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Analysis of the individual factors affecting mobile phone use while driving in France: Socio-demographic characteristics, car and phone use in professional and private contexts

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Abstract

In France, as in many other countries, phoning while driving is legally restricted because of its negative impact on driving performance which increases accident risk. Nevertheless, it is still a frequently observed practice and one which has not been analyzed in detail. This study attempts to identify the profiles of those who use mobile phones while at the wheel and determine the forms taken by this use. A representative sample of 1973 French people was interviewed by phone on their driving practices and mobile phone use in everyday life and their mobile phone use while driving. Logistics regressions have been conducted to highlight the explanatory factors of phoning while driving. Strong differences between males and females have been shown. For the male population, age is the main explanatory factor of phoning while driving, followed by phone use for work-related reasons and extensive mobile phone use in everyday life. For females, high mileage and intensive use of mobile phone are the only two explanatory factors. We defined the intensive phone use at the wheel group as drivers who receive or send at least five or more calls per day while driving. There is no socio-demographic variable related to this practice. Car and phone uses in everyday life are the only explanatory factors for this intensive mobile use of the phone at the wheel.

Keywords: Mobile phone; Cellular phone; Motor-vehicle driver; Car use; Phone use; Survey

1. Introduction

Since the 1990s, much research has been conducted in order to evaluate the impact of mobile phone use on driver behaviour in a variety of experimental contexts. This body of research has concluded that phone use while at the wheel has a negative impact on driving, whatever the type of phone used (hand-held or hands-free). It has shown an increase in drivers' response times (Alm and Nilsson, 1995; Bruyas et al., 2006; Consiglio et al., 2003; Hancock et al., 2003; Lamble et al., 1999; Patten et al., 2004) and an impairment of drivers' ability to deal with visual information and detect critical events (Mccarley et al., 2004; Richard et al., 2002; Strayer et al., 2003; Strayer and Johnston, 2001). Although several studies have shown that driving speeds are lower while phoning, it is not possible to conclude that drivers increase their safety margins sufficiently to compensate for their impaired performance (Alm and Nilsson, 1995; Haigney et al., 2000; Hancock et al., 2003; Liu and Lee, 2005; Tornros and Bolling, 2006). Epidemiological studies have also been conducted in order to evaluate whether phone use while driving increases accident risk. These showed that cellular phone activity while driving is associated with a fourfold increased likelihood of crashing (Mcevoy et al., 2005; Redelmeier and Tibshirani, 1997).

Identifying the profiles of individuals who use the mobile phone while driving and determining the forms taken by this use are recent topics for investigation for researchers. However, such investigations are essential for the public authorities to improve the targeting of driver awareness campaigns on the risk of in-car phone use. The patterns of mobile phone use while driving have mainly been studied by two approaches: roadside observations of traffic, and driver surveys. Roadside counting has provided estimates of the proportion of vehicles whose driver is telephoning (Eby and Vivoda, 2003; Eby et al., 2006; Glassbrenner, 2005a,b; Hill, 2005; Horberry et al., 2001; Mccartt et al., 2003; Townsend, 2006). The percentage of drivers who use the phone

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while at the wheel has thus been estimated as between 1% and 6%, depending on the year, the country and the law as it stands concerning phoning while driving. This percentage also varies according to the observation period, the type of road and the type of vehicle. To obtain representative data, it is therefore necessary to have a large number of counting locations and periods and to correct the data on the basis of the characteristics of the traffic (Eby and Vivoda, 2003; Mccartt et al., 2003). Furthermore, the roadside counting method has two main limits: it usually fails to take account of hands-free phones and the evaluation of the drivers' characteristics is not reliable (Taylor et al., 2003). Questionnaire-based surveys are the best method of identifying the groups of drivers which are most prone to using mobile phones while at the wheel. They provide data on the socio-demographic characteristics of drivers and can be used to elicit information about their general patterns of phone use while driving (Brusque and Alauzet, 2006; Gallup Organization, 2003; Lamble et al., 2002; Poysti et al., 2005; Sullman and Baas, 2004; Troglauer et al., 2006). The surveys that have been carried out in various countries have identified the profile of drivers who use the phone while driving, who tend to be young men (under 35 years of age). These surveys have also highlighted the variety of practices: use may be occasional, fairly frequent or intensive (Brusque and Alauzet, 2006; Lamble et al., 2002; Poysti et al., 2005).

