

PSIWORLD 2011

The perceived causes of severe traffic accidents: a psycho-social approach

Grigore M. Havârneanu *

Alexandru Ioan Cuza University, 3, Toma Cozma Street, Iași, 700554, Romania

Abstract

We examined the lay people's social representation of 23 possible causes of severe traffic accidents. 160 Romanian students filled in a questionnaire which assessed the relevance of each cause for a fatal accident. We used factor analysis to develop a pattern of consensual causes that are involved. The results suggest four central causes which reflect an absolute consensus among participants. People focus on general explanations provided by mass-media and less on specific traffic violations. The social representation of the accident is limited in terms of causation scenarios and is influenced by the way the mass-media decides to present the news.

© 2012 Published by Elsevier B.V. Selection and/or peer-review under responsibility of PSIWORLD2011

Keywords: social representation; social thinking; fatal accident.

1. Introduction

Road accidents are one of the main causes of human suffering, injury, death and economic losses in the modern societies. Every 30 seconds someone in the world dies in a traffic accident and every second someone is being injured (World Health Organization, 2009). In 2009, Romania registered 130 fatalities per million inhabitants, being the first country in the EU. In 2010, only in the first 10 months, there have been more than 7000 severe crashes, leading to over 1700 deaths and 6400 injuries (European Commission, 2010). In other words, Romania's average fatality rate is 1/3 meaning that one out of three accidents that occur is fatal, while the EU mean ratio is 1/40 (CNADNR, 2010).

According to the Social Representations Theory (SRT – Moscovici, 2008) human thought is relational at root (Joffe, 2003). Explanations and judgments are not constructed within individual minds but in the 'unceasing babble', the 'permanent dialogue' that people have with each other (Moscovici, 1984) and

* Corresponding author. Tel.: +4-074-214-3497; fax: +4-023-220-1293.
E-mail address: grighav@yahoo.com.

with institutions. A social representation (SR) guides behavior because it reconstitutes the elements of the environment where the behavior is to take place (Moscovici, 2008).

Regarded within a structural framework, a SR is a socio-cognitive system that processes an aspect of the world (i.e., a social object, such as risk). As a system, the representation is an organized set of opinions, attitudes, beliefs and information referring to an object or a situation (Abric, 1989). Any social representation is organized around a central core (or nucleus) which structures the content. The central core provides the representation with its significant properties (meaning, normative/evaluative and prescriptive functions, etc.). The structural approach allows a series of analyses within a representation as well as formal comparisons between representations. SRT-driven studies focus on commonalities across groups of persons in particular, how they make sense of particular risk issues, and how their meaning structures evolve. The meaning making process is linked to the social interaction and communication processes, including media communication.

Media refers to any type of distance communication technologies such as radio, television, print journalism, and the internet. The audio-visual and print media are likely to feature as sources of information, opinion-making, and general knowledge (MacDonald, 2003). However, news media do not merely present a reliable image of reality. Instead, they simplify or sensationalize it, and set up debates concerning responsibility and blame, in the hope of attracting mass audiences, often feeding the imagery of numerous risks, including traffic accidents. In short, the meanings of a social object such as the traffic accident are being transmitted both by the media using linguistic, iconic and metaphorical features, and through shared communication between lay people.

2. Aims and hypotheses

Previous studies (e.g., Havârneanu, 2010^b; Holman, Havârneanu, & Țepordei, 2010) have shown that people evoke different types of causes for a traffic accident: general causes mentioned in news reports (e.g. inattention, rebellious driving), the violation of specific traffic rules (e.g. over-speeding, drunk driving), but also causes which are not related to the driver (bad luck, the poor infrastructure). In addition, we have already found that accident consequences are more salient than the causes (Havârneanu, 2010^b). Therefore, this study is focused on understanding the representation of accident causation. We seek to compare the perceived causes of fatal accidents and to check the centrality of these causes in the social representation structure. We expect that fatal consequences will be mostly attributed to general or ambiguous causes often mentioned by the media (e.g. inattention, careless driving etc.). Secondly, we start from the assumption that not all traffic violations are acknowledged as causes for fatal crashes, and intend to find out which violations are perceived as such. We differentiate between three categories of violations depending on their effect on safety: (a) violations which affect everybody's safety (e.g., illegal overtaking), (b) violations which affect only personal safety (e.g., not wearing the seatbelt), and (c) violations which may affect both, depending on the context (e.g. over-speeding). We assume that the first category is most salient in the social thinking.

3. Method

3.1. Participants

160 Romanian students (119 females and 41 males) participated in this study. Their age ranged from 19 to 52 ($M=22.27$; $SD=5.44$). 113 (70.6%) had a driving license and 47 (29.4%) did not. The drivers' total mileage ranged from 100 km to 800.000 km ($M=32.906$ km; $SD=95.867$). Spearman's

nonparametric correlation showed a correct association between age and total mileage (0.52; $p < .01$), with younger drivers being less experienced than older ones.

3.2. Procedure

Participants were given a questionnaire measuring the perceived causes of fatal traffic accidents. The instructions were the following: 'In the table below there are randomly listed 23 causes which are more or less relevant for a fatal traffic accident. We would like you to evaluate how likely it is that each cause would lead to such an event. For example, how likely is it that *speeding* would cause a *fatal accident*? Make this evaluation using a scale from 1 to 9 (with 1 being 'very unlikely' and 9 being 'very likely'). For each cause choose one single answer.'

The list comprised 23 causes grouped in more categories. Four violations referred to everybody's safety and three violations concerned only personal safety for different type of road users. Five violations could affect both one's and other's safety depending on the traffic context (drunk driving, violating a 110 km/h speed limit, violating a 50 km/h speed limit, phone use without a *hands-free* device, no first aid kit and fire extinguisher, and the lack of mandatory documents). All these traffic norms were presented as violations. In addition to the 'normative' causes, there were also 7 general causes frequently evoked by mass-media and authorities (inattention, fatigue, rebellious acts, aggression, the current road infrastructure, lack of experience, and imprudent acts). Finally, the list included two external attributions regarding uncontrollable factors (bad luck, and God's will). The last item referred to the inefficient police actions as a cause for severe accidents (i.e., police fines are too small / police actions are too soft). There were no reversed items. Thus, high ratings reflect a higher probability of the cause to be fatal. After filling in the questionnaire, participants reported their age, gender, and mileage.

4. Results

In order to reveal the consensual picture of the possible fatal causes, we conducted the data analysis on the whole group. We examined the direct causal link between each of the proposed causes and the outcome in order to differentiate between the relevant and irrelevant perceived causes. In this approach, a cause is considered relevant only if it is endorsed by more than 50% of the participants, which fulfils the requirement from social representations to be consensual. To do this, we need to choose an item average criterion, which sets the level at which a participant can be considered as endorsing the causes. According to Rafiq, Jobanupra, & Muncer (2006), 3 or 4 can be used as criterions on 5-point scales. On this basis, on the current 9-point Likert scale we have set the criterion at 6. Thus a participant is considered to endorse the cause if their item average is above 6. We sorted all the causes according to their perceived importance. The causes can be regarded as relevant up to the point where less than 50% of the participants endorse them at the level of 6. The consensus of responses has further been analyzed according to several descriptive statistics: the mean, mode, and the minimum values.

For the first four causes in the ordered list (*drunk driving*, *rebellious acts*, *inattention*, and *fatigue*) the endorsement rate was above 85% and the means ranged between 7.74 and 8.57. The mode value was 9 showing that most respondents perceived them as deadly; the minimum scale response was 3 indicating that nobody perceived them as totally safe. Thus, these four causes were accepted as absolutely consensual for the whole social group. The next four causes (*illegal overtaking*, *violating a 110 km/h speed limit*, *imprudent acts*, and *illegal road crossing*) were retained as highly consensual (endorsement rate > 70.4%, mean > 6.97, modes 9 or 8). While breaking the 110km/h speed limit is perceived as potential deadly behavior (mode 9; $M=7.32$; $SD=1.78$; 76.9% endorsement), exceeding the 50km/h speed limit does not seem deadly (mode 2; $M=3.86$; $SD=2.66$). Only 8.1% of the total group endorses this cause

above 6. The paired samples t-test showed a significant difference between the violation of the two different speed limits [$t(159)=24.76$; $p=.000$].

In order to facilitate the interpretation of the data, we conducted an exploratory factor analysis (EFA) to examine how the causes group together and what hidden factors can be revealed. We used the Principal Component method (PCA) and Varimax rotation. The determinant value is 0.001, and the KMO coefficient is 0.76. Bartlett's test of sphericity is significant ($p=.000$). After 8 iterations, 7 factors have been computed. There are 96 (37%) non-redundant residuals with absolute values greater than 0.05. The 7 factors explain 62.08% of the model's variance. The first two factors are the most robust including more items with saturations over 0.60. The only cause which did not load in any factor is 'running though the yellow lights'. The only cause which loaded in two different factors is the 'lack of experience'. Factors 1, 2, and 4 include mostly the causes which are not represented as deadly. In contrast, the factors 3, 5, and 6 include the consensual causal links of fatal traffic accidents. The last factor includes an apparently weird association between over-speeding and the road infrastructure. This 7-factor solution is briefly discussed in the next section.

5. Discussion

In this study we investigated the lay interpretation of what may act as a cause for deadly traffic accidents. The list we have proposed is not exhaustive but it is based on the causes frequently evoked by the participants in our previous studies and the causes often cited by the Romanian mass-media (Havârneanu, 2011). To our knowledge there are no similar studies in the international literature concerning this topic. Despite the main limitations concerning the sample size and gender imbalance, the results support the initial claims and help clarifying what the broad consensus is.

On one hand the causes which are perceived as deadly are general expressions mentioned by the media: rebellious acts, inattention, fatigue, imprudent acts. This is consistent with the SRT principles (Moscovici, 2008) that mass-communication processes shape the social thinking. On the other hand, the perceived deadly causes are – with minor exceptions – the violations which always or occasionally affect everybody's safety: drunk driving, illegal overtaking, and breaking high speed limits. Most of the violations regarding one's own safety are not perceived as causes of death. The only exception is the illegal road crossing. It means that road users consider themselves vulnerable only as pedestrians and not as drivers or bikers. From this point of view, fatal traffic accidents include only cars hitting pedestrians. Furthermore, speeding is a cause of death but only at a high limit. This is consistent with the preliminary results from our previous studies (Havârneanu, 2010^a). Thus, people do not consider the deviation from low speeds such as a 50km/h limit to be dangerous. When combined, these two findings provide a clarification about the representation people have about urban accidents. They suggest that pedestrians die because of their own deviant and risky behavior (i.e., crossing illegally), and not because of the deviant behavior of drivers who exceed the 50 km/h speed limit.

These interpretations are also supported by the exploratory factor analysis which helped us identify hidden associative relations between the perceived causes. The factor solution partially resembled the initial classification of violations according to their impact on safety. The causes merged into 'common knowledge' patterns, easy comprehensible for the lay public. The first factor includes most violations which affect personal safety and which are not perceived as deadly: not wearing a helmet, not wearing the seat-belt, no first aid kit and fire extinguisher, aggression, the lack of mandatory documents. Therefore it can be labeled 'own safety'. Factor 2 (labeled 'other's safety') includes most violations which affect everybody's safety and which are not perceived as deadly: tailgating, zig-zag lane change, phone use without a *hands-free* device, small police fines. Drunk driving, illegal overtaking and rebellious acts loaded in factor 3 probably because the two specific behaviors are good examples of 'rebellious acts'; in

turn, this phrase is an adequate label for the underlying factor. Factor 5 ('incautious acts') includes illegal road crossing and imprudent behavior, suggesting that the first may be a common illustration of the latter. Hazard and God's will are relatively similar due to their 'uncontrollability' (factor 4) and are not perceived as a possible cause of death. On the contrary, they appear among the least possible causes of death, meaning they confer protection against accidents. This is consistent with a possible existence of a 'religious bias' (divine protection), or a belief in the 'good luck' (similar to the optimism bias).

