

# Attitudinal and motivational aspects of aberrant driving in a West African country

Road traffic crashes are reaching pandemic proportions in some African countries. This study investigated the individual and situational determinants of aberrant driving in the Manya Krobo District of eastern Ghana.

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## ABSTRACT:

Attitudinal and Motivational Aspects of Aberrant Driving in a West African Country

Road traffic crashes are reaching pandemic proportions in Ghana. Drivers of commercially operated passenger-carrying minibuses contribute significantly to road crashes. This study investigated the individual and situational determinants of aberrant driving among this population group in the Manya Krobo District of eastern Ghana. Thirteen drivers took part in face-to-face interviews and focus group discussions regarding their traffic risk perception, attitudes, behaviour, and motivations for risk-taking. Three key informants also provided information on traffic behaviour in the area. Qualitative content analysis was used to analyse the data. Participants described drivers' poor working conditions, bad road and vehicle conditions, poor road signage and signalisation as significant contributors to aberrant driving in the District. Inadequate driver training, irregularities in licensing drivers, and fatalistic beliefs were also considered key determinants of dangerous driving. Our findings suggest that road traffic crashes in Ghana result from the interaction of systems. They highlight the need to pay greater attention to the activities of commercial drivers and vehicle owners in suburban Ghana. We submit that effective countermeasures would require community psychology approaches to build relationships between individuals and local community organisations in order to influence local government policy and to effect lasting traffic behaviour changes.

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Keywords: aberrant driving, commercial driver, driving apprenticeship, Ghana

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Road traffic crashes are raising public health concerns in several communities in Ghana. The determinants of and the economic disparities that attend road traffic injuries in these settings deserve proportionate countermeasures that build public support and inspire participatory action. There appears to be a need to integrate the principles of community psychology in road safety education, research, and intervention in Ghana. These principles require the democratic participation of and collaboration with individuals and local community organisations to conduct research to identify local traffic problems and use the evidence from this research to influence local government policy and provide support for long-term traffic behaviour change. Building the capacity of community members may give rise to developing a sense of community that could elicit a shared responsibility in road safety promotion. For example, community psychologists could collaborate with local community groups to put in place projects that challenge cultural and religious myths about road traffic crashes.

### **Magnitude of Ghana's road traffic problem**

Road traffic crashes (RTC s) kill 1,800 and injure 14,500 Ghanaians annually with an estimated average of 5 deaths every day (Ghana News Agency, 2011). Of the 11,506 official motor vehicle crashes (MVCs) reported in 2010 alone, 1,986 travellers were killed, 5,713 travellers were seriously injured, and 9,205 travellers survived the crashes with slight injuries (National Road Safety Commission [NRSC ] Report, 2010a). Given an estimated national population of 24,223 million people as of 2010, 8.20 fatalities per 100,000 population in 2010 were recorded. The traffic fatality per 100,000 population has remained fairly stable from 2005 to 2010.

Thus, many Ghanaian travellers never return home alive, several hundred end up being hospitalised for years, and others suffer long term disability (Ackaah & Adonteng, 2011; Afukaar, 2003; Afukaar, Antwi, & Ofosu-Amaah, 2003; Yankson et al., 2010). An approach to road traffic issues that combines values, research, and action with the active participation of local community members is needed to help individuals and communities reduce the prevalence and incidence of unsafe traffic behaviour.

### **«Work conditions in Ghana is a major determinant of recklessness on the roadway»**

Commercial drivers aged 26–35 years are overrepresented in road traffic crashes in Ghana (Ablin Consult, 2007; Ackaah & Adonteng, 2011; NRSC , 2007; 2009; Quartey, 2010; see also, Mock, Amegashie, & Darteh, 1999). This age group of those most likely to die in road traffic crash, either as drivers or as vehicle occupants, portends danger for the well-being of families and local communities because this age group constitutes the manpower needed to contribute to the economic wealth of these families and communities. This calls for the participation of community psychologists in traffic research because they will mobilise the strengths of this age group in their respective communities and collaborate with them to bring about social change. Community psychologists will not view them as helpless individuals.

Although there is high under-reporting and under-recording of RTC s in Ghana (Salifu & Ackaah, 2011), in 2010, lack of attention on the part of drivers accounted for 34.1% of all officially reported RTC s, while 18.5% of crashes resulted from drivers losing control of the steering wheel (NRSC Statistics, 2010b). Despite this growing threat, little effort has been made to investigate the factors that influence RTC s involving commercial drivers of privately-owned public service passenger-carrying minibuses [PPSP M] (locally called “trotro”) in Ghana. Studies of factors that bring about RTC s involving commercial minibus drivers in Ghana appeared to be urgently needed to answer key questions. What individual and situational factors contribute to the increased crash risk of commercial drivers? How do attitudinal and motivational factors influence aberrant driving among this population group? The identification and description of the underlying causes of dangerous and inconsiderate driving (Road Traffic Act, 2004) among this population will help design appropriate intervention programmes to prevent or mitigate their effects.

A recent survey conducted among commercial drivers in Ghana (Ablin Consult; Conditions of Service Survey, 2007; NRSC , 2007) reports that out of the 700 drivers sampled, about 80% were between the ages of 18 and 59, and that 70% of them were married with children and were the principal wage earners in their respective families. Of 70% of them who said they were currently driving with good driving licenses, only 19% of them were found to possess actual valid driver's licenses obtained from the Driver and Vehicle Licensing Authority (DVLA). The study concludes that about 80% of passenger vehicles are owned privately and that individual vehicle owners determine their own terms of employment.

### **Global traffic injuries and economic differentials**

Globally, RTC s currently pose a considerable threat to public health and wellbeing because they kill nearly 1.3 million people every year and injure between 20 and 50 million others (WHO; Global Status Report, 2009), and they are expected to pose a more serious threat to life in the years to come unless appropriate countermeasures are implemented (WHO; World Report on Road Traffic Injury Prevention, 2004). It is well known that 85 % of the fatal accidents and 90% of the annual disability-adjusted life years lost in accidents occur in low-income and middle-income countries (Ameratunga, Hajar, & Norton, 2006; Lagarde, 2007) including Ghana. Aside from the human and social costs, these crashes cost the world economy about US\$ 518 billion annually (Jacobs, Aeron-Thomas, & Astrop, 2000). According to Jacobs, Aeron-Thomas, and Astrop (2000) *the economic loss* resulting from road traffic crashes to low and middle-income countries is estimated to be about US\$65 billion every year. This amount is far in excess of the total development assistance that these countries receive annually from donor partners. For instance, in Ghana government's expenditure on RTC s in 2006 constituted 1.6% of Gross Domestic Product (NRSC , 2009).

