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Proceedings Paper:

Öztürk, I., Üzümcüoğlu, Y., Bıçaksız, P. et al. (2023) How young female and male drivers differ in terms of eye movements and driver behaviors. In: International Journal of Psychology. 32nd International Congress of Psychology, 18-23 Jul 2021, Prague, Czech Republic (Virtual). Wiley, p. 1013. ISSN: 0020-7594. EISSN: 1464-066X.

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How young female and male drivers differ in terms of eye movements and driver behaviors

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Objective: The present study aims to investigate the differences between young female and male drivers in terms of eye movement behaviours and simulated driver behaviours. **Methods:** The study was conducted in the Human Factors Research Laboratory, Middle East Technical University. Forty male and 40 female drivers aged between 18 and 25 ($M = 22.31$, $SD = 1.66$) participated in the study. Drivers were asked to drive ten kilometres long experimental driving scenario with different road sections and elements representing general characteristics of roads in Turkey. Whole experiment procedure took approximately 30 min to complete. During the test scenario, various measures of eye movement fixations with Tobii X2-60 screen-based eyetracker and simulated driver behaviours with STISIM Drive M100W were tested. **Results:** The results showed that, after controlling the effects of annual kilometres, male drivers showed fewer fixations and more deviations on both horizontal and vertical fixation locations. Moreover, female drivers showed lower mean speed and higher time to collision on vehicles in the drivers' lane. **Conclusions:** Overall, the results presented specific visual and simulated behaviour differences between young male and female drivers. Male drivers had shown more active gaze behaviours than female drivers, whereas female drivers drove slower and have higher time to collision on vehicles in the drivers' lane than male drivers. It can be proposed that driving simulators integrated with eye-trackers might be effective tools for research, education, and evaluation purposes.