Summarize the background information on the research topic in three sentences.
  - b. What is the gap in the literature identified by the researchers? What question(s) are they trying to answer? What is their hypothesis and what should happen if the author's hypothesis is true?
  - c. What are alternative hypotheses?

*The broad question that the researchers were asking was if multitasking deteriorates with age. The specific question that the researchers were asking was if multitasking while driving deteriorates with age and how multitasking affects driving. The null hypothesis would be that there is no correlation between age and whether or not a person can multitask while driving. The alternative hypothesis would be that there is a correlation. It was also hypothesized that people would be worse at multitasking with visual tasks opposed to auditory tasks.*

2. What experiments were done to test the hypothesis or investigate the research question?
  - a. Explain the task design – what are participants instructed to do and what is being measured? Think about the independent and dependent variables.

*To test the effects of multitasking on driving, the researchers split the drivers up into two groups, one consisting of young drivers between the ages of 20 and 30, and one consisting of old drivers between the ages of 65 and 75. Each driver sat down in a driving simulator and was told to follow the car ahead of them, which would slow down, speed up, and turn. There were two control groups, one in which there were no loading tasks that the driver also had to focus on and one where the participants just had to complete the loading task without driving. This gave the researchers necessary baseline information. The loading tasks consisted of typing three-digit numbers into a nearby keyboard, verbally reasoning when a question was presented, and finally a memory task (either visual or auditory). Each participant drove under all three conditions over the course of many days (driving with no loading tasks, driving with loading tasks, and just completing the loading tasks).*

3. What evidence supports each of the conclusions?
  - a. Before you read the discussion, summarize the main findings and link each one back to the research question(s). How does each result inform the hypothesis?

*To summarize, the researchers did indeed find that the older drivers were worse at multi-tasking while driving and also more cautious on the road when tasks were not present, driving at a lower speed, but with higher speed variability. Specifically though, older drivers were much worse at the typing task, often driving off the road. However, they did not find that participants had more trouble with visual tasks than auditory tasks.*

4. What are the major conclusions?
  - a. What do the results add to the field? How do the researchers interpret their findings? Summarize any limitations identified by the researchers.

*One major conclusion that the researchers took away from the experiment was that since the typing task is very similar to other tasks common in driving, such as inputting something into a GPS, the results are very relevant for the driving safety of older people. The researchers question whether multi-tasking in older drivers could be improved by practice. No limitations were mentioned.*

### **The Critique:**

1. Is the paper well written? How do you know? For week 2 & later, use this space to practice headlines & summaries of the articles via tweets.

*This has been my favorite article to read thus far. I believe it is very well-written, easy to follow, and concise. It is an engaging and relevant study, and I truly enjoyed it.*

Headline 1: Older Drivers Beware - Research shows that multi-tasking while driving can lead to serious accidents

Headline 2: Focus on the Road – Typing and driving can lead to various negative consequences... especially as you age

Headline 3: Keep Your Hands on the Wheel – Our multi-tasking abilities deteriorate as we age, so stay focused while driving

2. Do the conclusions seem logical given the data processed? Why or why not? Another way of thinking about this: do the results adequately support the conclusions that are drawn? Are there alternative explanations for the findings? What inferences about the hypotheses and questions can be made based on these results?

*The results definitely adequately support the conclusion. The results showed that older drivers are much worse at multi-tasking, specifically under the typing condition, and thus the researchers concluded that the results are extremely relevant for the safety of older-drivers and we should try not to multi-task while driving.*

3. Are the conclusions important? How do you think this relates to everyday behavior?

*I'd say so. I drive almost every day, so this study is extremely relevant to me. I also think we can generalize this study a bit and say that in general, our ability to focus or perform declines when we have to multi-task. Therefore, we should try to multi-task less during everyday life and focus more on deep thought and concentration.*

4. What were the best aspects of the research presented, and how could the research be improved? Name at least one way to improve the experiment.

*The best aspect of the research presented was that the researchers stated that they would release all the data and results that were recorded. This makes the study easier to replicate and the results easier to reproduce. One way that the research could improve is by potentially also testing middle-aged drivers to truly see when the decline in multi-tasking and driving begins.*

5. How would you follow-up this experiment or study?

*I would follow-up this experiment the same way the researchers stated they wanted to. I would incorporate more than two tasks at a given time and see how that affects the driver. Like I said above, I would also incorporate all age-ranges.*

**Additional Resources:** What are the basic concepts that you need to know to understand the science presented in your paper? What other information or resources would help you better understand the paper? This is helpful to consider for your science communication pieces.

*I think it is important to understand basic concepts such as memory, perception, and multitasking to better understand this paper.*

### **Further Questions:**

Write at least five comments or questions about the article to discuss with the class.

1. *Why did the researchers choose the age ranges that they did?*
2. *Do you think the technology/simulator aspect of the experiment played a role in the outcome?*
3. *Would the results be different if the participants were really driving cars?*
4. *What plans of action do the researchers propose to make driving safer for older drivers?*
5. *Overall, I really enjoyed this paper and thought it was extremely relevant and engaging.*