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ABSTRACT

Objectives: While there is a growing body of literature on crash risks in the developed world, little is known about how well these models apply to motoring in developing countries, the context in which the majority of road traffic fatalities occur. This qualitative study explores factors perceived to influence crash risks for commercial drivers in Ghana.

Method: Twenty commercial drivers of varied ages and experience were sampled from 7 major lorry terminals in 3 regions (Greater Accra, Ashanti, and Volta) of Ghana. Data were collected through semi-structured interviews.

Results: The participants identified some issues that are shared with drivers in the developed world, though moderated by the Ghanaian context. These included working pressures (e.g., fatigued driving), speeding, distracted driving and inadequate vehicle maintenance. Other factors identified by the participants are less frequently considered in research addressing driving behavior in developed countries. These included aggressive competition over passengers and corruption (e.g., improper licensing practices) among others.

Conclusion: The findings have implications for building a research base to support the development of road safety policy and interventions in developing countries.

Keywords: *road crash, commercial driver, behavior, developing economies, thematic analysis*

Introduction

Road crashes in developing countries pose serious public health challenges accounting for approximately 85% of global traffic accidents (Largade, 2007). Against a global average of 17.5 deaths per 100,000 population, mortality from road crashes is highest in Africa (28.3 per 100,000 population) despite being the least motorised world region (WHO, 2015). We focus on Ghana which exemplifies the contribution of road crashes to mortality and morbidity in Africa. Partly as a result of growing population and increasing car ownership, fatalities have increased 12-15% annually since 2008 (National Road Safety Commission [NRSC], 2017). About 40% of Ghanaian fatalities involve commercial passenger vehicles that provide public transport services (NRSC, 2017). These include minibuses, big buses (coaches) and shared taxis that are operated mostly on a hire and pay basis.

Human factors contribute to over 95% of global road fatalities (Petridou & Moustaki, 2000), yet little research has focussed on these factors in developing countries where crashes are most common (Largade, 2007). Many human factors identified in developed world crash research are also likely to be salient in developing countries. Two forms of risky driving have been identified; inadequate driving skills and dangerous driving style (Reason Manstead, Stradling, Baxter, & Campbell, 1990). Skill deficits include deficiencies in hazard perception, the ability to understand the road situation sufficiently to allow dangerous situations to be anticipated (Wells et al., 2008), and errors such as missing give-way signs (Reason et al., 1990). In developed countries, driver education and licensing are designed to mitigate skill deficits. The reductions in newly qualified driver crash through initiatives such as hazard perception training (Wells et al, 2008) demonstrates the potential efficacy of these controls.

Dangerous driving style involves deliberate rule violations, such as speeding and close-following which are more common in males and younger drivers and have been linked to antisocial behaviour (Reason et al., 1990). Risky driving behaviours may be responsive to education, although current approaches have provided limited evidence of efficacy (Poulter & McKenna, 2010). The evidence base more strongly supports enforcement, such as speed cameras (Delaney, Ward, Cameron, & Williams, 2005), as control mechanisms for violations in developed countries.

Regarding commercial driving, variations in working conditions and training have been associated with crash risk in developed countries (Zhang, Yau, Zhang, & Li, 2016) and factors relating to sleep may be particularly important. Sleep factors, such as sleeping <5 hours in the previous night and driving between 2 am and 5 am, have been associated with 15-25% of crashes (Zhang et al., 2016). While falling asleep during driving is likely to be catastrophic, lower level fatigue may also increase risk. For example, mild sleepiness can impair hazard perception performance (Smith, Horswill, Chambers, & Wetton, 2009) which would be predicted to increase crash risk. Studies addressing commercial driving in developing countries have indicated that working under exhaustion is linked to violations leading to crashes (Zhang et al., 2016).

This study explores the potential determinants of road traffic crashes in Ghana as seen from the perspective of commercial drivers. It is anticipated that a number of factors identified as important in crash risk in developed countries, as discussed above, will be salient in Ghana. Errors and violations are likely to be proximal risks for crash. However, characteristics of the road situation in a developing nation such as Ghana might influence the way the driving environment limits and/or promotes these aberrant driving behaviours. In particular, deficiencies in road traffic law enforcement structures in the developing world have been identified (Largade, 2007) as contributing to crash risks. Corruption promotes improper training and licensing and fosters violations so hazardous driving behaviors may go unchecked, and mandatory maintenance practices may be ignored (Nantulya & Reich, 2002).