While road traffic fatalities are expected to decrease by 27–30% in high-income countries, they are projected to increase by 80–83% in low-and middle-income countries until year 2020 (Nantulya & Reich, 2003; see also Kopits & Cropper, 2005; World Report on Road Traffic Injury Prevention, 2004). This comes against the background that nearly 95% of goods and passengers are conveyed via motorised transport from one community to another in Ghana (Quartey, 2010; NRSC , 2009). These roads reach many rural settings where low-income people, who are largely pedestrians and/or patrons of public transport, are in the majority. This makes their exposure to motor vehicle crash risk very high.

Poor people from groups with low socioeconomic status have been found to be at greater risk compared to those with higher socioeconomic status (Nantulya & Reich, 2003; Sharma, 2008). The poor are more likely to choose means of transportation which may make them more vulnerable to the dire consequences of RTC s such as commuting via “trotro” vehicles than are people of higher socioeconomic status. Evidence shows that poor bereaved families may be forced to sell a property or look for a loan following RTC s as compared with non-poor households (Ross Silcock & Transport Research Laboratory [TRL], 2003).

**«Drivers seem to recognize that there are risks involved in the work they do»**

Additionally, poor people have limited access to emergency care following RTC s and costs of medical treatment, loss of the income of the principal wage-earner in the family, and loss of income due to disability may likely push them further below the poverty line (Alyson & Ehiri, 2006; Mock, Gloyd, Adjei, Acheampong, & Gish, 2003).

### **A case for community psychology approaches in traffic research and intervention**

Arguably, the aims of traffic psychology may overlap with or parallel those of community psychology because traffic psychology, like community psychology, is action research-driven. Community psychology approaches to road safety education and intervention may bring about faster change in attitude and behaviour of road users. Since community psychology approaches emphasise participatory action they may tend to inspire pro-poor based interventions and initiatives. Such community-based initiatives will have the potential of harnessing public support for road safety interventions. We argue that recourse to the principles of community psychology in road traffic research may facilitate the identification of individual or community traffic problems that warrant intervention research to inform recommendations for effective policy change. This focus on the big picture of road crashes will help address individual and community traffic problems concurrently

because large social problems could be solved by helping individuals find context-specific solutions to their problems.

Public health and traffic psychology's focus on the health needs of the individual appears to be too general. In Ghana, the magnitude of road traffic crashes differs from one context to another given the differing conditions of road infrastructure in the country as a whole. Thus, road traffic crashes seem to be assuming a context-dependent dimension. The context-dependent nature of traffic behaviour in Ghana appears to be eluding the research and intervention focus of traffic researchers, traffic psychologists, public health professionals, and road safety advocates. Inadequate public health facilities and trained personnel in the country also mean not all traffic victims can have access to trauma care systems. Thus, a research and intervention strategy that will address the specific concerns of the individual road user and the peculiar road safety needs of a community is required to provide this missing link. The lack of resources coupled with the specificity required to deal with the emerging road traffic crises suggests the need to focus more on community psychology-based approaches.

Community psychology offers approaches that are more victim-friendly than the other allied social science fields of research. Community psychologists have respect for diversity and multiculturalism and could mobilise community members to make long-term changes in their traffic behaviour.

Thus, in planning accident countermeasures in resource-limited countries like Ghana where poverty is becoming endemic, basic post traumatic health facilities are lacking and traffic crash victims hardly get access to the hospital care they need; community psychological strategies of health promotion and prevention may turn out to be cost effective. While it is well known that road traffic crashes have serious consequences for public health delivery, we argue that public health and traffic psychology approaches to road crash prevention alone may fail unless they are linked with principles of the social ecological model (Bronfenbrenner, 1979) which is central to community psychology and health promotion (Stokols, 1996). Health promotion is proactive, on-going, multifaceted, and population-centred.

On one hand, traffic and community psychology may work best as complimentary approaches to traffic behaviour research because they both seek to understand individuals in their context. The combined paradigms may facilitate a mixed-method approach by bringing phenomenological, naturalistic, and antipositivist perspectives to research on traffic behaviour. Traffic psychologists seek to understand both internal and external states of road users with a particular focus on the social psychology of road use and the psychomotor skills of drivers. These include road user cognition, personality, emotion, motives, and perceptual and attentional factors with regard to the road use task (Barjonet, 2001; Porter, 2011; Rothengatter & Huguenin, 2004; Underwood, 2005). They carry out research on traffic behaviour of individuals to inform the design and implementation of intervention measures to mitigate crash risk factors.

On another hand, the aims of community psychology are, among other things, to understand individuals in their context and to work towards improving their well-being (Nelson & Prilleltensky, 2005). Put differently, community psychology is mainly concerned with understanding and helping people. Within a community psychology framework, traffic victims are not blamed but efforts are made to change the social and physical living environment perceived to be the determinants of the individual's attitudes and behaviour through the processes of citizen participation, consciousness raising, and empowerment. Conceptually, community psychology approaches to intervention are culturally sensitive because of the use of principles such as citizen participation which favours a bottom-up approach to problem solution. Community changes resulting from effective citizen participation have been found to be enduring (Brody, Godschalk, & Burdy, 2003). For example, local community members such as drivers, passengers, and pedestrians could be empowered to lead road safety discussions at local town hall meetings. A citizen-centred participatory design process in road

safety engineering, for instance, will make local community actors have a say in where to site footbridges and crosswalks so as to ensure that these facilities meet their needs and will thus enhance their usage (Arnstein, 1969; Brody, Godschalk, & Burdy, 2003; Burke, 1968).

These people-centred activities of community psychologists often lead to health-enhancing changes in behaviour (Campbell, 2003). Road traffic crash prevention attempts also tie in well with the person-in-context perspective (Lajunen & özkan, 2011) which supports the notion that the individual and their context are mutually constituted (Markus & Hamedani, 2007; Markus & Kitayama, 2010). Herein lies the unique convergence between traffic and community psychologists' desire to perform analyses at several levels (e.g., road, vehicle, person) in order to examine the interdependence of individuals with their setting. Thus, traffic researchers are cautioned to not lift and transplant successful traffic accident countermeasures from one culture to another without due diligence and modification (Forjuoh, 2003; Mohan, 2008).

