

Reflective Thinking and Simulated Driving: The Importance of Answering Questions

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Risky driving behaviors are common among young people, who tend to exhibit excessive speeding, speeding for the thrill, driving too close to the followed vehicle, driving while using a mobile phone, and to violate other road traffic rules. Here, consistently with the question-behavior effect [1,2] we ask whether a specific action of a prevention program involving reflective thinking [3] (i.e., answering a questionnaire on driving and traffic safety) can alert participants and induce a concern capable of modifying simulated driving performance.

A sample of 116 high school students, including 46 with car driving licence (DL), participated in two sessions of simulated driving tests, separated by a 60-min rest period during which they answered a written questionnaire on either driving safety (24/3122/39 with/without DL) or ICT (with/without DL). A simulator – designed by ACI safe driving center at Vallelunga – supported realistic driving experience in urban, suburban, and motorway critical situations and the recording of several test parameters: speed and braking reaction time for emergency braking; number of offences (excess speeding, unsignaled lane change, collision, traveling in the emergency lane) for motorway driving.

Simulated driving behavior of young adults (with/without driving license) proved to be malleable. Participants who answered the driving safety questionnaire changed their performance towards greater carefulness in the second session, compared to participants in the control group who answered the ICT questionnaire. The Session \times Questionnaire interaction was significant ($p < 0.001$) for both travelling speed and braking reaction time. In the pre-questionnaire session travelling speed was in the 50-52 km/h range, with licence holders driving slightly faster; in the post-questionnaire session participants who answered the driving safety questionnaire (presumably, thinking about risky behaviors and their effects) slowed down, while participants in the control group (induced to think about ICT) increased their average speed. In the second session participants who answered the driving safety questionnaire reacted to the “Brake” signal much faster (from about 860 ms to 760 ms), while participants who answered the ICT questionnaire reacted slightly slower (from about 800 ms to 830 ms). The overall number of offenses decreased in all participants, with a stronger benefit in participants who answered the driving safety questionnaire. In general, driving licence ownership had limited effects on change of simulated driving behavior during participation in a prevention program.

Our study provides strong support for the occurrence of a question-behavior effect within the context of a safe driving program. Results and conclusions are consistent with previous research in which behavioral changes were self-reported [2], but constitute a more convincing source of evidence, given that in our study the dependent measures were referred to objective

measures of driving performance (not subjective evaluations) and obtained effects emerged from an experimental design including a control group involved in reflective thinking on a topic only partially related to road safety.

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