We adopted a qualitative methodology to provide an initial exploration of the under-researched driving situation in Ghana. This allows investigation of issues hypothesised to be important on the basis of literature from the developed world, without constraining the way in which these issues are framed. It also allowed participants to tell us about novel issues that may be peculiar to the developing world context and therefore have not been anticipated in the developed world literature. The inductive approach to thematic analysis (Braun & Clarke, 2006) was used to help to identify unanticipated insights within the data.

Method

Participants

Twenty drivers of commercial passenger vehicles were selected through purposive and snowball sampling strategies. Inclusion criteria required active commercial driving within the last 6 months. Initial contacts were made with the commercial drivers at 7 lorry terminals in Accra metropolis and one each at Ashanti and Volta through personal approaches. Participants identified through mutual acquaintance were invited by telephone. The participants were all males reflecting the male domination of this profession in Ghana, aged 24-63 years *(M = 37.95* years*, SD= 10.6)* and had driving experience of between 5 months - 30 years (*M* = 5 years, *SD* = 2.16). Nine of the participants usually drove less than 500km per journey, 5 usually drove more than 500km per journey and the remaining 6 did both. All the drivers except one had valid driving licences at the time of conducting the interviews.

Ethical approval was obtained from the Ethics Committee of the Psychology Department at the University of Sheffield UK and from the University of Ghana, Ethics Committee for the Humanities. Participants provided informed consent and were informed of their right of withdrawal from the study at any time without offering any explanation. Anonymous quotes are reported in Appendix II to protect anonymity. Data saturation was realised after the 20th interview; the themes that were identified at this stage overlapped with themes already identified in previous interviews. Therefore no further interviews were conducted because it was unlikely that this would lead to the identification of novel themes (Guest, Bunce, & Johnson, 2006).

Data Collection

Data was collected through face-to-face semi-structured interviews by two interviewers from the University of Ghana with support from two assistants. The assistants obtained informed consent, conducted pre-screening, collected demographic information and debriefed participants. All invited participants were fluent in English (lingua franca in Ghana) which was used for all interviews. The interviews were conducted in driving union offices (bodies that oversee the daily operations of commercial passenger drivers) or at the participants' homes and lasted approximately 35 minutes each.

An interview protocol (Appendix I) ensured that both interviewers and participants were guided towards discussing the same topics. Questions were phrased generally to allow the participants freedom to provide novel information. Further probes were used to enhance the understanding of the participants' experiences. Methodological rigor was ensured by member checking (Guba & Lincoln, 1985). The initial thematic frameworks of 6 participants randomly drawn from the two interviewers were discussed with the respective participants to check that they reflected the experiences they shared during the interviews. Only minor modifications were made to a few narratives on this basis, demonstrating the overall integrity of the approach. This process resolved minor differences in questioning between the two interviewers.

Data Analysis

Open coding techniques (Yin, 2012) were employed to analyse the data. Data was coded manually after a verbatim transcription. The analysis was conducted using the 6 phase process recommended by Braun and Clarke (2006) which includes; (1) data familiarization, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes and (6) reporting. Coding units were defined as individual statements, usually a sequence of interrelated sentences, of relevance to the research objective. The data were coded independently by the principal researcher and lead interviewer with an inter-rater reliability of 94%. Coding differences were resolved by discussion.

RESULTS

Six main themes emerged: working pressure, violations, concentration, training, behavior of other road users, and corruption. Sample quotation extracts are presented in Appendix III.

Work pressure

Participants discussed a number of work pressures which they believed contribute to traffic crashes. These focused on fatigued driving and revenue pursuit.

Fatigued driving

Participants, often working 18-20 hours per day, 6-7 days per week, confirmed that fatigue and sleepiness were a major issue. The participants disclosed not having assistant drivers to relieve

them when tired. A few did periodically employ "spare drivers" but this was to drive on days when the primary driver was entirely unavailable rather than to relieve them on long journeys when they were sleepy.

Revenue Pursuit

The participants indicated that fatiguing working conditions are usually due to the pursuit of high revenue targets. Operational costs demand that they meet certain revenue targets in order to keep operating. They believed drivers try to address this problem by engaging in violations in order to maximise income.

Violations

In relation to the 'violation' theme, participants particularly identified and discussed such behaviours as speeding and aggression, aggressive competition over passengers, obstruction, dangerous overtaking, lax maintenance attitudes, dangerous loading practices, and substance use.