### **Focus of the present study**

Several empirical work shows that driving errors, lapses, and violations (Cf. Reason, Manstead, Stradling, Baxter, & Campbell, 1990) are contributing significantly to the carnage on Ghana's roads (Ackaah & Adonteng, 2011; Afukaar, Antwi, & Ofosu- Amaah, 2003; Bonna, 2009; Damsere- Derry, Afukaar, Donkor, & Mock, 2008; Damsere-Derry, Ebel, Mock, Afukaar, & Donkor, 2010; Yankson et al., 2010). Given the growing traffic crash situation in the country among commercial drivers of public transport and the high probability of a person getting killed in every crash, studies of factors that lead to driving errors, lapses, and violations on Ghana's roads are warranted. The aim of the present study was to investigate drivers' perceptions of their own driving behaviour, as well as attitudes and motivations for committing driving violations, errors, and lapses in the Manya Krobo District in eastern Ghana. The study site is a suburban district capital with 89,246 inhabitants (Ghana Statistical Service [2010 Census], 2012) and could provide a replica of the road use situation in the country despite the small sample size used.

### **Method**

*Participants.* Sixteen participants took part in the study – 13 were drivers of “trotro” vehicles and 3 were key informants. The key informants were officials from the Motor Traffic Transport Unit (MTTU ) of the Ghana Police Service, the National Road Safety Commission (NRSC ), and the Ghana Private Roads and Transport Union (GPRTU ). Informants were included to take advantage of what Miles and Huberman (1994) call *critical case sampling*-which enables investigators to learn more about a phenomenon by accessing expert knowledge (Onwuegbuzie & Leech, 2007). Job responsibilities of key informants in the present research focused directly on issues relating to road traffic safety and it was deemed they could provide important insights into the road crash phenomenon in the country.

Driver participants were a purposive sample (Miles & Huberman, 1994; Onwuegbuzie & Daniel, 2003) and were recruited from two drivers' unions in the Manya Krobo township by the corresponding investigator. The unions were the Ghana Private Roads and Transport Union (GPRTU ), the largest transport organization in Ghana and the Progressive Transport Owners Association (PRO - TOA ). The criteria for inclusion of drivers were the possession of a driver's license and being in active service. All driver participants were male because only males engage in occupational driving at the study site as well as many parts of Ghana.

Researchers often suggest what they consider to be sufficient sample sizes for doing qualitative research (Johnson & Christensen, 2004). While Morgan (1997) argues that 3–5 members in a focus group and 6–10 individuals are sufficient for a qualitative study, Morse (1994) contends that if the research goal is to understand lived experiences, then at least, 6 participants are enough. Other researchers recommend that the appropriate number of participants for a qualitative study is the number capable of answering the research question. They posit that focus groups should be relatively

small to afford every member the chance to have their voices represented but moderate enough to make it possible to capture a range of voices (Krueger, 2000; Marshall, 1996). Guest, Bunce, and Johnson (2006) show that interviews obtained from a sample size of six, drawn from a homogenous population, could sufficiently lead to the convergence and meaningfulness of data. Therefore, a sample size of 16 was considered sufficient enough to answer the questions posed in the present research and to generate interviews that may lead to a convergent and meaningful data. It was also thought that saturation (Mason, 2010) would be reached given the method triangulation in collecting the data and the diverse backgrounds of the research participants sampled. The study was approved by the Norwegian Social Science Data Services (NSD) and the Ghana Police Service.

*Data collection and procedure.* The aims of the study were explained to drivers who met the inclusion criterion. Verbal informed consent was obtained from participants who showed a willingness to take part in the study. A semi-structured interview and discussion guides were used to collect data from participants. The interview schedule and discussion guidelines were developed by the corresponding investigator on the basis of his personal knowledge of RTCs and information gleaned from newspaper articles and magazines published in the country. Items on the interview and discussion guidelines were in three categories covering background information of drivers, e.g. driver experience, road use attitudes and behaviour, and perceived motor vehicle crash risks. Driver participants were asked to provide their ages or age range. Individual face-to-face interview sessions were mostly carried out using the snowball approach (Miles & Huberman, 1994) and were held with drivers who were waiting for their turn at their respective minibuss terminals (locally called “lorry station”). Focus group discussions (FGDs) were held at the lorry stations which constitute the loading and ‘resting’ places of most drivers.

There were 5 individual interviews with drivers (all male), 2 FGDs with the first comprising 5 participants and the second comprising 3 participants. The first FGD was held with drivers who identified with the GPRTU and the second with those who identified with PROTOA. Drivers who took part in individual interviews were excluded from FGDs. Key informants were contacted in their offices. On average, the face-to-face interviews lasted about 45 min each. The FGDs lasted 1 hour 30 min each. Aside from two of the key informant interviews which were held in the English language, the rest of the interviews and discussions were conducted in *Dangme* (i.e., the local dialect spoken by the people of the study area as well as the corresponding author). Notes and tape recordings were made.

Also, a one week in-car participant observation was carried out by the corresponding author after the individual interviews to get practical first-hand information of the daily driver and passenger road use behaviour as described during interview sessions. This technique served mainly to validate the interviews and it provided a form of constant comparison that helped to focus subsequent interviews.

*Trustworthiness.* Methodological triangulation, an important technique of ensuring rigour and validity in qualitative studies (Adami & Kiger, 2005; Creswell & Plano Clark, 2006; Silverman, 2000; Thurmond, 2001), has been employed to collect the data used in the current study. Credibility (Guba, 1981; Schou, Høstrup, Lyngsø, Larsen & Poulsen, 2012) was assured through the combination of face-to-face individual interviews, focus group discussions, and key informant interviews used in our study. These multiple sources of data gave rise to saturation during the data analysis. This study also benefited from a rigorous peer review process that served to promote its trustworthiness as noted by Merriam (2009). Generally, the strategies used in this study are largely consistent with the qualitative study validation guidelines provided by Schou, Høstrup, Lyngsø, Larsen, and Poulsen (2012).

*Data analysis.* Qualitative content analysis as described by (Graneheim & Lundman, 2004; Leech & Onwuegbuzie, 2008; Sikron, Baron-Epel & Linn, 2008; Unrau & Coleman, 1997) was applied to analyse the transcripts from the interview, focus group discussions, and observation notes. The coding process was done manually and via a data-driven approach (Elo & Kyngas, 2008). The manual coding

involved a fourstage process (Braun & Clarke, 2006). The first stage involved the researcher reading the entire data set and the second stage involved identifying emerging patterns that indicate instances of attitudinal and motivational characteristics of driving errors, lapses, and violations.

At the third stage, all the preliminary codes were collated and sorted into meaningful categories depicting possible themes. It also became clear that additional data might only serve to confirm the emerging categories and thus it was thought that there was no need for more sampling. The fourth and final stage of the analytic process was used to review and define themes as well as selecting raw data exemplars which describe and support these themes. This procedure helped to refine some confusing themes and categories (Morse, 2008) and to identify subthemes to form a final constellation. The final themes arrived at and their respective descriptions are stated and discussed below.

