

# The Influence of Gaming Experience and Optic Flow on Simulator Sickness: Insights from a Driving Simulator Study

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## INTRODUCTION

Simulator sickness can increase dropout rates and bias participant behavior in driving simulator experiments. It is therefore generally to be reduced when conducting studies in driving simulators. Subjects experienced with simulator driving have been suggested to be less prone to simulator sickness. The authors hypothesized gaming experience to likewise reduce the probability of subjects to experience simulator sickness.

## SIMULATOR SICKNESS AND OPTICAL FLOW

Optic flow was reported to increase simulator sickness. Stoner and colleagues (2011) suggested removing static objects, such as trees or buildings, from the scene to reduce optic flow and therefore also simulator sickness. As no actual study could be identified having tested just that assumption, we constructed an experiment manipulating both gaming experience and optic flow.

### STUDY SETUP

- 26 subjects (M = 24 yrs, SD = 4 yrs)
- static driving simulator
- Simulator Sickness Questionnaire (SSQ)

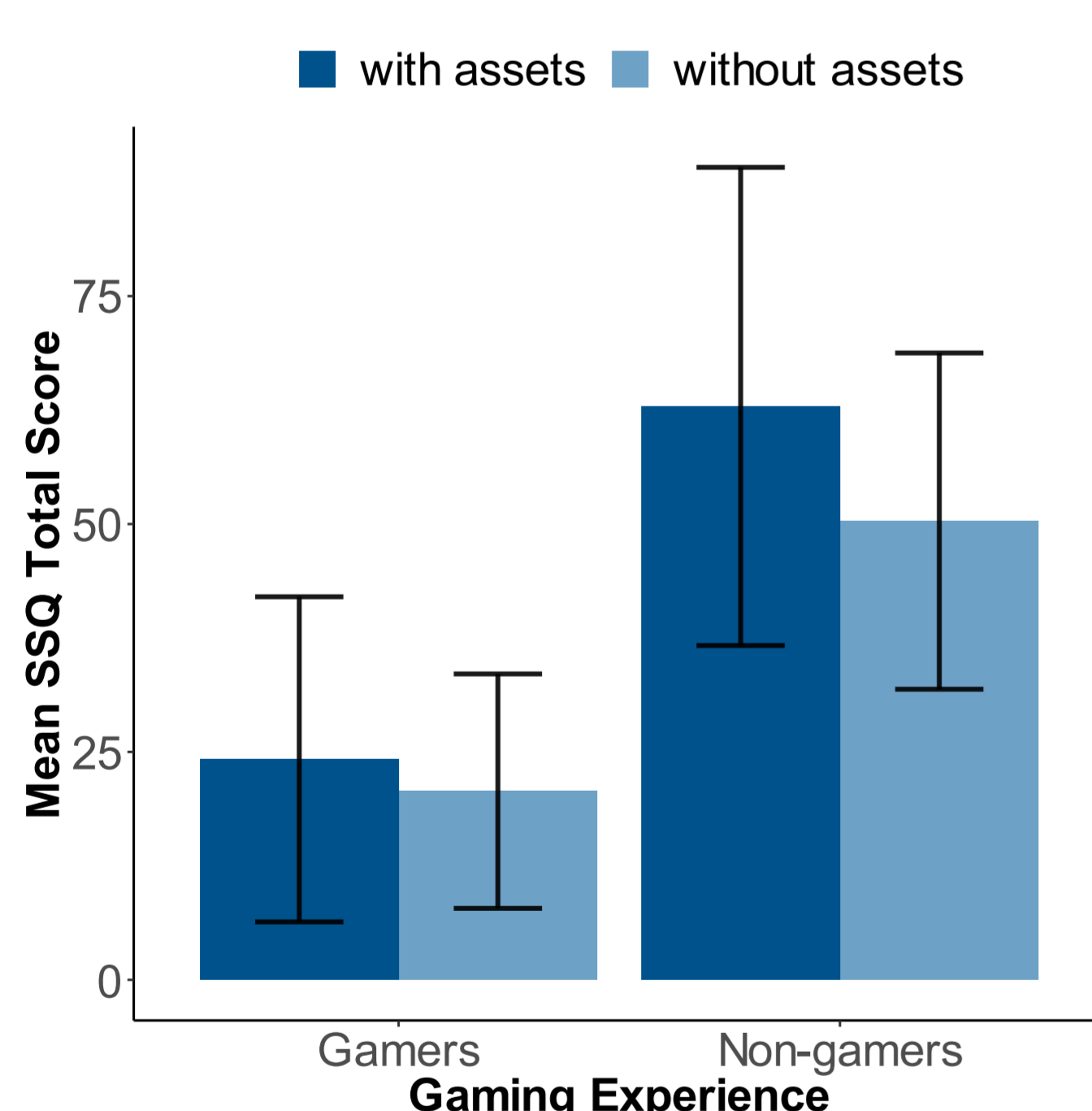
### BETWEEN-SUBJECTS GAMING EXPERIENCE

- gamers (n = 15)
- vs.
- non-gamers (n = 11)

### WITHIN-SUBJECTS OPTICAL FLOW

- scene with assets (n = 1)
- vs.
- scene without assets (n = 1)

## RESULTS



## IMPLICATIONS FOR AUTOUI

Driving simulators are with no doubt one of the most frequently used research tool in the AutomotiveUI community. Simulator sickness is a general threat to studies conducted in driving simulators. Gamers were shown to be more resistant against simulator sickness compared to non-gamers. It is yet to be determined how this knowledge can help reduce simulator sickness, e.g., inviting more gamers to simulator studies or asking participants to play games prior to the simulator session.

Results regarding objective flow only showed descriptive tendencies.

## CONCLUSION

The present findings show that gamers are less susceptible to simulator sickness compared to non-gamers. Design-recommendations may be derived from the present study, suggesting that inviting gamers to simulator experiments might help reduce simulator sickness. There was no significant effect of optic flow on simulator sickness. We recommend repeating the experiment with a larger sample.

Full text:

