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# DRIVERS' PERCEPTIONS ABOUT THE USE OF MOBILE PHONES AND SEAT BELTS WHILE DRIVING

AS PERCEPÇÕES DOS CONDUTORES SOBRE O USO DO CELULAR E DO CINTO DE SEGURANÇA DURANTE A CONDUÇÃO

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## ABSTRACT

The present survey study investigated drivers' perceptions regarding the risky behaviors related to the use of cellphone and seatbelt while driving. The research adopted a quantitative approach, involving a sample of 402 participants in the Eduardo Mondlane University Campus, among employees and students, using a dichotomous self-report questionnaire. The results showed that, on the one hand, 41.7% of the participants assumed to use the cellphone while driving and 90.7% considered that this behavior occurs with other drivers. On the other hand, 75.8% of the participants admitted not using seatbelt, while 53% stated that other drivers did not. The research concluded that the reported use of cellphone and seatbelt is a concern for the road safety and requires interventions aiming to prevent these risky behaviors among drivers. However, similar and systematic researches need to be carried out to deepen the different contexts and ways of using the cellphone and seatbelt among drivers. [1]

**Keywords:** Driving. Cellphone. Seatbelt.

[1] Non-funded research.


**RESUMO**

O presente estudo investigou as percepções dos condutores a respeito dos comportamentos de risco ligados ao uso do celular e do cinto de segurança durante a condução. A pesquisa adoptou uma abordagem quantitativa, envolvendo uma amostra de 402 participantes no Campus da Universidade Eduardo Mondlane, entre funcionários e estudantes, com recurso a um questionário dicotómico de auto-relato. Os resultados da pesquisa mostraram, por um lado, que 41,7% dos participantes assumiu usar o celular durante a condução e 90,7% considerou que este comportamento ocorre com outros condutores. Por outro lado, 75,8% dos participantes admitiu não usar o cinto de segurança, enquanto 53% referiu que outros condutores não o fazem. A pesquisa concluiu que o uso do telefone e do cinto de segurança constitui uma preocupação para a segurança rodoviária e necessita de intervenções voltadas a prevenção destes comportamentos de risco nos condutores. Contudo, mais pesquisas congéneres e sistemáticas precisam de ser levadas a cabo para aprofundar os diferentes contextos e formas de utilização do celular e do uso do cinto de segurança no seio dos condutores.

**Palavras-chave:** Condução. Telefone. Cinto de segurança.

## INTRODUCTION

Traffic accidents are a serious public health problem and one of the leading causes of death and injury worldwide. Every year, about 1.3 million people die and millions (20 to 50) are injured or disabled due to traffic accidents, especially in low- and middle-income countries (WHO, 2015).

Among the causes of traffic accidents, the WHO for Africa (2016) points five main causes, where seatbelt use play a significant role, among others, namely speed, drink driving, motorcyclist helmet use, and child restraints. That study concludes by highlighting that although 40 countries have laws regarding road safety, however, the level of consistency in implementing those laws and


regulations is critically low. For example, only 2, 3% were consistent in alcohol control; 13, 9% in helmet use control; 16% in speed; 20,9% in child restraints use, and 39,5% in seatbelt.

Although the WHOs' report does not include cell phone use among drivers as one of the important causes of road accidents, it seems fair to hypothesize that it constitutes one of the causes to be highly considered in today's road crashes in Africa, and particularly in Mozambique. In their report about National Survey on Distracted Driving Attitudes and Behaviors in US, Schroeder *et al.* (2018) showed that cell phone holding and use among drivers is a great concern, as drivers appear to use cell phones for several purposes, including, answering calls, making calls, texting, etc. Additionally, those researchers (SCHROEDER *et al.* op. cit) have found that the use of mobile phones amongst young and middle age drivers was critical.

