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Approaches of truck drivers and non-truck drivers toward reckless on-road behavior

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ABSTRACT

The purpose of the study was to compare the reported approaches of truck drivers to those of non-truck drivers toward reckless on-road behaviors. One hundred and sixty-seven adult males, including 70 non-truck drivers, completed the questionnaires voluntarily. The truck drivers were employees of a concrete manufacturing company working at various company plants throughout Israel. Seventy were professional mixer truckers and 27 were tip-truckers. The participants completed the Reckless Driving Self-Report Scale based on Taubman Ben-Ari et al. [Taubman Ben-Ari, O., Florian, V., Mikulincer, M., 1999. The impact of mortality salience on reckless driving: a test of terror management mechanisms. Journal of Personality and Social Psychology 76, 35–45], adapted for truck drivers for this study. It was expected that non-professional, as compared to professional (truck) drivers, would be more permissive regarding reckless driving, since driving risks are less prominent in their daily driving experience. An ANOVA performed on mean reckless-driving scores yielded significant results. The post hoc Schéffe test indicated significantly higher reckless-driving scores for automobile drivers as compared to both mixer-truck driver scores and tip-truck driver scores. In addition, the reckless-driving scores for mixer-truck drivers were significantly higher than the tip-truck driver scores. We discuss various explanations for the findings and consider possible implications for training strategies in organizations as well as for media campaigns focused on mutual safe road use of truck drivers and private vehicle drivers.

1. Introduction

Occupational vehicular accidents involving truck drivers represent a serious threat to both work safety and public health. Research has indicated that truck driving is among the occupations with the highest risk for fatal injuries (McCall and Horwitz, 2005) though not necessarily due to the fault of the truckers. Professional truck drivers have a unique set of characteristics compared to those of everyday motorists (Walton, 1999). In addition to gender (98% of truckers are male in Israel) and age (the average truck driver is older than the average automobile driver), they are all professional drivers, meaning that they have gone through some selective processes and have had to attain certain physical, psychological and educational standards (Israeli Road Safety Authority, 2006). This study investigates the differences between truck driver and automobile driver perspectives regarding reckless driving.

Previous research in the field reveals several patterns, largely pointing in the direction of a more cautious set of driving behaviors among truck drivers, as compared to light vehicle drivers. In other words, drivers of heavy trucks engage in fewer unsafe road behaviors than do drivers in general (Blower, 1998). In addition, truck drivers are more aware of environmental risk factors as well as of their own limitations as drivers (Walton, 1999). Analysis of driver-related factors in road accidents indicates that passenger vehicle driver errors or other driver factors are cited in 66% of crashes, whereas truck driver errors are cited in fewer than 30% (Blower, 2002). Likewise, Craft and Blower (2004) have presented preliminary statistics on 287 two-vehicle crashes from the FMCSA/NHTSA Large Truck Crash Causation Study (LTCCS). In crashes between trucks and light vehicles, the "critical reason" for the crash was attributed to the other vehicle or driver in 70% of the cases and to the truck or truck driver in 30% of the cases (Thieriez et al., 2002).

Instrumented vehicle studies (Hanowski et al., 2007), which provide a video "instant replay" of safety-related traffic incidents, have further corroborated the above findings. One study observed and analyzed 210 critical incidents (driver errors resulting in potentially unsafe conditions, e.g., lane change or road crossing with an insufficient gap) involving the interaction of a large truck and a light vehicle. More than three-quarters of such incidents were attributed to light vehicle drivers in the vicinity of trucks, rather than to truck drivers (Hanowski et al., 2003). Consistent with

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these findings, commercial drivers on local/short haul operations (defined as trips of 100 miles or shorter) listed other drivers as their primary safety concern, followed by work related time pressure and inattention as causes for critical accidents (Hanowski et al., 1999).

Apparently, there is also contradicting evidence to the results cited above. Analysis of driver-faults in road accidents revealed that truck drivers were found to be at fault more often than car drivers (48% as compared to 40.2%), in truck–car accidents (Council et al., 2003). However, the majority of truck-fault accidents were either the less severe rear-end crashes, or accidents involving the trucks' dead-zones; whereas car drivers were at fault with the majority (71.2%) of the deadly head-on crashes. These findings are consistent with traffic experts' ratings of truck related dangerous driving situations (Stuster, 1999).

The inconsistency regarding driver (either truck or not) responsibility (whether truck or auto) in accidents (Council et al., 2003; Craft and Blower, 2004) might reflect a minority group of less cautious truck drivers. This possibility would be consistent with some studies in the field. Specifically, Hanowski et al. (2000) reported that the local/short haul driver population consists of a small high-risk subgroup responsible for the majority of drowsy episodes, with a similar subgroup in the long haul drivers' population (Wylie et al., 1996). Vehicle fleet safety managers estimate that the majority of total fleet risk (50% or more) can be attributed to only 10% of the drivers, as a product of these drivers personality traits makeup, thus maintaining this ratio over time (Knipling, 2005).