## **Results and discussion**

The findings presented here represent the nucleus of the dominant themes and categories identified from the face-to-face interviews and FGDs. The themes are presented and interspersed with discussion in order to contextualize them in relation to the extant literature. A key theme emerging from our study had to do with the working conditions of drivers.

### **Working conditions of drivers**

Drivers generally appear to show dissatisfaction with their working conditions to the extent that only the fittest amongst them are most likely able to survive. They consider this to be a major determinant of recklessness on the roadway. This theme has sub-themes such as employment procedure, job demands, and remuneration system. The participants report the mode of their employment usually to be by word of mouth. They thus seem to remain at the mercy of vehicle owners for as long as they work for them. This situation appears to be leading to a sense of learned helplessness (Peterson, Maier & Seligman, 1995; Seligman, 1975; Seligman & Maier, 1967) among drivers. They thus express worry about the hire-and-fire-atwill behaviour of vehicle owners:

“I’m his fourth driver since he bought the car. You see, every car owner likes money and they know if they take their car from you the next day they’ll get a new driver”. (I2, trotro driver)

The commercial transport sector in Ghana is not well regulated. Transport operators or vehicle owners are able to enter the industry with relative ease. Vehicle owners set their own rules of engagement with little or no bargaining power for their employees. Drivers confess that they have little or no say in how they are employed and how their conditions of service are determined by vehicle owners. These arbitrary rules of engagement coupled with the biting demands of their job expose drivers to fatigue and stress situations. Drivers usually work for long hours without rest. On average they work for 16 hours a day from Monday to Saturday instead of the officially recommended 8 hours of work a day (NRSC, 2007). There seems to be consensus among them that the greatest pressure they face, in the execution of their job, emanates from meeting the sales target imposed on them by vehicle owners:

“But much of the pressure comes from car owners. They want their sales; they hardly will take any excuse. They don’t care what you go through to make the money; if you speed and commit other traffic violations, all they want is their money”. (I5, trotro driver)

This problem seems to be compounded by the increasing rate of commercial transport that gives rise to competition among drivers for passengers. This competition significantly shapes their attitudes to road use and leads to a survival of the fittest situation.



## «Work pressure often makes it impossible to have time for eating»

Working under pressure leads to stress and fatigue which have been found to be the causes of many road traffic crashes (May, 2011; Taylor & Dorn, 2006; Tse, Flin, & Mearns, 2006). Driver stress may be experienced at two levels (cf. Gulian, Matthews, Glendon, Davies, & Debney, 1989; Matthews, Dorn, Hoyes, Davies, Glendon, & Taylor, 1998).

First, situational stress that results from event-specific demands such as rushing against time to meet one's sales target before the sun goes down. This is often the case of 'trotro' drivers in the study area in particular and Ghana in general. Research suggests situational stress challenges drivers coping strategies over which they have little or no control leading to difficulty in processing complex information that would enable them to take timely safety decisions (Fuller, 2011; Öz, Özkan, & Lajunen, 2010). The second level of stress is reported to emanate from long hours of exposure to challenging traffic situations and affects drivers' cognitive, emotional, and physiological states (Hennessy & Wiesensthal, 1997; Kontogiannis, 2006). A key characteristic of Ghana's road traffic system is that 'trotro' drivers stay in traffic queues (locally called 'go slow') for long hours coupled with hot temperature. This situation may give rise to anger and aggressive driving (Abdu, Shinar, & Meiran, 2012; Shinar, 2007) which are implicated in RTCs. A driver narrates:

“It's the same for me if I don't get the sale I have to look for money from elsewhere to pay. On bad days, nightfall becomes your enemy. You worry, you become stressed and confused, you lose your temper with the slightest provocation. I mean it affects your driving”. (FGD2, trotro driver)

After getting out of dense traffic situations, the next option appears to speed to recoup time lost (Damsere-Derry, Afukaar, Donkor, & Mock, 2008; Tarko, 2009). The pressure under which they work often makes it impossible to have time for eating such that most of them are forced to eat or refresh themselves while at the wheels. This situation may combine with fatigue to induce sleepiness. Dieting at the wheels and sleepiness are reported to be implicated in RTCs (Philip, 2005; Young, Mahfoud, Walker, Jenkins, & Stanton, 2008).

Drivers also maintain that they are not entitled to a leave or holiday. The only time they can enjoy “leave or holiday” is when they are either sick and cannot go to work or their vehicles are taken to the workshop following a break-down. But even during this period they are not entitled to any pay since their remuneration system appears to be more on commission basis. This pay system has far-reaching implications for driving and road safety. They refer to the pay they are entitled to after making their sales as “chop money” (literally meaning ‘a day's eating money’).

According to drivers, the fear of going home empty-handed makes them resort to all forms of risk-taking in order to make some money for the upkeep of their families. This includes overloading, speeding, and general dangerous and inconsiderate driving. Besides, the lack of social security or retirement pension and social support further pushes them to commit traffic law violations. This finding seems to be consistent with Maslow's theory (Maslow, 1954) of human needs. Maslow has theorized that needs are sources of motivation and that humans are born with five needs ranked in order of importance for survival with *physiological needs* considered to be the most influential. Maslow argues that each level of need can only be met after needs below it are met. Thus, in the case of trotro drivers it is reasonable to expect that until they meet their needs for food, shelter, and clothing; safety needs such as careful driving and non-speeding will most likely not be an important consideration:

“Through our campaigns, we identified driver fatigue as a key factor in road traffic crashes, we educated drivers on the need to take rest after driving for a while but they hardly rest”.  
(KI3, informant)

This result supports findings in a previous study reported by the National Road Safety Commission in the *Road Safety Dialogue* (i.e., a newsletter published by the NRSC ) that “for commercial drivers in particular, the anxiety to meet daily wages and earn an extra income to keep body and soul alive, imposes enormous pressure on them to make more money such that sleep is never appreciated” (NRSC , 2008; p. 5). It was also found that commercial drivers in Ghana often work under pressure from vehicle owners (NRSC , 2007).

### **Environmental and situational factors**

Road condition is another principal theme that emerged, and participants say it is a major predictor of carelessness and crashes on the roadway. First, the roads in the Manya Krobo area are narrow such that cars coming from opposite directions have challenges giving way at certain portions of the roadway. Second, the surface of the road is dotted with pot-holes, and this is further aggravated by the poor road signage and signalization. No road signs or directional lights are available even at dangerous spots and busy junctions, thus there is often confusion about who has the right of way. Speed limits are not posted on the entire stretch of roads in the township and its environs and so is lack of official bus stops. This exposes drivers to risky driving situations as it means stopping almost everywhere and anywhere on the roadway according to the wishes of passengers, who are in the habit of disembarking at places of their choice. Due to their cognitive workload, some commercial drivers stop without any warning to other road users. Participants acknowledge that the lack of speed calming devices in residential areas impacts driving behaviour and often leads to pedestrian-vehicular collisions. This is because many roads in Manya Krobo pass through dense residential areas due to the linear housing subculture of the people. Road design and its conditions have been found to influence driving and safety (Iteke, Bakare, Agomoh, Uwakwe, & Onwukwe, 2011; Karlaftis & Golias, 2002).