Distracted driving is acknowledged as a great and growing threat to road safety (WHO, 2011). While it is difficult to quantify the role of distraction in road crashes, given the lack of systematic reporting, there is a growing body of data indicating that it is an important contributor to both fatal and injury crashes (YOUNG; SALMON, 2015).

In Australia, nearly two-thirds of serious crashes resulting in hospital admission involved driver inattention, including driver distraction (BEANLAND *et al.*, 2013). Figures from New Zealand indicate that distraction contributed to 10% of fatal crashes from 2004 to 2008 (MINISTRY OF TRANSPORT, 2010). In the United States, distraction was a factor in 16% of fatal crashes in 2008 (NHTSA, 2010), while a 100-car study found that distraction contributed to 23% of crashes and near crashes (KLAUER *et al.*, 2006). Moreover, these figures are expected to increase over the next decade, as the number and complexity of technologies brought into vehicles continues to rise.

Schroeder *et al.* (2015) analyzed the level of changes drivers might have had in 30 day concerning cell phone use while driving and found fewer changes in drivers who frequently used cell phones. This is understood by Stuckman-Johnson *et al. (*2015) as a result of multiple factors, such as risk perceptions and personality differences.


Alongside with refrain in cellphone use while driving, it is also known that seatbelt use can significantly reduce the risk of injury, as belts retain passengers in their seats in events of crash. Nevertheless, seatbelt use is still low (ALI *et al.*, 2011; MAHFOUD *et al.*, 2015; MATHUR; BANDHU, 2016). In this line, a study in Iran performed by Nadrian e Morowatisharifabad (2011) based on the Theory of Planned Behavior (TPB) and Health Behavior Model (HBM) indicated that there was a positive and statistically significant relationship between TPB variables (perceived behavioral control, subjective norms and attitudes) and the intention to use seatbelt. Among these variables, perceived behavioral control had the highest correlation with the intention. Furthermore, the HBM variables (perceived susceptibility and severity, perceived barriers and benefits, cues to action) had positive correlation with the intentions, but among them there was an inverse correlation between perceived barriers and intentions.

Mahfoud *et al.* (2015) conducted a study on seat belt and mobile phone use among 2011 drivers in Doha, Qatar, and found 72,7% using seat belt and 7,5% mobile phones. Surprisingly, the mobile phone use was significantly higher among drivers who did not wear seat belt (17,9%) than in those who wore it (3,5%). While in the baseline study conducted by Mathur and Bandhu (2016) in Rajasthan, India, showed results of higher rates of underuse of seatbelt, in some regions, ranging from 65,7% to 99,3% of drivers not using it. Thus, both studies show that not using a seat belt is a risky behavior and the statistics remain significantly high in several contexts.

In Mozambique we found no systematic research focusing on cell phone and seat belt use among drivers, but just government appeals and alerts on the impact of road crashes related to the issue. However, considering that failing to use seat belt and cell phone use during driving are part of distraction and reckless behavior, Machava (2011) mentioned reckless driving as one of the main causes of crashes in Mozambique.

Despite the fact that we did not find systematic research on the impact of cell phone use and seatbelt non-use in road traffic accidents in Mozambique studies, which are overdue, it is a fact that those behaviors are reckless and, therefore, a significant matter of concern, calling for appropriate


actions in order to positively change those behaviors amongst drivers. Paving way in that direction, we conducted a baseline study on cellphone and seatbelt use perceptions among drivers in Maputo, which is now reported in this paper. The city of Maputo the context in which the study was run, was chosen taking into consideration relevant variables such as population density.

## METHOD

This was a survey, and adopted quantitative approach. The research was carried out at the main Campus of the Eduardo Mondlane University (UEM) in Maputo, the capital city of Mozambique. The UEM campus is a multicultural and multiethnic place, where people from all 11 provinces of the country can be found. A considerable number of workers (including teaching and administrative staff) and students commute to the campus using their private vehicles, as it can be inferred from the number of vehicles (5000) registered by the *Direcção de Administração do Campus Universitário* (DACU), an administrative department responsible for the management and control of vehicles entering the campus. This number comprises cars driven by campus workers (teachers and staff) and students of both day and night shifts. In terms of organization, UEM teaching and non-teaching organs comprise currently around 4000 workers, among teachers and other staff whereas the total student population is of more than 40.000, with the main campus holding more than 50% of that population.