Inattention and fatigue merged together in factor 6, which can be labeled as the first variable. This corresponds to the common shared knowledge that fatigue alters the driver's attention. This factor is important for the way mass-media presents the news. The discourse mass-media uses is often general without pointing out the particular cause and 'inattention' is one of the most evoked causes. According to our data, the lack of attention is likely to be interpreted as fatigue. However, there are situations when inattention has nothing to do with fatigue. It may be due to the driver distraction or due to an excessive workload. Therefore, these results can help improving the message framing in order to promote correct public information and a more accurate representation about the real causes which lie behind a specific outcome. Lastly, the factor solution reveals a latent association between speeding violations and the current road infrastructure (factor 7). This association is relevant for the Romanian driving context; in the absence of the highways, drivers might exceed the speed limits especially when travelling long distances and when forced to cross many villages and cities.

In conclusion, the social representation of a threatening object such as a fatal car accident appears to be selective or distorted in terms of causes. The way the language is used, what distinctions are being made through it, how these distinctions are contested and defended, which categories are being chosen for carrying the core meanings, all of these are crucial hints for an effective accident prevention and driver education. These can be the goals of future studies.

References

- Abric, J. C. (1989). L'étude expérimentale des représentations sociales. In D. Jodelet (Ed.), *Les représentations sociales* (pp. 187–203). Paris: Presses Universitaires de France.
- Campbell, A., Muncer, S., Guy, A., Banim, M. (1996). Social representation of aggression: Crossing the sex barrier. *European Journal of Social Psychology*, Vol. 26, 135-147.
- CNADNR, <http://www.cnadnr.ro> (August, 2010).
- European Commission. http://ec.europa.eu/transport/road_safety/observatory/trends_en.htm (August, 2010).
- Havârneanu, G.M. (2010a). *Representations of speed and the connection with the normative system*. Paper presented at the 5th National Conference on Psychology, Iasi, Romania.
- Havârneanu, G.M. (2010b). *The social representation of the traffic accident*. Paper presented at the International Conference "Psychology and the Realities of the Contemporary World", Bucharest, Romania.
- Havârneanu, G.M. (2011, July). *The Traffic Accident – A Mass-Media Discourse Analysis*. Poster presented at the XII European Congress of Psychology, Istanbul, Turkey.
- Holman, A., Havârneanu, G.M., & Țepordei, A.M. (2010). The social representation of the traffic accident. *Buletinul Psihologia Campului Social*, nr. 25, pp 73-84.
- Joffe, H. (2003). Risk: From perception to social representation. *British Journal of Social Psychology*, 42, 55–73.
- MacDonald, M. (2003). *Exploring media discourses*. London: Arnold.
- Moscovici, S. (1984). The phenomenon of social representations. In R. M. Farr & S. Moscovici (Eds.), *Social representations* (pp. 3–69). Cambridge: Cambridge University Press.
- Moscovici, S. (2008). *Psychoanalysis: Its Image and Its Public*. Cambridge, UK: Polity Press. (originally published in 1961 and 1976).
- Rafiq, U., Jobanuptra, N., & Muncer, S. (2006). Comparing the Perceived Causes of the Second Iraq War: A Network Analysis Approach. *Aggressive Behavior*, 32, 321-329.
- World Health Organization (2009). *Global Status Report on Road Safety*. <http://www.who.int>