

Shechtman, O., Classen, S., Awadzi, K. & Mann, W. (2009). Comparison of driving errors between on-the-road and simulated driving assessment: A validation study. *Traffic Injury Prevention, 10*(4), 379-385.

ABSTRACT:

Objective: Driving simulation provides a convenient and safe method for assessing driving behaviors. Many authors, however, agree that validation is a key component of any study that utilizes simulators to assess driving performance. The purpose of this study was to test *driver response validity* by discerning if behavioral responses of drivers, as expressed by type and number of errors, are similar between on-the-road and in-the-simulator.

Methods: We replicated real-world intersections in our driving simulator (STISIM M500W; Systems Technology Inc) and assessed the number and type of driving errors committed by the same 39 participants while negotiating a right and a left turn both on-the-road and in-the-simulator.

Results: We found no significant interactions between the type of vehicle (road vs. simulator) and the type of turn (right versus left) for any of the driving errors, indicating that the same trends exist between driving errors made on-the-road and in-the-simulator and thus suggesting *relative validity* of the simulator. We also found no significant differences between the road and the simulator for lane maintenance, adjustment to stimuli, and visual scanning errors, indicating *absolute validity* for these types of errors.

Conclusions: The findings suggest early support for *external validity* for our driving simulator, indicating that the results of assessing driving errors when negotiating turns in the simulator can be generalized or transferred to the road under the same testing conditions. A follow up study, with larger sample size is needed to establish whether or not driving performance in-the-simulator is predictive of driving performance on-the-road.

Key Words: driving simulator, driving assessment, validation