Finally, converging evidence regarding more cautious driving behaviors among truck drivers comes from Tardif (2003) who reported that heavy vehicle drivers exceed speed limits less often, and by smaller margins, than drivers of light vehicles, and that truck drivers involved in crashes are less likely than passenger vehicle drivers to drive under the influence of alcohol. In line with Tardif (2003), Rosenbloom (2001) reported that even if their scores in the Sensation Seeking Scale (Zuckerman, 1978) were relatively high, truck drivers actually engaged in fewer reckless driving behaviors than automobile drivers.

In Israel, trucks are over-represented in road crashes, and 20% of the fatal crashes derive from only 2.2% of the total fleets, due to their high mileage. In spite of their over-representation in fatal crashes, truckers are regarded as more professional drivers than other (passenger light vehicle) drivers (Israeli Road Safety Authority, 2006). It appears, then, that truck drivers support safer road behavior and are known for this trait by experts and by co-workers.

The present study compared between truck- and private-drivers' attitudes toward reckless driving. Its main purpose was to examine the proneness to reckless driving as reported by professional truck drivers and by non-professional car drivers. We expected that non-professional drivers, as compared to professional drivers (i.e. truck drivers), would display a permissive approach toward reckless driving, as driving risks are less prominent in their daily driving experience.

The truck driver sample consisted of two subgroups—concrete mixer drivers and tip-truck drivers, allowing (as a secondary goal) an evaluation of some of the factors affecting truck driver attitudes toward reckless driving as derivates of their unique professional environment. By sampling workers from a single concrete manufacturing company, we tried to hold constant extraneous factors affecting professional behavior or expressed attitudes such as workplace and legal regulations and corporate culture, maintaining a similar background for all professional drivers.

The process of manufacturing and delivering concrete requires applying the mixture (of wet cement and aggregates) in a short time after creating the mix batch, to ensure proper structural strength. Naturally, the wet concrete mixture is impossible to store for long periods. The mixture is produced on demand, and is delivered by mixer trucks as soon as possible to construction sites, where the driver dispenses the mix load. As construction sites are often located in residential areas, additional maneuvering ability is required. A wide spread of cement manufacturing plants allows shorter routes to construction sites, resulting in a more efficient delivery of better quality concrete mixture (Clark et al., 2001; Weeks, 1998).

With workload and working hours dictated by construction site requirements, mixer-truck drivers do not have a regular schedule; this can lead to long working days, irregular working hours including working intermittently as well as periods of concentrated work followed by long breaks. Importantly, mixer truck driving poses some unique driving challenges, such as adjusting the driving to the constant shifts in the cargo's center of gravity due to concrete fluidity and the mixer truck drum's rotating action. Furthermore, the mixer operation adds a constant heavy noise in the driver's cabin, in addition to the more conventional noise (and vibrations) affecting most truck drivers. These elements present additional stresses for mixer-truck drivers who need to balance the professional demands with careful driving (Clark et al., 2001).

In contrast, the company's tip-truck drivers deliver gravel from mining sites and quarries to the cement manufacturing plants, to be stored for future use. Tip-truck driver schedules are constant, with regular work shifts. Tip-truck drivers working for the concrete manufacturing company in the current study were all regular company employees, and the vehicles they use were company owned. Driving tip-trucks poses no unusual driving challenges relative to other truck driving. Importantly, both mixer-truck drivers' and tip-truck drivers' operations are defined as local/short haul operations, i.e. less than 150 miles.

Subjective workload is affected not only by task-related factors such as the perceived mental, physical, and temporal demands, but also by driver-related factors such as effort, frustration and performance (Hart and Staveland, 1987; Maincent et al., 2004). By examining an attitudinal factor—the driver's self-reported proneness to reckless driving, we wished to elaborate on this model, allowing the inclusion of a cognitive feedback loop between the perceived subjective workload and some of the driver mental and cognitive factors (Rosenbloom, 2001).

Primarily, it can be expected that truck drivers, would display a more cautious approach toward reckless driving than non-professional drivers, as their (truck drivers) regular driving experience is significantly more complex than non-professional drivers. Secondly, it can be expected that, on the one hand, concrete mixer-truck drivers would display a more cautious approach toward reckless driving than tip-truck drivers, as their (mixer) regular driving experience is even more complex than that of tip-truck drivers, particularly in terms of balance and noise (see above). On the other hand, since schedule demands require a speedy delivery, mixer-, as compared to tip-truck drivers might display more permissive approaches toward road risks.

2. Method

2.1. Participants

One hundred and sixty-seven adult males, of which 70 were non-professional drivers, completed the questionnaires voluntarily. Of the remaining drivers – all employees of a concrete manufacturing company working at the various company plants located countrywide – 70 were professional mixer truckers, and 27 were tip-truckers. Participants were recruited using a snowball sampling method, i.e. participants recruited future subjects from among their acquaintances.