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ScienceDirect

Procedia - Social and Behavioral Sciences 127 (2014) 581 – 585

Procedia
Social and Behavioral Sciences

PSIWORLD 2013

Contextual determinants of speeding: time pressure and police control in urban and non-urban areas

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Abstract

This study examines how speeding behavior varies depending on the visibility of the traffic police, the presence of time pressure, and the location of driving (inside and outside cities). 620 drivers analyzed 8 different photo-based scenarios and reported the intended speed for each situation. The results showed that drivers over speed mostly in urban areas, when under time pressure and when there is no visible police control. Moreover, when under time pressure they will exceed the speed limit regardless of the location and police presence. We discuss some hints for improving the intervention methods of the traffic police.

Selection and peer-review under responsibility of Romanian Society of Applied Experimental Psychology.

Keywords: speeding behavior; time pressure; police control.

1. Introduction: Time pressure and police visibility as external motives of speed choice

Speeding is one important cause of severe traffic accidents (World Health Organization, 2013). Outside cities, on national roads and highways the road crashes are severe due to the high speed on impact. In urban and rural areas the consequences of speeding are also severe because drivers interact with vulnerable road users (Swedish National

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Selection and peer-review under responsibility of Romanian Society of Applied Experimental Psychology.
doi:10.1016/j.sbspro.2014.03.314

Road Administration, 1999) such as pedestrians, cyclists, carriages, etc. In Romania, the latter situation is particularly important because most national and European express roads cut through inhabited areas such as cities or villages. Drivers that do not obey to the speed limits believe to a greater extent that the results of their actions will be positive, because this will make driving more enjoyable and will help them reach their destination faster. Most individuals do not use to think about the negative results of the infringement of the speed limits, such as road accidents or injuries, because the perceived benefits are stronger (Parker, Manstead, Stradling, & Reason, 1992).

Time pressure has been theorized as a key motive in speed choice (McKenna, 2004). If a driver is pressed by time to reach the destination, he/she will be motivated to drive faster, which in many cases leads automatically to the violation of the speed limits. McKenna (2004) reports, for example, that 33% of drivers who were penalized for having exceeded the speed limit justified their behavior by saying they were hurrying to reach the destination (McKenna, 2004). Even the fact that they are late for an important meeting is a good reason for speeding (Campbell & Stradling, 2003).

Another key factor which acts as an external motive in speed choice refers to the visibility of a police squad in the immediate proximity of the driver (Pérez, Lucas, Dasi, & Quiamzade, 1998, 2002). When there is a police control or some visible police officers in action, the drivers have the tendency to massively obey the traffic laws, but if the police patrol is absent it is more likely that the traffic rules are violated. In fact, traffic monitoring lowers the rate of non-compliance to the rules (Wallen-Warner & Åberg, 2005) and would be one of the most effective techniques to achieve conformism in traffic (Summala, 1985).

To sum up, time pressure to reach the destination and the visibility of police patrols can be regarded as two contradictory external motives which influence the compliance with speed limits. Although there is consistent scientific literature which reveals the importance of these two motives for speed regulation, there are very few studies which look at the interaction between them and virtually no study which analyses them according to the driving location (e.g., inside vs. outside inhabited areas).

2. Aims and hypotheses

Therefore the aim of the current paper is to examine how speeding behavior varies in several contexts defined by three factors which interact in real road traffic: traffic police (present, absent), time pressure (present, absent), and the type of road corresponding to the location of driving (urban road, road outside the city). In line with the existing literature, we expect the drivers to speed more when they are under time pressure and (2) when there is not a visible police squad in action. We also proposed that drivers may over speed more according to the location, for example, either outside urban areas or within cities.

3. Method

Data was collected from 620 participants (322 men and 298 women) with ages ranging from 18 to 70 (M = 34.44; SD = 13.89), and with driving experience ranging from 5000 to 1.900.000 km (M = 137634.03; SD = 223368.23). The participants were asked to fill in a questionnaire consisting of 8 scenarios (Cronbach's Alpha = .83) which resulted from the interaction of the three factors mentioned above: police (present / absent), time pressure (present / absent) and location (urban / non-urban areas). Each scenario consisted of a photo shot from the driver's perspective and a short descriptive text which clearly mentioned the imposed speed limit. Half of the driving situations occurred inside inhabited areas and the other half on roads outside cities. In addition, in half of the scenarios the participants could clearly see a police prowl car. Lastly, in half of the situations the text explicitly mentioned that the driver was in a hurry and needed to reach the destination as soon as possible. For each scenario we checked (1) the drivers' familiarity with the presented situation on a 5-point Likert scale, in order to be sure that the situations presented are not unknown to the drivers and (2) the extent to which drivers violate the speed limit in that situation by asking them to report the speed they would use in that particular context.