Data collection took place in the second semester of 2018 in the elected clusters. To begin with, the number of cars entering into the campus on a regular basis was requested from DACU, and a sample of 500 drivers was defined.

Participating organs were among those located on the main campus, whereof nine were randomly sorted-out. Letters signed by the head of the Faculty of Education were sent to the heads of the elected organs requesting permission for data collection.


The main data collection instrument was a questionnaire with dichotomic yes or no responses, adapted from the Driver Behavior Questionnaire (DBQ). The questionnaire had two parts apart from that covering demographic information of the participants. One was aimed at collecting participants' perspective about other drivers' behavior, and the other part aimed to evaluate the participant's own driving. The study sample consisted of 402 participants, 246 (61.2%) male and 153 (38.1%) female. Gender indication was not found in the questionnaires of three (0.7%) participants.

Data analyses were based on SPSS 16. Descriptive statistics, correlations, analysis of variance (ANOVA) were performed to describe (a) the sample, (b) the participant' perceptions of their own and other drivers' behavior, (c) the interaction between demographic variables and the categories of behaviors under analysis.

## RESULTS

### *Descriptive statistic of the sample*

Table 1 summarize the sample demographic profile, regarding gender, occupation, marital status, age, education, driving license tenure, driving experience, and alcohol use.

**Table 1** - Demographic situation of the participants

| Variable | Categories | Percentage |
|---|---|---|
| Gender | Male | 61.2% (246) |
| | Female | 38.1% (153) |
| | Non identified | 0.7% (3) |
| Marital status | Single | 77.1% (310) |
| | Married | 19.9% (80) |
| | Widowers | 1.7% (7) |
| | Divorced | 0.8% (3) |
| Occupation | Student | 37.1% (149) |
| | Student-worker | 10.4% (42) |
| | Worker | 37.8% (152) |


| | | |
|---|---|---|
| | Teacher/Researcher | 9.2% (37) |
| Age groups | 18-25 | 33.3% (129) |
| | 26-32 | 29.7% (115) |
| | 33-40 | 20.7% (80) |
| | 41-48 | 10.1 % (39) |
| | 49 – on | 6.2% (24) |
| Education | Higher education | 80% (321) |
| | Secondary school | 13,9% (56) |
| | Primary school | 0,1% (1) |
| | Other | 5,7% (23) |
| Driver license | Yes | 91,4% (362) |
| tenure* | No | 8,6% (34) |
| Driving | 1-5 years | 55,7% (216) |
| experience | 6-10 years | 25,5% (99) |
| | 11-15 years | 10,3% (40) |
| | 15 years - on | 8,5% (33) |
| Alcohol use | Yes | 46% (182) |
| | No | 54%t (214) |

Source: research data (2018)

***Results***

The survey captured the participant's perception on cellphone and seatbelt use while driving. It also sought to elicit the acknowledgement of one's and others' driving risky behavior. For the present study, cellphone use while driving comprehends **making or answering calls (B1),** and **write or reply to SMS or engage on social networks (B2)**.

Considering B1 variable, 41,7% of the 402 participants admitted making and answering cellphone calls while driving, and 90,7% considered it a common behavior of other drivers. For B2 variable, only 28% admitted writing and replying to SMS or engaging on social networks while driving, in contrast to 82,1% who have considered others as doing so while driving.

B1 and B2 have significant correlation between both (r=0,582; p=.000), meaning that those who make and answer calls while driving have higher probability to write and reply SMS or engage on social networks while driving. However, both behaviors have weak association with age, B1(r=0, 199;


P<0,01) and B2 (r = 0,216; p=.000), but showing a slight frequency increase with age. Homogeneity between B1 and B2 with marital state could not be found.