Speeding and aggression*;* the participants commonly cited breaking speed limits to make up for lost time and revenue when there were traffic delays as a contributor to crash risk. They reported being particularly likely to speed on roads that were in good condition. Some of the participants believed that speeding capabilities defined the status of a 'true' driver. The ability to drive fast and overtake others was seen as a way of demonstrating driving superiority.

Aggressive competition over passengers: Participants noted that there was not a formal bus timetable. This often resulted in competition over passengers in pursuit of their revenue. According to the participants, competition to arrive first at passenger pick-up points often resulted in speeding and dangerous overtaking to get or stay ahead of rival drivers, deliberately obstructing competing vehicles to prohibit them from overtaking and use of unapproved routes including driving on sidewalks. Passenger competition can also result in confrontations between drivers involving angry verbal exchanges and physical scuffles.

Obstruction (unintentional and passive) and dangerous overtaking: As well as the deliberate obstructions involved in passenger competition, unintentional obstructions by other road users, including other commercial drivers were identified as hazards. Unintentional obstructions include other drivers' inability to complete a "U' turn on a single lane road ahead of approaching vehicles and intentional violations from other motorists. It also involves large vehicles that do not give way to other motorists who wish to overtake them because of their slower pace.

The participants believed that many fatal crashes stem from head-on collisions following dangerous overtaking. They indicated that such overtaking occurs in unsafe places such as sharp curves or uneven portions of the road leading to staying too long on the opposite lane and facing oncoming vehicles.

***Maintenance attitudes*:** The participants believed a poor maintenance culture contributes to the prevalence of crashes. They reported experiences of several poorly maintained vehicles; some drivers deliberately ignore mechanical faults due to the unwillingness to pay for repair. This was partly linked to the majority of the participants hiring the cars that they drive while being responsible for maintenance. Participants indicated their vehicles were only serviced when they developed mechanical faults. They did not have scheduled safety checks. The use of worn-out tyres and car parts was also reported to be commonplace.

Loading practices: Exceeding the vehicle carriage capacity (loading more passengers and goods than designated) was mentioned by participants as often resulting in crashes as their vehicles become uncontrollable. They noted that their motivation is short-term profit rather than passenger safety.

***Alcohol and Substance use*:** The participants reported often drinking alcohol or seeing other commercial drivers drink alcohol before driving. Most participants condemned this behaviour and attributed it to boredom and habit. However, some stated that they often drink and drive without being involved in crashes. Aside from drinking, some of the participants reported the use of other substances [e.g., cannabis] during working hours.

Concentration

Poor concentration that arises from passenger distractions, absent-mindedness, and mobile phone use was discussed by the participants.

Passenger distraction: The participants indicated that commercial drivers often get distracted by their passengers. The issues usually concern disagreement over fares and protests over driving speed (with passengers asking them to drive both faster and slower).

Absent mindedness: the participants reported often taking their minds off the road when driving. They explained this as having to think about other things including domestic issues and family problems.

Mobile phone use: The participants reported that using mobile phones while driving is common among commercial drivers just as in other Ghanaian drivers. They indicated this impairs their concentration.

Causal beliefs

While the participants accepted that some crashes have natural causes, some believed that supernatural forces contributed to some crashes. They indicated that "evil" supernatural influence could be a response to their own unethical behaviours for example in the means by which they acquired their car. Alternatively "evil spirits" may dwell in specific road locations. The participants also observed that commercial drivers may acquire charms either to protect themselves from crashes or to inflict harm on competing drivers.

Training and Experience

Training and experience deficits and other factors such as age, confidence, and ability to interpret road signs were also discussed by the participants.

***Age, experience, and confidence*:** Contrasting concerns were raised regarding driving age. The participants indicated that aberrant driving behaviours are often engaged in by young drivers who

had limited training. They indicated commercial driving is unsuitable for young people. Participants also indicated that lack of confidence to handle emergency situations contributes to road crashes. Most of the drivers reported experiencing emergency situations such as a tyre blow-out. According to them, it requires confidence to manage such situations but they believed that many commercial drivers lack such abilities.

***Training and performance*:** The participants indicated that the majority of commercial drivers learnt by apprenticeship without formal training. They reported that formal training offered by driving school is the preserve of private car users, and those seeking formal driving employment rather than independent commercial drivers. When commercial drivers had received formal training their abilities were perceived to be low. The participants indicated that even under the apprenticeship model some do not complete the mandatory training period. Therefore, they may lack basic knowledge of driving regulations and road safety.