4. Results

A 2 (police) x 2 (time pressure) x 2 (location) Repeated Measures ANOVA was performed to obtain a main effect for each independent measure, as well as four interaction effects between the independent factors (see Table 1). In order to analyze the main effects and the interaction effects for over speeding, we have computed the difference between the allowed speed limit for each scenario and the speed reported by the participants. Therefore the negative values represent the over speeding cases.

4.1. Main effects

There are significant differences between the two conditions concerning the visibility of the police: present versus absent [F (1, 619) = 1212.55; p = .001; η^2 = 0.662]. Drivers rather violate speed restrictions when the police is absent (M = -6.95) than when there is a police squad in action (M = 1.63). There are also significant differences between the two time pressure conditions [F (1,619) = 785.77; p = .001; η^2 = 0.559]. Drivers will rather violate speed limits when they are in a hurry (M = -5.51) than when they are not pressed to reach their destination (M = .18). There are also significant differences between the two conditions referring to the location: urban versus non-urban areas [F (1,619) = 381.04; p = .001; η^2 = 0.381]. Drivers rather violate speed limits when driving on the roads inside cities (M = -5.04) than outside inhabited areas (M = -0.27). Overall, these results suggest that drivers over speed mostly in urban areas, when under time pressure and when there is no visible police control.

4.2. Interaction effects between police and location

Paired samples t tests were performed within each specific condition to analyze the interaction effects. When drivers are pressed by time to reach the destination and the police patrol is present there is a significant difference depending on the driving location [t (619) = -8.61; p = .001]. When driving within urban areas, there is a higher violation of the speed limit (M = -1.79) than when the driving is performed outside cities (M = 1.22). Also, when drivers are in a hurry and the police squad is absent there is an opposite difference [t (619) = 19.23; p = .001] between the driving locations: drivers speed more in non-urban areas (M = -10.35) than in urban ones (M = -1.46). When the police officers are absent and the drivers are not in a hurry to reach their destination there is a significant difference depending on the location [t (619) = 26.98; p = .001]: the drivers over speed more when driving in urban areas (M= -3.50) compared to non-urban areas (M= 11.92). Overall, these results suggest that the presence of police patrols on the roads outside cities and villages may be more effective than the preventative actions conducted inside inhabited areas.

Table 1. ANOVA Repeated measures.

	Sum of Squares	**df**	**M Square**	**F**	**p**	**η^2**
Police*location	553.86	1	553.86	6.99	.008	0.011
Police*pressure	10373.05	619	10373.05	138.42	.001	0.183
Location*pressure	44379.46	619	44379.46	548.39	.001	0.470
Police*location*pressure	15280.78	619	15280.78	185.68	.001	0.231
Police	182664.78	619	182664.71	1212.55	.001	0.662
Location	56268.93	619	56268.93	381.04	.001	0.381
Pressure	80541.00	619	80541.00	785.77	.001	0.559
Total	**390061.89**	**620**				

4.3. Interaction effects between police and time pressure

When the police control is visible and the drivers are in urban areas there is no significant difference according to the time pressure [t (619) = 11.30; p = .676], suggesting that drivers comply with the speed limits in both cases. However, when there is no visible police control in urban areas, the drivers speed more in the situations when they are under time pressure (M = -10.35) than when they are not in a hurry (M = -3.50) [t (619) = 11.30; p = .001]. Another result shows that when a police squad is present and the people are driving outside cities they violate the speed limit more when under time pressure (M = 1.22), than when they are not in a hurry (M = 11.89) [t (619) = 18.84; p = .001]. Also, when driving in non-urban areas with no visible police squad drivers speed more when they are under time pressure (M = -1.46), than when they are not in a hurry (M = 11.92) [t (619) = -23.18; p = .001]. Globally, these results are consistent with the previous ones, suggesting that time pressure leads to a higher non-compliance with the speed limits especially when the police patrols are not visible on the roads outside cities and villages.