While vehicle owners are to blame for putting pressure on drivers, drivers’ own acts of commission or omission in the execution of their jobs leaves much to be desired (Afful & Dapaah, 2011; Mock, Kobusingye, Anh, Afukaar, & Arreola-Risa, 2005). The growing motorization rate in the commercial transport sector is having a negative influence on driving attitudes and behaviour. For instance, the period between 2001 and 2010 has seen a rapid motorization growth rate of 42% in the country (NRSC Report, 2010a). Driver participants note that the increases in the number of commercial vehicle engender stiff competition among them for passengers and leads to tailgating or what is locally called “bumper to bumper” driving and sometimes criss-crossing of one another:

“We know it’s not good but we do it. As I was saying, to get passengers, you must be able to criss-cross and dash in front of other cars to reach the passengers first... otherwise the whole day you’ll use all your fuel and not get any money to fill your tank. You will forfeit your ‘chop’ money too”. (FGD1, trotro driver)

While we note that these risk factors are both human and structural in nature, we also recognize that our findings seem to support the extant literature which has established that about 90% of motor vehicle crashes are due to human factors (Petridou & Mousaki, 2000; Stanton & Salmon, 2009).

**«Professional drivers are forced  
to eat or refresh themselves  
while at the wheels»**

Inadequate driver training also emerged as being responsible for aberrant driving. Mode of training for commercial passenger vehicle driving in Manya Krobo is about 90% informal and driving knowledge and skill are acquired through *driving apprenticeship*. This is a practice where anyone who wishes to learn driving does so by going to work with a driver (i.e., the master) for a maximum period of three years. In the opinion of participants, the inadequacy of driver training especially among the young ones is assuming dangerous dimensions. The result of inadequate driver training is novice and inexperienced drivers (Martinez, 2005). Best practice demands that driving skill and competence should be acquired through serious instruction and practice (Groeger, 2006) because the number of years one spends acquiring driving skills helps to shape road use attitudes and behaviour in significant ways (Groeger & Brady, 2004). Because driver training in the study site is just by observation under the supervision of a master, aberrant driving may be passed on from one reckless driver to another:

“...some even learn driving at the car washing bay. I know about 3 guys who were washing cars at Odumase, they’re now trotro drivers. Who taught them driving? No one, they just learnt to drive people’s cars when they’re washing them. Some started as car sprayers only to end up as drivers a few weeks later”. (KI2, informant)

In addition, participants describe major irregularities in obtaining a driver’s license and perceive the practice not only as validating the inadequate driver training, but also as a potential source of danger to road use. Participants point out that people without any driving experience are able to obtain valid driving licenses from the Driver Vehicle and Licensing Authority (DVLA) without testing.

### **Cultural and religious beliefs**

From the description of their work routine, drivers seem to recognize that there are risks involved in the work they do. However, their survival needs, cultural, and religious beliefs appear to moderate and mediate their perceived crash risk. Some drivers ascribe fatalistic meanings or magical thoughts to some road traffic crashes and are of the belief that individuals destined to die through road accidents would die irrespective of what human beings do. They describe such individuals as those who acquired wealth by means of ‘akpasu’ or ‘sikaduro’ or ‘sakawa’, meaning the practice of acquiring wealth through sorcery, witchcraft, necromancy, and the spilling of human blood. These local terms refer to a means of acquiring wealth that is frowned upon by society. It is held that vehicles purchased from such proceeds will one day get involved in traffic crashes as a punishment to their owners. Given this explanation, safe road use by such individuals and vehicles may not be worthwhile because they are bound to be punished or crashed one day!

Other participants also seem to suggest that thinking about crash risk as a driver is at variance with their religious faith and teachings. According to them, thinking and talking about road crashes is similar to discussing death which is a taboo subject in many parts of Ghana, including the study site:

“Of course, it’s possible [road crash] but I don’t want to think about it. The Bible says whatever we say with our mouth shall come to pass...I think positive all the time. But I know accidents could be caused by spirits. Sometimes, it’s a curse from somewhere”. (I7, trotro driver)

Not surprisingly, most clergymen in Ghana have unconsciously reinforced these beliefs by forcing to preach sermons on moving passenger vehicles as a sign of protection for the occupants (Ghana News Agency, 2002; 2004). While it may be argued that this finding is culture-specific, we note that it lends support to the terror management theory perspective which holds that mortality salience influences cultural worldviews (Burke, Martens, & Faucher, 2010; Solomon, Greenberg, & Pyszczynski, 2004).

Evidence shows that religious and cultural beliefs have a significant influence on what people think and do (Osafo, Knizek, Akotia, & Hjelmeland, 2011; Rashid & Ibrahim, 2008). Similar findings in relation to road traffic crashes are reported elsewhere (Akanbi, Charles-Owaba, & Oluleye, 2009; Kouabenan, 2009; Nguetsa & Kouabenan, 2012; see also, Dixey, 1999).

Finally, several limitations need to be noted. We used a purposive sample. Budgetary constraints made it impossible to do member checks. The use of FGD s also made more vocal participants overshadow less vocal ones in terms of their responses and contributions. However, the vocal participants expressed their opinions in ways that met the goal of our study. Future research should take note of these shortfalls.

## **Summary and implications**

The present study explored factors shaping road use attitudes and behaviour of commercial drivers in the Manya Krobo area in eastern Ghana. We note that despite the limitations, our study offers a unique insight into a growing problem. Participants mentioned some risk factors which, in their opinion, constitute the major causes of driving violations, errors, and lapses. However, further research is required on correlates of dangerous driving as well as the intersection between fatalism and commercial drivers' perceptions of their crash risk.

From participants' descriptions, efforts to halt and reverse RTC s should holistically address commercial drivers' conditions of service such as pay, tenure, training, the daily *fixed sales* system, and other structural factors related to safety outcomes through a bottom-up approach that actively involves drivers and vehicle owners. For example, drivers should have a say in the determination of their wages and how the wages are paid; both drivers and vehicle owners should be involved in the maintenance of vehicles; drivers and vehicle owners ought to be represented in road safety audit exercises as well.