***Ability to interpret road signs*:** Although the participants noted the inadequacy of signage on the roads, many of them reported difficulties interpreting the few road signs available. This they attributed to the low level of formal training among commercial drivers. They reported that only a few apprentices who have remained under training for a long time will have learnt to interpret some road signs.

Behavior of other road users

Pedestrians and cyclists: The participants identified pedestrians and cyclists as contributing to road crashes. They reported that pedestrians often cross the road at unsafe places and without looking for oncoming vehicles. They also reported that cyclists often do not observe safety rules; they ride on the wrong side of the road and cut in front of moving cars.

The participants observed that in some towns the major highways are overrun by pedestrians and street-sellers. In some of the towns, there are no sidewalks. In others, pavements are provided but they are not sufficient to cope with the demand.

Corruption

Improper licensing practices: The participants identified corruption and cumbersome licensing procedures as contributing to aberrant driving behaviours. Some participants explained that commercial drivers may secure their licenses through illegal means, including bribery.

Police hold-ups and extortion: Unscheduled roadblocks and checks by the police that involve extortion of money were reported to influence the participants' driving behaviour. The participants indicated that the extortions make them look out for police check-points creating distress and anxiety. According to the participants, not only will the police extort money but the process often results in long delays.

Discussion

This study explored commercial drivers' perceptions of the causes of Ghanaian crashes. Similar to findings from the developed world, human behaviours were identified as the key risks. Issues of working pressure, violations, concentration, training deficits, the behavior of other road users and corruption among enforcement agencies were identified. While some of the risk factors that were reported (e.g., fatigued driving and speeding) are similar to those identified in developed countries, others (e.g., corruption) have not been widely discussed in the literature addressing developed countries and may be more common in developing countries.

Working pressure

Work pressure has been identified as a major antecedent of crashes in professional driving in the developed world (Zhang et al., 2016). Common to the developed world, the pressure to generate revenues was reported by Ghanaian commercial drivers. However, the outcomes of this pressure reported in Ghana differed from those often discussed in literature from the developed world. For example, the participants described competition between drivers trying to arrive first at passenger pick-up points to involve risky driving including dangerous over-taking and deliberately blocking competitor's attempts to overtake. While professional drivers in developed countries will experience work-related fatigue this is managed through regulation. For example, EC Regulation 561/2006 and EU 165/2014 limit passenger vehicle drivers to driving for 9 hours per day and 56

hours per week with breaks every 4.5 hours (EU, 2006). These limits are enforced through tachograph recordings in the EU but no similar system exists in Ghana.

Violations

Driving violations are well-documented predictors of crashes in the developed world (de Winter & Dodou, 2010). Speeding and aggression, dangerous overtaking and substance use among others were reported to be common by our participants, particularly amongst young drivers. Some of the violations (e.g., speeding) are shared with developed countries. Others, including poor attitude towards maintenance, unsafe loading practices may be much common in the context of developing countries.

Drinking and substance use were other commonly reported violations. Driving under the influence of alcohol has attracted public attention in Ghana over the past two decades (NRSC, 2017) but still persists as a common violation. The debilitating effects of alcohol were recognised by some participants although some argued for positive influence on driving performance. There were also reports that cannabis was used by Ghanaian commercial drivers. This may result in cognitive impairments that lead to errors (Hartman & Huestis, 2013). However, some of the participants believed that driving experience mitigates the effect of substances and this may further increase their crash risk.

The level and impact of violations may be more severe in developing countries where legislation and enforcement may be less effective. Enforcement weaknesses were highlighted by our participants including police corruption. This includes police roadblocks that could only be passed by bribery to avoid prosecution for minor infringements. To avoid these situations, our participants reported that drivers may take unsafe alternatives routes to avoid expected corrupt policing. Bribery and ineffective regulation of driver licensing were also reported to encourage the entry of unskilled drivers into commercial driving. A body of evidence (e,g., McCartt, Mayhew, Braitman, Ferguson, & Simpson, 2009) from developed countries attests to the importance of experience in road safety. The problem of inexperienced drivers in the developing world may be much greater as ineffective and corrupt licensing practices allow untrained drivers onto the roads.

Social-cognitive factors

The participants reported that they believed that there were supernatural causes of crash. In developing countries, fatalistic and superstitious beliefs have been found to influence driving safety behaviours such as seat belt use (Kouabenan, 1998) and may be widespread. Kouabenan (1998) have found that culturally determined biases and beliefs affected the perception of driving risk. These beliefs may impede efforts to develop safer behaviors in drivers that do not believe their crash involvement is not under their control.