The Analysis of variance (ANOVA) shows that B1 tends to be homogeneous throughout the age groups, but there is significant difference between 18-25 age group and 41-48 (Tukey HSD = 0,002; p<0,05), where the last one tends to present higher scores.

Table 2, Tukey HSD test, it is notorious that B1 behavior increases with age up to 48 years and declines from 49 upwards.

**Table 2** - Influence of demographic variables on B1 and B2

| **Behavior (B)** | **Demographic variable (DV)** | **Beta Coefficient** | **P-Value** | **Correlation B- DV** |
|---|---|---|---|---|
| B1 - | Age | 0,294 | 0,000 | 0,199 (p=000) |
| | Education | 0,061 | 0,238 | 0,037 (p=0,243) |
| | Gender | 0,17 | 0,747 | 0,036 (p=0,247) |
| | Driving experience | -0,109 | 0,106 | 0,032 (p=0,247) |
| | Alcohol consumption | 0,126 | 0,020 | 0,116 (0,013) |
| B2 - | Age | 0,267 | 0000 | 0,211 (p=000) |
| | Education | 0,064 | 0,214 | 0,038 (p=0,238) |
| | Gender | 0,006 | 0,909 | 0,023 (p=0,334) |
| | Driving experience | -0,049 | 0,468 | 0,072 (p=0,082) |
| | Alcohol consumption | 0,143 | 0,008 | 0,120 (p=0,011) |

Source: research data (2018)

Table 3 presents the results of regression analysis using demographic variables and it shows that age and alcohol have significant weigh on both behaviors, meaning that alcohol and age have influence on making and answering calls as well as on writing , replying to SMS, and engage on social networks.

Concerning seatbelt use, the results indicate that 75,8% of the respondents admitted not using seatbelt themselves, neither requiring their passengers to do it, while only 24,2% confirmed complying with that requirement. Contrarily, 47% considered that other drivers are using and obliging their passengers to wear seatbelt, and 53% thought others are not acting accordingly.


The ANOVA for seatbelt use shows no difference among age groups, *F Test*=1,578 (p= 0,179). There is neither a significant association between seatbelt use with demographic variables.

The regression analysis showed no connectivity between demographic variables and seatbelt use behavior at any point, which means that the demographic variables cannot explain the behavior under analysis, as shown in Table 3.

**Table 3 -** Correlation among some demographic data and seatbelt use

| **Behavior** | **Demographic variable (DV)** | **Beta Coefficient** | **P-Value** | **Correlation B3-DV** |
|---|---|---|---|---|
| B3 - | Age | -0,074 | 0,269 | -0,083 (p=0,056) |
| | Education | 0,022 | 0,682 | 0,027 (p=0,305) |
| | Gender | -0,054 | 0,312 | -0,37 (p=0,239) |
| | Driving experience | -0,004 | 0,952 | -0,061 (p=0,125) |
| | Alcohol consumption | 0,059 | 0,284 | 0,059 (p=0,130) |

Source: research data (2018)

## DISCUSSION

This study investigated drivers' self-perception on cellphone and seatbelt use while driving.

It is a logical and common assumption that the knowledge acquired during driving school attendance would influence one's behavior when actually driving. Therefore, the level of knowledge of risky behaviors that drivers are supposed to have acquired *a priori* should prompt them to drive safely (i.e. display a consistent behavior of not using cellphone and use seatbelt while driving). However, data shows that this is not the case, as between 80 to 90% of the informants report to have witnessed other drivers making phone calls or texting while driving. However, the questionnaire was unable to grasp the factors that impel them to display such risky behaviors.

The discrepancy between self-reported driver's behavior and the perceptions of other's behavior may reveal that the majority of drivers are not aware of the gravity of their own behavior, or tend to


underrate it, thus not finding it necessary to report that they proceed riskily while driving, even doing it just now and then. It can also be assumed that the driver's perceptions of risk emanate from the frequency the risky behavior is displayed.