First, this information may be useful for central government, e.g., the Ministry of Roads and Transport, National Road Safety Commission (NRSC ), the Motor Transport and Traffic Unit of the Ghana police service (MTTU ) to plan and implement appropriate safety countermeasures to halt and, if possible, reduce the growing motor vehicle crash problem in the country. Second, it is well known that road traffic crashes disproportionately affect the poor, and since the poor do not usually have a voice, the recourse to the principles of community psychology in planning road safety interventions will offer a voice to these individuals.

Community psychologists would initiate and facilitate dialogue between local government institutions and communities affected by unfair traffic policies to bring about change. Through capacity building, local community groups may be empowered to find workable communitybased solutions to their traffic problems and not always depend on central government for top-down solutions. Community psychologists have the skills to work with individuals and communities with diverse cultural and religious backgrounds. Thus in traffic research, community psychologists could help bring understanding to the big picture of road traffic crashes in a particular setting and build coalitions with relevant community opinion leaders, individuals, government agencies, and other professionals against unsafe traffic behaviour.

We submit that this may be the surest way to ensure that the National Road Safety Commission's strategic framework to reduce the annual road traffic death of Ghanaians from 1,800 to 1000 deaths by 2015, halt and reverse them by 50% by 2020 (NRSC , 2010a; 2011), in line with the United Nation's '2011–2020 Decade of Action for Road Safety' blueprint, could be sustainable.

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## Vis referanser

### References

- Abdu, R., Shinar, D., & Meiran, N. (2012). Situational (state) anger and driving. *Transportation Research Part F*, 15, 575-580.
- Ablin Consult. (2007). Conditions of service of commercial vehicle drivers and their impact on road safety. National Road Safety Commissions Report, Accra, Ghana. Online publication. Retrieved from <http://www.nrsc.gov.gh/publications/doc/COMMERCIAL%20DRIVER%20STUDY.pdf>
- Ackaah, W., & Adonteng, D. O. (2011). Analysis of fatal road traffic crashes in Ghana. *International Journal of Injury Control and Safety Promotion*, 18, 21-27.
- Adami, M. F., & Kiger, A. (2005). The use of triangulation for completeness purposes. *Nurse Researcher*, 12, 19-29.
- Afful, S., & Dapaah, D. K. (2011, June 25). GPRTU boss blames drivers for accidents. *Daily Guide*. Retrieved from <http://www.dailyguideghana.com/?p=17813>
- Afukaar, F. K. (2003). Speed control in developing countries: Issues, challenges and opportunities in reducing road traffic injuries. *Injury Control and Safety Promotion*, 10, 77-81.
- Afukaar, F. K., Antwi, P., & Ofosu-Amaah, S. (2003). Pattern of road traffic injuries in Ghana: Implications for control. *Injury Control and Safety Promotion*, 10, 69-76.
- Akanbi, O. G., Charles-Owaba, O. E., & Oluleye, A. E. (2009). Human factors in traffic accidents in Lagos, Nigeria. *Disaster Prevention and Management*, 18(4), 397-409.
- Alyson, H. B. S., & Ehiri, J. E. (2006). Road traffic injuries: Hidden epidemic in less developed countries. *Journal of the National Medical Association*, 98, 73-82.
- Ameratunga, S., Hajar, M., & Norton, R. (2006). Road-traffic injuries: conflicting disparities to address a global-health problem. *The Lancet*, 367(9521), 1533-1540.
- Arnstein, S.R. (1969). A ladder of citizen participation. *Journal of the American Planning Association*, 35(4), 216-224.
- Barjonet, P. E. (Ed.) (2001). *Traffic psychology today*. Boston, London: Kluwer Academic Publishers.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101.
- Brody, S. D., Godschalk, D. R., & Burdy, R. J. (2003). Mandating citizen participation in plan making: Six strategic planning choices. *Journal of the American Planning Association*, 69(3), 245-264.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.
- Burke, E. M. (1968). Citizen participation strategies. *Journal of the American Institute of Planners*, 34(5), 287-294.
- Burke, B. L., Martens, A., & Faucher, E. H. (2010). Two decades of terror management theory: A meta-analysis of mortality salience research. *Personality and Social Psychology Review*, 14 (2), 155-195.
- Campbell, C. (2003). "Letting them die": Why HIV/AIDS prevention programmes fail. Indiana: University Press.
- Creswell, J. W., & Plano Clark, V. L. (2006). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.
- Bonna, O. (2009). *Stopping the carnage on African roads: The case of Ghana, Nigeria and South Africa*. Bloomington: AuthorHouse.
- Damsere-Derry, J., Afukaar, F., Donkor, P., & Mock, N. C. (2008). Assessment of vehicle speeds on different categories of roadways in Ghana. *International Journal of Injury Control and Safety Promotion*, 15, 83-91.
- Damsere-Derry, J., Ebel, B. E., Mock, N. C., Afukaar, F., & Donkor, P. (2010). Pedestrians' injury patterns in Ghana. *Accident Analysis and Prevention*, 42, 1080-1088.
- Dixey, R. A. (1999). 'Fatalism', accident causation and prevention: Issues for health promotion from an exploratory study in a Yoruba town, Nigeria. *Health Education Research Theory & Practice*, 14(2), 197-208.
- Elo, S., & Kyngas, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62, 107-115.
- Forjuoh, S. N. (2003). Traffic-related injury prevention for low-income countries. *Injury Control and Safety Promotion*, 10, 109-118.