Efficient driving performance was also reported to be compromised by the behavior of others. Distraction from interaction with passengers in the vehicle was noted. Our sample also indicated that the behavior of other road users such as pedestrians, cyclists and large-bodied vehicles among others contributed to crash risk. Some of these behaviors reported on the part of other road users reflect the same sorts of behaviors that our sample reported engaging in themselves and therefore highlights the widespread nature of problem driving behavior in the developing world.

Limitations

The interview approach does have weaknesses in terms of potential volunteer biases and the possibility that the participants' responses may be influenced by efforts to portray their own driving positively. The exclusion of non-English speaking drivers may have led to the inclusion of more educated commercial drivers than are fully representative of the population. This concern is mitigated to some extent by our participants basing their reports on the driving behaviour that they have observed in other drivers as well as their own driving, which therefore means that the behaviour on non-English speakers has contributed to our results. Further research, using quantitative as well as qualitative methodologies will be required to test the hypotheses on crash causation developed in this paper in the context of the developing world.

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Appendix I: Interview Guide

Pres-Screening Question(s)

1. Are you currently driving or not (not driving/without a car)? A. Driving B. Not driving
2. If not driving for how long since you last drove? A. Less than 6months B. 6+ months.

Demographic Information Questions

1. Do you have/hold a valid driving license? A. Yes…… B. No……
2. Will you kindly tell me your age ……
3. For how long have you been in commercial driving? Have you any other form of driving experience?
4. Which type of vehicle do you usually drive?
5. Travel distance A. Long……. 500km+ B. Short ……. < 500km
6. How often do you share the driving with another driver?

Now I am going to give you a brief overview of the current accident situation after which we will discuss some few issues.

'..Globally over 1.2 million people die each year on the world's roads with millions more sustaining serious injuries (WHO, 2015). Road crashes in Ghana for the year 2015 stood at 13,133 cases of accidents involving 16,598 vehicles. This resulted in 1,634 deaths - with 9,186 sustaining severe injuries (National Road Safety Commission, 2016). These numbers are predicted to increase in coming years... '

Research Interview Questions

1. What is your typical day as a driver like?
2. Do you find anything stressful about your typical day? What are the pressures?
3. Briefly tell me about your experiences with crashes/accidents and the factors you might identify as being responsible?
4. Will you tell me a little bit about your training?
5. What has changed about driver training and driving since your training?
6. What can you say about the driving environment (in terms of roads, safety etc)?
7. Will you recommend that anybody at all at any time once he/she is of age can go into commercial driving? Why and why not?
8. Is there anything else you want to share concerning the causes of crashes on our roads?
9. What is the greatest priority in increasing road safety in Ghana?

Thank you very much for your time

Appendix II: Coding Framework

Theme	**Sub theme**	***Quotation extract***
Work pressures	Fatigued driving	*"...you have to wake up very early like 4 o'clock am and close late like 12 am…" (P2)* *"....when going on long journeys ....we will not sleep for about three days. Sometimes you will be sleeping while driving.... It happened to me before. I just slept small before I opened my eyes the car was in a trench somewhere" (P13)*
	Pursuit of revenue targets	*"...Many of us drivers to are rushing and the problem is because of the sales you have to make...when there are more passengers like funerals on Saturday, I rush so much so I can get more money to make my sales. Even if the car is for you, after spending money at the shop you are left with something small for yourself so you have to rush whenever there are passengers and you have to work all day. You sometimes become tired but you don't have to stop..." (P8)*
Violations	Speeding and aggression	*"...The reason [for crashing on good roads] is that some of the drivers over speed ... they drive 90, 100 [km/h] and above…'' (P5)* *"..For instance, driving from Accra to Kumasi should take about 4 hours but because of the traffic you can be on the road for 6 hours. ... you can be in traffic alone for three hours and when you finally move through you want to speed to cover the time you spent in the traffic especially when the road is good" (P8)* *"...You see there are some of us [commercial drivers] the moment we get on the good roads we want to exhaust the speed of the car to show everybody that, yes! we can drive" (P13)* *"...and there is that thing that the faster you go the better you are as a driver among the young guys and these things all lead to accidents..." (P18)*
	Aggressive competition over passengers	*"...some of my colleagues in order that they will get to Accra first and load they will rush, they know if others get to the station before them they will load ahead of them. So, some of the drivers, when they see that, they speed up and pass through some corners or pass the side of the road. If you want to overtake them they will block you..." (P6)* *"..Even the fighting among us the drivers over passengers creates a lot of tension and hatred which are all not good for driving. Sometimes you will see us commercial drivers quarrelling in traffic because someone has crossed you or is not giving way for you to pass. It is very common among us the 'trotro' [mini commercial passenger buses that ply short distance in Ghana] drivers ..." (P13)*