Phoning while driving can also be analyzed in terms of the driver's profile and attitudes towards the activity. Individuals who regularly phone while driving are characterized by higher annual mileage and by vehicles that are more recent and more powerful than average (Sullman and Baas, 2004), highly risky driving behaviours (Poysti et al., 2005; Sartre 3 Consortium, 2004), lower than average perception of the risk involved in phoning while driving (Gallup Organization, 2003; White et al., 2004; Wogalter and Mayhorn, 2005) and more negative attitudes towards the legal restrictions on it (Lamble et al., 2002; White et al., 2004). It has emerged from this body of research that the tendency of drivers to have phone calls while driving is very probably affected by their characteristics and attitudes towards road safety. Until now, professional constraints have not been considered as potential explanatory factors of phone use while driving, except by Troglauer who has shown that occupational characteristics explain the frequency of phone use by truck drivers (Troglauer et al., 2006).

Mobile phones have become a consumer good which is widely used by the population as a whole. However, in the early 1990s, the first people to use mobile phones did so mainly for work-related reasons (Guillaume, 1994; Massot, 1997; Roos, 1994). Initially, mobile phones were used to facilitate exchanges in work situations which were characterized by a large number of players and temporally and spatially dispersed activities. While it is the mobile aspect of these phones which led to their adoption by professional users, it was, in contrast, their personal aspect which contributed to their adoption by the population as a whole (Heurtin, 1998; Licoppe, 2002). Mobile phones therefore appear to be inseparable now from individuals going about their day-to-day activities. It seems reasonable to suggest that individuals who travel a great deal and who need to be contacted anywhere at any time would be more inclined and constrained to use their mobile phone while driving. It may therefore be assumed that the tendency of individuals to phone while driving is explained not only by attitudes toward road safety but also by professional constraints. It is this hypothesis which has been tested in this research. More precisely, we have investigated the explanatory factors of mobile phone use while driving in France by including, in addition to the usual socio-demographic factors, car use and mobile phone use in everyday life in both the professional and private contexts.

2. Method

2.1. Data collection

The data were obtained from a questionnaire-based survey of a representative sample of the French population of more than 18 years of age. The survey was conducted by phone by the IPSOS polling company, from 16 June to 18 July 2003. The sample of telephone numbers was randomly extracted from the list of French fixed telephone numbers. These randomly selected individuals were then subjected to quota control to obtain a representative sample of the French population according to gender, age and area of residence and according to the occupation of the respondent's household head.

The questionnaire consisted of about 90 questions and was divided into two parts: the aim of the first part was to select people who were both drivers and mobile phone users and the second part of the questionnaire was dedicated to specific questions about selected people behaviours with cars and mobile phones. The first part contained

- A set of socio-demographic questions for managing the quotas and thus the representativeness of the sample and in order to describe the respondent.
- Two questions used to identify drivers and mobile phone users
  - o Q1. How often do you use a mobile phone? (Every day or almost every day / One or two times a week / Two or three times a month / Less often / Never)
  - o Q2. Do you ever drive, even rarely? (Yes/No)

The second part of the questionnaire contained

- A set of questions on the respondent's car use practices in both professional and private contexts.
- A set of questions on his or her practices with regard to mobile phone use in everyday life in both professional and private contexts.
- And a last set of questions on his or her practices with regard to mobile phone use while driving. Among them
  - o Q49. Do you often phone while driving? (Very often / Often / From time to time / Rarely / Never)
  - o Q53. On average, how many calls do you make or do you receive while driving? (More than 10 calls a day / From 5 to 10 calls a day / From 2 to 4 calls a day / Around 1 call a day / Less than 1 call a day)