- Fuller, R. (2011). Driver control theory: From task difficulty homeostasis to risk allostasis. In B. E. Porter (Ed.), *Handbook of traffic psychology* (pp. 13-26). Amsterdam: Elsevier.
- Ghana News Agency [GNA]. (2002, October 15). Pastor fights over preaching on bus. Retrieved from <http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=28337> Ghana News Agency [GNA]. (2004, March 28). Ban self-styled pastors preaching on buses – apostle. Retrieved from <http://www.modernghana.com/news/52304/1/ban-self-styledpastors-preaching...>
- Ghana News Agency [GNA]. (2011, May 22). 1, 800 die annually through road accidents. Retrieved from <http://www.ghananewsagency.org/details/Social/1-800-die-annuallythrough-...>
- Ghana Statistical Service (2012). 2010 Population and housing census. Retrieved from [http://www.statsghana.gov.gh/docfiles/2010phc/2010\\_population\\_and\\_housing\\_census%28view\\_population\\_by\\_sex\\_regional\\_and\\_district%29.pdf](http://www.statsghana.gov.gh/docfiles/2010phc/2010_population_and_housing_census%28view_population_by_sex_regional_and_district%29.pdf)
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24, 105-112.
- Groeger, J. A. (2006). Youthfulness, inexperience, and sleep loss: the problems young drivers face and those they pose for us. *Injury Prevention*, 12, 19-24.
- Groeger, J. A., & Brady, S. J. (2004). Differential effects of formal and practice and instruction when learning to drive (Road Research Report No. 42). London: HMSO.
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology Journal*, 29, 75-91.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82.
- Gulian, E., Matthews, G., Glendon, A. I., Davies, D. R. & Debney, L. M. (1989). Dimensions of driver stress. *Ergonomics*, 32 (6), 585-602.
- Hennessy, D. A., & Wiesensthal, D. L. (1997). The relationship between traffic congestion, driver stress and direct versus indirect coping behaviours, *Ergonomics*, 40(3), 348-361.
- Iteke, O., Bakare, M. O., Agomoh, A. O., Uwakwe, R., & Onwukwe, J. U. (2011). Road traffic accidents and posttraumatic stress disorder in an orthopedic setting in south-eastern Nigeria: A controlled study. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, 19, 39.
- Jacobs, G., Aeron-Thomas, A., & Astrop, A. (2000). Estimating global road fatalities (TRL Report No. 445). London: Transport Research Laboratory.
- Johnson, B., & Christensen, L. (2004). *Educational Research: Quantitative, Qualitative, and Mixed Approaches*. 2nd ed., Needham Heights, MA: Allyn & Bacon.
- Karlaftis, M. G., & Golias, I. (2002). Effects of road geometry and traffic volumes on rural roadway accident rates. *Accident Analysis and Prevention*, 34, 357-365.
- Kontogiannis, T. (2006). Patterns of driver stress and coping strategies in a Greek sample and their relationship to aberrant behaviors and traffic accidents. *Accident Analysis and Prevention*, 38, 913-924.
- Kopits, E., & Cropper, M. (2003). Traffic fatalities and economic growth: World Bank Policy Research Working Paper (No. 3035). Retrieved from <http://econweb.umd.edu/~cropper/publications/wp3.pdf>
- Kopits, E., & Cropper, M. (2005). Traffic fatalities and economic growth. *Accident Analysis and Prevention*, 37, 169-178.
- Kouabenan, D. R. (2009). Role of beliefs in accident and risk analysis and prevention. *Safety Science*, 47, 767-776.
- Krueger, R. A. (2000). *Focus groups: A practical guide for applied research*. 3rd ed., Thousand Oaks, CA: Sage.
- Lagarde, E. (2007). Road traffic injury is an escalating burden in Africa and deserves proportionate research efforts. *PLoS Medicine*, 4 (6), 0967-0971.
- Lajunen, T., & özkan, T. (2011). Person and environment: traffic culture. In B. E. Porter (Ed.), *Handbook of traffic psychology* (pp. 179-192). Amsterdam: Elsevier.
- Leech, N. L., & Onwuegbuzie, A. J. (2008). Qualitative data analysis: A compendium of techniques and a framework for selection for school psychology research and beyond. *School Psychology Quarterly*, 23(4), 587-604.
- Markus, H. R., & Hamedani, M. G. (2007). Sociocultural psychology: The dynamic interdependence among self systems and social systems. In S. Kitayama & D. Cohen *Handbook of Cultural Psychology* (Eds.), London: The Guilford Press.
- Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, 5, 420-430.
- Marshall, M. N. (1996). Sampling for qualitative research. *Family Practice*, 13, 522-525.

- Martinez, R. (2005). Teen crash victims: who are these people and why are they here? *Annals of Emergency Medicine*, 45, 155-156.
- Maslow, H. A. (1954). *Motivation and personality*. New York: Harper & Row.
- Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung / Forum Qualitative Social Research*, 11(3), Art. 8, <http://nbn-resolving.de/urn:nbn:de:0114-fqs100387>.
- Matthews, G., Dorn, L., Hoyes, T. W., Davies, D. R., Glendon, A. I., Taylor, R. G. (1998). Driver stress and performance on a driving simulator. *Human Factors*, 40(1), 136-149.
- May, J. F. (2011). Driver fatigue. In B. E. Porter (Ed.), *Handbook of traffic psychology* (pp. 287-297). Amsterdam: Elsevier.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass.
- Miles, M., & Huberman, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. 2nd ed., Thousand Oaks, CA: Sage.
- Mock, C., Amegashie, J., & Darteh, K. (1999). Role of commercial drivers in motor vehicle related injuries in Ghana. *Injury Prevention*, 5, 268-271.
- Mock, C. N., Gloyd, S., Adjei, S., Acheampong, F., & Gish, O. (2003). Economic consequences of injury and resulting family coping strategies in Ghana. *Accident Analysis and Prevention*, 35, 81-90.
- Mock, C., Kobusingye, O., Anh, L. V., Afukaar, F., & Arreola-Risa, C. (2005). Human resources for the control of road traffic injury. *Bulletin of the World Health Organization*, 83, 294-300.
- Mohan, D. (2008). Road traffic injuries: A stocktaking. *Best Practice & Research Clinical Rheumatology*, 22(4), 725-739.
- Morse, J. M. (1994). Designing funded qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp.220-235). Thousand Oaks, CA: Sage.
- Morse, J. M. (2008). Confusing categories and themes. *Qualitative Health Research*, 18, 727-728.
- Nantulya, V., & Reich, M. (2003). Equity dimensions of road traffic injuries in low-and middleincome countries. *Injury Control and Safety Promotion*, 10, 13-20.
- National Road Safety Commission. (2007). Annual report. Retrieved from <http://www.nrsc.gov.gh/assets/2007%20annual%20report%20dav%20adom%20ruddy.pdf>
- National Road Safety Commission [NRSC]. (2008, January-June). Break the drive and stay alive. *Road Safety Dialogue*, 3(1).
- National Road Safety Commission. (2009). National road safety policy. Retrieved from <http://www.nrsc.gov.gh/assets/NRSP.pdf>
- National Road Safety Commission [NRSC]. (2010a). Annual report. Retrieved from: <http://www.nrsc.gov.gh/assets/2010%20annual%20report.pdf>
- National Road Safety Commission [NRSC]. (2010b). Road traffic crashes in Ghana: Statistics. Retrieved from: <http://www.nrsc.gov.gh/assets/accidents2010.pdf>
- National Road Safety Commission [NRSC]. (2011). National road safety strategy III (NRSSIII). Retrieved from <http://www.nrsc.gov.gh/assets/NRSS%20III.pdf> or <http://www.nrsc.gov.gh/pages.php?pg=annual>
- Nelson, G. B., & Prilleltensky, I. (2005). *Community Psychology: In pursuit of liberation and well-being* (Eds.), Palgrave MacMillan.
- Ngueutsa, R., & Kouabenan, R. (2012, July). Fatalistic beliefs, accident explanations, and safety-related behaviours. Paper presented at the meeting of 30th International Congress of Psychology, Cape Town, South Africa.
- Onwuegbuzie, A. J., & Daniel, L. G. (2003). Typology of analytical and interpretational errors in quantitative and qualitative educational research. *Current Issues in Education [Online]*, 6(2). Retrieved from: <http://cie.ed.asu.edu/volume6/number2/>
- Onwuegbuzie, A. J., & Leech, N. L. (2007). A call for qualitative power analyses. *Quality & Quantity*, 41, 105-121.
- Osafo, J., Knizek, B. L., C. S. Akotia, C. S., & Hjelmeland, H. (2011). Influence of religious factors on attitudes towards suicidal behaviour in Ghana. *Journal of Religion and Health*. Advance online publication. doi: 10.1007/s10943-011-9487-3.
- Öz, B., Özkan, T., & Lajunen, T. (2010). Professional and non-professional drivers' stress reactions and risky driving. *Transportation Research Part F*, 13, 32-40.
- Peterson, C., Maier, S. F., & Seligman, M. E. P. (1995). *Learned Helplessness: A Theory for the Age of Personal Control*. New York: Oxford University Press.
- Petridou, E., & Moustaki, M. (2000). Human factors in the causation of road traffic crashes. *European Journal of Epidemiology*, 16, 819-826.
- Philip, P. (2005). Sleepiness of occupational drivers. *Industrial Health*, 43, 30-33.

