

**Driver distraction without presence of secondary tasks:
Inattention, cognitive overload and factors outside the vehicle – an overview.**

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Abstract

Distraction is induced through a variety of sources that can be present both inside and outside the vehicle, and may involve a secondary task (e.g. mobile phone use, conversation with passenger, use of navigation or other in-vehicle systems etc.). The objective of this study is to provide an assessment and critical overview of the effects of distraction induced without the presence of a secondary task, which can be categorized in two different groups. The first group is driving under an improper state of mind, which includes inattention and distractions through cognitive overload. The second group consists of factors outside the vehicle, which include static objects or advertising signs, vision-impairing glare caused by sun or other vehicles' lights and observing people or situations outside the vehicle. For inattention and distraction through cognitive overload, eight high quality studies regarding were reviewed and it was found that inattention has a mostly detrimental effect on road safety. The specific impacts of these distractions vary, but they are negative and can be deduced that driver behavioral variables such as perception and braking performance are affected. There are some positive results that show reduced injury severity or increased perception, but these occur mainly due to overcompensation effects. The majority of the studies were observational studies which investigated past crash data. For distraction factors outside the vehicle, twelve high quality studies were reviewed. It can be argued that these factors create mostly negative impacts on road safety, with all statistically significant effects being detrimental. Both crash numbers and various driver behavioral variables such as lateral control and speeding are affected. There were cases, however, that reported no statistically significant effects. Based on the sample of countries of the reviewed studies, the results appear to be generally transferable with caution, especially for industrialized countries.

Keywords

Road Safety; Distraction; Inattention; Cognitive overload; Distraction outside vehicle