Using psychophysical methods to investigate the role of sound in speed perception

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Abstract

Electric vehicles (EVs) are quickly replacing internal combustion cars, which will soon become obsolete. Nonetheless, how drivers' perception and cognition deal with certain features of EVs remains largely unknown. In this study we focus on the role of in-car sound, specifically the artificial engine sounds, on drivers' speed perception and control. Previous studies indicate that removing or reducing engine sound leads drivers to underestimate speed and, consequently, to drive faster. Furthermore, evidence suggests that specific sound frequencies could play a role in this process, highlighting the importance of in-car sound features. We consider benefits and limitations of different research paradigms used in the field (mostly video based technique and driving simulation) and we propose an experimental protocol to systematically investigate the phenomenon. Finally, we suggest that the wider use of psychophysical methods on video recordings would benefit the research in the field and overcome some limitations of simulation studies.

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