

Mobile Phone and Driving

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INTRODUCTION

Mobile phone subscriptions are widely increasing all over the world to values that would have been unexpected until few years ago. In particular, according to Eurostat (2010), data show that the number of mobile phone subscriptions to public mobile telecommunication systems using cellular technology related to the population is generally over one subscription per one person (e.g. in Italy it is 159 per 100 inhabitants). Analogously, according to the World Bank Data (ITU, 2013), the number of subscriptions to a public mobile telephone service using cellular technology (including both post-paid and prepaid subscriptions) in the USA is 98 per 100 inhabitants, 106 in Australia, 81 in China, with peak in Saudi Arabia (185), Kuwait (191), Russian Federation (184), Hong Kong (228). Only in very rare cases the number is lower than 50, e.g. in some African Countries such as Somalia, Eritrea, Ethiopia. Then, it is not surprising that more than 85 percent of cellular telephone owners use their phones at least occasionally while driving, and more than 27 percent use their phones during half or more of their trips (Goodman et al., 1999). Similar results are shown in the last annual report of IRTAD (2014).

The strong improvement of technologies and the consequent wide diffusion of mobile equipment have in the meanwhile increased the worries related to sanitary aspects, as the exposure to

electromagnetic waves and to safety, especially while driving. However, cellular telephone use while driving is not without controversy. Public, legislative and media concerns about the safety of using a cellular telephone while driving have been expressed for some time. Nevertheless, there has been increasing concern over the safety of using communications devices while driving, particularly within the public sector, and this has been reflected in the growing number of legislative initiatives in the Countries that addressed the use of wireless communications in vehicles.

It is from the beginning of nineties that governments all over the world consider with more or less great attention the issue of using the cellular phone while driving (IRTAD, 2014). Some laws, regulations and recommendations have been promulgated. They differ from Country to Country and sometimes disagree. In general, in the Countries where the use of cellular phone is directly associated to some risks, three kinds of measures have been assumed: more than 50 Countries have adopted laws prohibiting the use of cellular phones while driving; in few cases some preventive measures have been imposed to cars manufacturers; finally, wide media campaigns have been produced to make drivers aware of the associated risks.

These measures are justified by some studies. The first works have been developed at the end of sixties (e.g. Brown et al., 1969), to evaluate

the impact on driving performance while drivers are involved in a telephone call. All the studies on this field of research start from the following questions: does the use of cellular phone increase the mental work load reducing the attention and the performance of the drivers? Does the use of cellular phone reduce the safety of driving? If the safety is reduced how and how much does the risk increase? Finally, at which level should the effects of using a mobile phone while driving be considered hazardous?

OVERVIEW

With the strong improvement of communication technologies provided as original equipment in the vehicle and portable equipment brought into the vehicle, the electronic communication devices, such as mobile telephones, are receiving increasing attention regarding their influence on driving performance and road safety.

Although drink driving, speeding and non-wearing of seatbelts remain recurrent key issues in all Countries and the experience has shown that efforts on these three fronts bring large benefits, distracted driving, including the use of mobile phones, is now a growing concern in many Countries.

Distracted driving, which includes a wide range of activities while driving, such as phoning, texting, watching video and regulating the GPS navigator, is recognized as a growing road safety issue by many Countries, considering for example the explosion in the sales of mobile phones and in-vehicle technologies. NHTSA (2013) estimated that in 2011 the 17% of all road crashes in the United States involved distracted driving, resulting in 3331 people killed and 387000 injured in motor vehicles. More specifically 385 people died in crashes in which at least one of the drivers was using a cell phone (12% of fatalities in distraction-affected crashes) at the time of the crash and 21000 were injured (5% of injured people).

These data and several studies support the main idea that attention is a primary cognitive requirement for safe driving performance.

One of the main causes of distracted driving is surely related to the use of mobile phone during the drive and that is even more critical if we consider that mobile phone subscriptions are widely increasing all over the world and the same occurs for people that use their phones at least occasionally while driving (85% of drivers), or during half or more of their trips (27%), according to data reported by Goodman et al. (1999). The annual report of IRTAD (2014) provides almost the same results, increasing the safety concerns related to the use of mobile, especially while driving, that have been reflected in the growing number of legislative initiatives all over the world, addressing the use of wireless communications in vehicles.

Specifically, from the beginning of nineties the most of Countries have made the use of the cell phone while driving illegal (IRTAD, 2014). However its use is still common among drivers both for calling and texting. Many governments have enacted laws to ban mobile phone use, especially hand held phone, while only in few Countries the use of hands free phone is consider illegal (e.g. Australia, Greece, Switzerland).

Notwithstanding on the basis of the literature relating to dual-task performance it is reasonable to suppose that concurrent performances of two tasks, as in the case of driving while using a mobile phone, result in poorer performances of either or both, depending on the levels and types of demand of each task and their allocated priorities, it is not certain which is the mechanism of distraction and in which way the safety of driving is reduced.

CURRENT SCIENTIFIC KNOWLEDGE IN MOBILE PHONE AND DRIVING

The effects of mobile phone on driving were usually analyzed under a multidisciplinary approach. Different scholars from different disciplines

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