When B1 and B2 are compared to B3, it becomes easy to conclude that there is lower level of self-acknowledgement of cellphone use while driving than seatbelt underuse, although both risky behaviors are significantly present in the participants.

Driving risky behavior, a leading cause of car accidents, results from a confluence of several factors such as psychological traits of the driver, road surveillance, road conditions, vehicle conditions, level of law enforcement, social norms, among others (JAFARPOUR; RAHIMI-MOVAGHAR, 2014). In order to mitigate the effects of the described driving risky behaviors, efforts must be strategically coordinated.

The readiness to change a behavior in many psychological approaches such as the Transtheoretical Model (PROCHASKA; VELICER, 1997), the Theory of Reasoned Action of Fishbein and Ajzen (1980 apud Rodrigues *et al*., 2007), the Theory of Planned Behavior of Ajzen (1966 apud MORRIS *et al.*, 2012), presuppose the existence of consciousness about a specific behavior and the capacity to rate it if it is functional and conforms the norms, or it is deleterious, in order to proceed with change. Thus, this study sought to map such consciousness, inferred from the capacity of the participants to state their judgment on others' behaviors compared to their own.

Cellphone use in either way, texting or calling while driving, shows a minimization of the participant's own risky behavior and the overrating of that of others', which is not particularly true. In Mozambique, as in many other African countries, the cellphone use remains a stumbling block for the accident causation (MANUEL, 2005; MACHAVA, 2011). Thus, it is possible to infer that there is less readiness to change these risky behaviors, given that most of the drivers do not acknowledge the extension of the dangerousness their behavior might represent.

Both behaviors, cellphone use and seatbelt self-reported behavior, might differ in frequency due to the extension of danger, given that cellphone use, being a distractive behavior, may highly lead to an


accident, differently from seatbelt underuse, which does not mean putting others in danger. In this situation, drivers would be more tempted to deny that they engage in potentially dangerous behavior, and that they are involved in the accident causation.

Surprisingly, the level of acknowledgement of one's behavior related to seatbelt use seems more realistic, since participants highly recognized the underuse of this safety tool, although they overrated the other's pattern of use. This may mean that drivers do not think about the importance of seatbelt before being involved in an accident. Furthermore, seatbelt underuse is less controlled or punished in Mozambique, as quite often, police agents overlook the use of seatbelts.

The results of the present study are somehow concurrent with the finding from that of Mathur and Bandhu (2016) in India. These researchers found that seatbelt remains underused by drivers, especially in rural areas and highways, but even in urban areas, where the underuse was of 65,7%.

It remains unclear what hinders drivers to use de seatbelt, assuming that they are very aware of their behavior. Thus, the possible explanatory hypothesis could lay on psychological traits, social norms, low surveillance of the police, and other weaknesses in the law reinforcement as possible factors influencing the behavior. Thus, it would be important to carry out studies based on some theoretical models, such as TPB and HBM (ALI *et al*., 2011) to better explain the factor behind the behavior of not using seatbelts.

The previous statement about the weakness in the laws reinforcement leads us to the **broken window theory**, which states that if there are, in a society, signs of deterioration and nothing is being done, then the disorders may rise (WILSON; KELLING, 1982). Seemingly, the broken window theory may even be sufficiently explanatory for the situation in Mozambique, since the use of vehicle security device has not received the necessary attention from the police (MACHAVA, 2011), and drivers covertly understand that their underuse is not a problem.