4.4. Interaction effects between location and time pressure

There is a significant difference between speeding in urban and non-urban areas according to time pressure [t (619) = 18.84; p = .001] when the police crew is visible. The results show that drivers tend to over speed more when they drive in non-urban areas, the police patrol is present and they are in a hurry (M = 1.22), than when they are not in a hurry to reach their destination (M = -11.89). When the police patrol is absent, there is also a significant difference between speeding in urban and non-urban areas according to time pressure [t (619) = -16.88; p=.001]. Drivers tend to over speed more when they are driving in urban areas where there is no police patrol and they are pressed by time (M = -10.35), than when they are not in a hurry (M = -3.50). In conclusion, drivers over speed more when they are in a hurry, regardless of the presence of a police squad or the type of location.

5. Discussion

It is known that visible surveillance of the traffic decreases the infringement rate (Wallen-Warner & Åberg, 2005) and is one of the most effective techniques to make the drivers obey the traffic laws. Some studies have shown for example that road traffic surveillance led to 90% increase in conformism (Gains et al., 2005; Schwab, 2006). Another motive for which the drivers obey the rules is the fear of being punished (Fernández-Dols, 1993). Therefore, police controls continue to play an important role in the prevention practice. The results of the current study support this idea. The drivers exceed the speed limit mostly when they are under time pressure to reach their destination, when they are driving in the urban areas, but also when there is no visible police prowl car. One key factor which makes the driver comply or violate the rules is the perceived risk of being detected and sanctioned by the police. Therefore, if there is not a police squad to supervise the traffic, the drivers think that they cannot be caught breaking the law and they will over speed.

On the other hand, one can argue that punishing individuals who violate traffic rules is not the most effective way to promote traffic safety. Sometimes financial sanctions do not work, because they can be easily overlooked when drivers are courteous with the police officers, thus avoiding a fine, penalty points and a possible temporary suspension of the driving license as long as the violation committed does not involve accidents, injuries or casualties.

The results of the current study provide support for the fact that time pressure is a key factor for speed choice. This external motive not only makes the drivers violate the speed limits more often, but interacts with the location type and the chances of being detected by the police. When drivers are under time pressure they will exceed the speed limit no matter what type of road they are driving on and whether or not the police car is visible. Moreover, speed variability within urban areas is lower than in non-urban areas and when drivers are in a hurry they will not respect the speed limits. When entering an urban area, drivers will try to move at a relatively high speed in order not to lose too much time. These results are consistent with the ones obtained by Näätanen and Summala (1976), Guppy & Guppy (1995), and McKenna (2004).

These findings are important for the prevention of over speeding in Romanian traffic situations and provide some hints for improving the intervention methods of the traffic police. First, as shown in some previous studies, obedience to traffic norms depends on the individual perception of the adequacy of the rule to the road context. In other words, if the driver does not perceive any risk in a given road context, he will see the rule as inadequate for traffic safety and will be more likely to violate it (Havârneanu & Goliță, 2010). Adding time pressure to this equation increases these chances even more. Second, the traffic police department is over-focused on the detection of speed violators, often ignoring the contextual details mentioned above. Police crews are usually hiding and trying to detect the drivers who speed when entering inhabited areas (i.e., cities or villages). These are sudden speed shifting locations where drivers arrive usually at speeds higher than 50km/h because they have been rolling much faster on the national roads. The role of the police is to prevent the violation of road rules and not only to sanction the drivers who do not comply. According to the results of the current study, in order to limit the deviant behavior in traffic, the traffic police should make efforts to stay as visible as possible and not remain hidden in the attempt to detect the over speeders. In other words, police patrols would probably be more effective than hidden radars, especially outside inhabited areas. One possible solution could be to use visible police cars that should continuously move and regulate the traffic flow.

As limitations of the current study we can mention the unrepresentative sample used, compared to the entire population of Romanian drivers, and the self-reported technique which is a subjective method that may have led to socially desirable answers. As for the strong points, this study reveals more deeply a few factors that influence speed conformism while driving. Further studies should analyze other external motives of speeding as well as the way in which visibility of police influences the compliance with additional traffic rules.

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