- Porter, B. E. (Ed.). (2011). *Handbook of traffic psychology*. Amsterdam: Elsevier.
- Quartey, R. Q. (2010). Performance audit report of the auditor-general on road safety in Ghana. Report No.AG.01/109/Vol.2/29. Retrieved from [http://www.gaudit.org/reports/national\\_road\\_safety.pdf](http://www.gaudit.org/reports/national_road_safety.pdf)
- Rashid, Z., & Ibrahim, S. (2007). The effect of culture and religiosity on business ethics: A cross-cultural comparison. *Journal of Business Ethics*, 82, 907-917.
- Reason, J. T., Manstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). Errors and violations on the roads: A real distinction? *Ergonomics*, 33, 1315-1332.
- Road Traffic Act, 683. (2004). Republic of Ghana.
- Ross Silcock, B., & Transport Research Laboratory (TRL) Limited. (2003). Guidelines for estimating the cost of road crashes in developing countries (Project R7780). Retrieved from [http://www.transport-links.org/transport\\_links/filearea/publications/1\\_807\\_R%207780.PDF](http://www.transport-links.org/transport_links/filearea/publications/1_807_R%207780.PDF)
- Rothengatter, T., & Huguenin, D. (Eds.). (2004). *Traffic and transport psychology. Theory and application*. Proceedings of the ICTTP 2000. Oxford: Elsevier.
- Salifu, M., & Ackaah, W. (2011). Under-reporting of road traffic crash data in Ghana. *International Journal of Injury Control and Safety Promotion*. Advance online publication.doi:10.1080/17457300.2011.628752.
- Schou, L., Høstrup, H., Lyngsø, E. E., Larsen, S., & Poulsen, I. (2012). Validation of a new assessment tool for qualitative research articles. *Journal of Advanced Nursing*, 68(9), 2086-2094.
- Seligman, M. E. P. (1975). *Helplessness: On Depression, Development, and Death*. San Francisco: W. H. Freeman.
- Seligman, M. E. P., & Maier, S. F. (1967). Failure to escape traumatic shock. *Journal of Experimental Psychology*, 74, 1-9.
- Sharma, B. R. (2008). Road traffic injuries: A major global public health crisis. *Public Health*, 122, 1399-1406.
- Shinar, D. (2007). *Traffic safety and human behaviour*. Oxford, UK: Elsevier.
- Sikron, F., Baron-Epel, O., & Linn, S. (2008). The voice of lay experts: Content analysis of traffic accident "talk-backs". *Transportation Research Part F*, 11, 24-36.
- Silverman, S. (2000). *Doing qualitative research: A practical handbook*. London: Sage.
- Solomon, S., Greenberg, J., & Pyszczynski, T. (2004). The cultural animal: Twenty years of terror management theory and research. In J. Greenberg, K. L. Sander, & T. Pyszczynski (Eds.) (2004). *Handbook of Experimental Existential Psychology* (pp. 13-34). New York, NY, US: Guilford Press.
- Stanton, N. A., & Salmon, P. M. (2009). Human error taxonomies applied to driving: A generic driver error taxonomy and its implications for intelligent transport systems. *Safety Science*, 47, 227-237.
- Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion*, 10(4), 282-298.
- Tarko, P. A. (2009). Modelling drivers' speed selection as a trade-off behaviour. *Accident Analysis and Prevention*, 41, 608-616.
- Taylor, A. H., Dorn, L. (2006). Stress, fatigue, health, and risk of road traffic accidents among professional drivers: the contribution of physical inactivity. *Annual Review of Public Health*, 27, 371-391.
- Thurmond, V. A. (2001). The point of triangulation. *Journal of Nursing Scholarship*, 33, 253-258.
- Tse, J. L. M., Flin, R., & Mearns, K. (2006). Bus driver well-being review: 50 years of research. *Transportation Research Part F*, 9, 89-114.
- Underwood, G. (Ed.). (2005). *Traffic and transport psychology: Theory and application*. Proceedings of the ICTTP 2004. Oxford: Elsevier.
- Unrau, Y., & Coleman, H. (1997). Qualitative data analysis. In M. Grinnel (Ed.), *Social work research and evaluation: Quantitative and qualitative approaches*, (pp. 512-551), Itaca, Illinois: Peacock.
- World Health Organization. (2004). *World report on road traffic injury prevention*. Retrieved from [http://www.who.int/violence\\_injury\\_prevention/publications/road\\_traffic/...](http://www.who.int/violence_injury_prevention/publications/road_traffic/)
- World Health Organization. (2009). *Global status report on road safety*. Retrieved from [http://whqlibdoc.who.int/publications/2009/9789241563840\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241563840_eng.pdf)
- Yankson, I. K., Browne, E. N. L., Tagbor, H., Donkor, P., Quansah, R., Asare, G. E., Mock, C. N., & Ebel, B. E. (2010). Reporting on road traffic injury: content analysis of injuries and prevention opportunities in Ghanaian newspapers. *Injury Prevention*, 16, 194-197.
- Young, M. S., Mahfoud, J. M., Walker, G. H., Jenkins, D. P., & Stanton, N. A. (2008). Crash dieting: The effects of eating and drinking on driving performance. *Accident Analysis and Prevention*, 40, 142-148.