It is notorious that for the three kinds of behaviors here discussed there is no association with demographic variables, except for age, which showed weak positive correlation with cellphone use while driving. For this behavior the peak is reached in the 41-48 age group, which is outstanding


compared to younger group, 18-25. This finding is contrary to several research findings by some author, such as Mcevoy *et al.* (2006), which indicated that men, younger drivers and metropolitan residents were more likely to use a phone while driving and to report a higher frequency of use. In another study, Mahfoud *et al.* (2015) found that in high-income locations lower rates of mobile phone use tend to be reported. Which may suggest that in the present study younger drivers might have underrated the self-reported cellphone use behavior.

But if the previous statement is true, the explanation may lay in the fact that adult drivers have more responsibilities related to several spheres such as work, family, church, etc., which may demand them to use mobile phone many times and circumstances, including while driving, which is concurrent with Musicant *et al.* (2015) findings that around 25% drivers reported using cellphone for work. Anyway, systematic and contextual research with large samples remains to be undertaken to measure the prevalence of cellphone use among young and adult drivers, as well as the underlying factors.

The research suggests that other factor than demographic variables might be the leading cause of the behaviors herein studied, such as surveillance, quality of the roads, quality of vehicle, weak law enforcement and corruption. These ideas also enlighten the need for further studies analyzing the risky behaviors association with these variables in Mozambican context.

Furthermore, psychological traits may explain the risky behaviors studied herein, as some authors did, Musicant *et al.* (2015) stated that perceived need and safety influence the frequency of cellphone use; Gauld *et al.* (2017) found that for initiating smartphone use while driving the attitudes, subjective norms and perceived behavior control played important role; and Engelberg *et al.* (2015) demonstrated that work obligations and overconfidence in one's ability to talking/texting while driving influenced the cellphone use.


## CONCLUSION

This study aimed to investigate the magnitude of cellphone and seatbelt use while driving in a sample of drivers in Maputo. It adopted a self-reported approach, which sought to grasp the drivers' perceived own behavior and on others related to the issue.

As revealed in previous studies, cell phone use is a problem worldwide. The results of this study are concurrent with these indications. Overall, our results show that the occurrence of these behavior is high in the population, however when it comes to self, people tend to undermine their behavior (41,7%) and escalate the others' (90,7%), but this continues to be a concerning use in the population, as these behavior is dangerous.

Cell phone use also entails texting, which is considered more dangerous as it demands cognitive, visual and motor activity, increasing the driver's inattention. In this study, this behavior is very concerning since 28% of drivers admitted to use cell phone this way while 82,1% drivers considered these behaviors as common on others. Given the dangerousness of this behavior, 28% is big enough and reveals that people rely on this reckless behavior while driving which mean that are potential to get involved in accidents. Furthermore, the rates of accidents in Mozambique are high, which is concurrent with having many drivers performing distracted driving.

We also concluded that adults are more prone to use cellphone while driving than young, which may be due to several factors such as less driving frequency among young, young drivers not owning cars, adults having demanding routines and preoccupations, and perceived mastery among adults due to driving experience.

Seatbelt is a protection device, once it contributes to minimize injuries in cases of accidents. Nevertheless, its underuse is also a great concern worldwide, mainly in low-income countries, where findings suggest that it remains underused. In this study results were concurrent with these findings given that drivers reported lower levels of use (24,2%), but surprisingly they were more prone to consider that other drivers used this device (47%).


Not wearing seatbelt means that drivers are permanently in potential danger in case of accidents, thus only 24,2% drivers using seatbelt represents a great concern in road safety.

Although seatbelt non-use and cell phone use while driving is irregular and sanctioned by law, police tend to overlook these behaviors which may lead drivers to derogate the extension of danger, associated with the bribes in case of police surveillance. This fact could be explained by the broken window theory. Thus, it is fair to conclude that a strong law reinforcement is necessary to instigate behavior change amongst drivers.

Overall, the magnitude of the behaviors herein discussed is concerning and calls for changes among drivers. Although it was not our intention to study the underlying motivations for these behavior, further studies should be carried out aiming to explore the influence of other variables such as psychological traits and contextual factors, given that cell phone use and seatbelt non-use showed no association with demographic variables.

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