



Photo: Paul Voorham

## Distraction in traffic: an increasing risk factor

**The Dutch daily paper Trouw of 19 October 2011 reported that during an interruption of connections for BlackBerry smartphones, the number of car crashes in Dubai and Abu Dhabi decreased drastically. In three days' time, 20% fewer crashes were registered in Dubai; Abu Dhabi recorded a reduction in the number of car crashes of 40% during this same interruption, according to the chief of the traffic police in Abu Dhabi.**

This press report gives rise to many questions: is this reduction the result of BlackBerry users not having been able to send text messages, e-mail and use the Internet while driving during this period, as was suggested by the local police? Is the use of smartphones and mobile phones while driving as hazardous as suggested? And what about hands-free phoning? Does this not distract as much as does hand-held phoning? Are car drivers just as much distracted by a conversation with passengers as by a conversation on the phone? Can roadside billboards distract road users? SWOV studied the facts that are already known about the problem of distraction in traffic with respect to road safety.

### Distracting activities

Studies into the prevalence of distraction in traffic show that a large number of road users

are involved in activities that may distract them. Listening to music is very popular in this respect, among car drivers as well as among cyclists. Besides, many car drivers talk on the phone or with a passenger, or they eat and drink. Car drivers are engaged in distracting activities during circa 25 to 30 per cent of the driving time, and about half of that time is spent talking to a passenger. Activities that cause the most significant visual distraction, such as text messaging, turn out to be the most hazardous. Finally, young car drivers and cyclists turn out to be more frequently engaged in various distracting activities than older road users.

### Car drivers

Studies have shown that distraction affects a number of essential aspects of road users' performance. For example, variations in lane posi-

tions on the road are more often found among car drivers, which indicates reduced vehicle control. They often also react more slowly to changes in the environment and they commit more errors. On the other hand, distraction also results in reduced driving speeds and longer headways. Furthermore, distracted road users fail to see all kinds of visual information, because they do not keep their eyes on the road (e.g. while text messaging) or because their minds wander off (e.g. while conducting a conversation on the mobile phone). So even when their eyes are directed at the road, road users may fail to notice all kinds of information due to being distracted. This may also be the reason why conducting a conversation via a hands-free mobile phone has similar effects on driving behaviour as conducting a conversation using a hand-held device. Mobile phone conversation may cause *cognitive* and *auditory* distraction.

### Cyclists and pedestrians

Cyclists and pedestrians turn out to be highly underrepresented in studies into distraction. Cyclists should be given special attention, considering their vulnerability and the fact that they are relatively often casualties in crashes. It

is likely that the effects of the various sources of distraction will not be the same for cyclists and car drivers: the cycling task does differ from the driving task. It can for example be assumed that cyclists (and pedestrians), more so than car drivers, rely on auditory information, so that distraction by music or mobile phone conversations may even have more impact on cyclists than on car drivers. Meanwhile, research has shown that the use of devices by cyclists results in an increased risk of self-reported crashes, although this only applies to younger cyclists (12-34 years).

### Crashes

Data indicating how often road users are engaged in distracting activities is rather scarce. Although it is difficult to demonstrate a causal relationship, most studies estimate that distraction may have contributed to the occurrence of circa 5-25% of all car crashes. The percentages vary, partly due to the definition of distraction

that was used and the method used to estimate the risks. For crashes involving trucks, the estimate is much higher than for passenger cars: one American observation study estimated that in over 70% of the crashes involving trucks, distraction played a role in their occurrence. As is the case with many other road safety issues, findings from different studies cannot be read unequivocally; this also holds true for the effect of distraction on the crash rate. Many sources of distraction seem to increase the crash rate, but there is little agreement about the exact size of the effect. It has convincingly been demonstrated that distraction has negative effects on traffic behaviour, but as yet there is no clarity about the exact crash risk due to mobile phone use or other distracting activities.

### More knowledge required

Knowledge of distraction is important for determining the extent of the problem and mechanisms underlying it. Although much is

known about the problem of distraction, there still are important knowledge gaps. Thus, there is insufficient data about the extent in which distraction occurs among different types of road users and about the effect of the various sources of distraction on the crash risk. In particular, little is known about distraction among cyclists and pedestrians. It is conceivable that the various sources of distraction will not require the same types of measures. Future studies should focus on the effectiveness of various kinds of measures to reduce distraction in traffic.

#### Distraction in traffic; A literature review.

A. Stelling & M. Hagenzieker. R-2012-4. SWOV, Leidschendam. In Dutch with a summary in English.