	Obstruction (unintentional and passive) and dangerous overtaking	*"..Some drivers especially of big cars have been rushing and blocking others. When you are on the road, and other cars are coming you have to give way…allow them so that they can overtake you but many of us commercial drivers we don't allow that" (P6)* *"...some drivers just rush to get in front of other, they don't make sure the way in front of them is clear before they do the overtaking or sometimes the way is too narrow...." (P4)* *"..There are some drivers who don't have brains, they do overtaking in places that are not good like in curves.... Sometimes when we want to go fast and there is traffic you can see somebody driving on the other road for cars coming the opposite way" (P8)* *"....I have ever seen a crash resulting from wrong overtaking. The vehicle that was doing the overtaking did not see that there was another vehicle coming from the opposite direction and when he saw it he applied the brake and before we all see the car has somersaulted thrice killing all the people..." (P9)*
	Attitudes towards maintenance	*"...Many of our cars to are not properly maintained so they become very dangerous to use" (P3)* *" ...ok sometimes your tyres and some other parts of the vehicle are not good but you will say you want to manage it small…small, and by the time you know you get an accident... the only time we go to the shop is when the cars have a problem"(P13)* *"…the parts are not good, we go to Abossey Okai [market for used car spare parts in Ghana] to buy some parts but they don't last. Sometimes the second-hand parts fail us when we are on the road …. Sometimes the old spare parts that have spoiled; they will just paint it and resell to us. The tyres we buy are also not good because the new tyres are very expensive..." (P8)*
	Loading practices	*"Those who have load carriers will carry heavy loads on top before there will be passengers. Sometimes we even carry more passengers than the car... and you know some of the cars were not made to carry loads" (P4)*
	Alcohol and Substance use	*"...when we are feeling sleepy we go to take "akpeteshie" [alcohol] to make us alert but most times it makes you dull because you are drunk. But the drinking sometimes makes you become sharp and alert but if the driver over drinks and is going on a long journey it is a problem, but if it is a short journey I don't think it is a problem" (P4)* *"...Many drivers at the station here drink alcohol but they are very experienced so they don't get accidents just anyhow.... As you can see they are selling "akpeteshie" over there and here, two places..." (P11)* *"...As we are here like this some drivers go to smoke "wee" [cannabis/marijuana] and their eyes become so red like that of some wild animal before they drive..." (P11)*

Concentration	Distraction from passengers	*"....they will be putting pressure on you, let's go, why did you stop? ...and your car is not running... But you're the same person carrying 23 people. Sometimes you become annoyed and turn to watch back and talk to them and if you are not careful accident will happen now... Sometimes when the passengers starts misbehaving towards you and you want to correct them other passengers will support them..." (P7)* *"... I was "firing" [speeding] a bit then a passenger, a woman behind me started shouting at me as to why I was speeding like that.... so it shocked me and I turned to look at her, before I could turn around and concentrate on the road there was a broken down tipper parked by the road in front of me. To avoid running into it, I left the road [veered off] into the bush...." (P11)*
	Absent mindedness	*"...So sometimes the issues from home take your mind out of the car when driving... The problem takes your confidence away and you can't drive well..." (P8)*
	Mobile phone use	*"All of us drivers even all mates now have phones... People drive and talk on phone" (P10)*
Causal beliefs		*"There are spiritual problems that cause accidents. Sometimes some spirits located in some places like water bodies near the roads when thirsty for blood also cause accidents. Sometimes when it happens we will all say it is the driver but we all know it is not the driver...." (P1)* *"Sometimes the cars owners used spiritual or blood money to buy the car so every year especially getting to Christmas there must be blood spill to pay for that money or get more money... there must be accident involving that car, then people will die....." (P3)*
Training and Experience	Age, experience and confidence	*"...we have drivers who are 19 years, 20 years as commercial vehicle drivers. Yeah, 19, 20 to 22..., this is young guys with youthful behavior who are interested in just plying the road and they are not thinking about their lives and that of other people.... And there is that thing that the faster you go the better you are as a driver among the young guys..." (P18)* *Some others blamed elderly drivers for being responsible for the crashes.* *"...the brains of some of our drivers too are tired and they have to stop driving, ...if you see most of the big buses like the metro buses they are being driven by old people and often there are accidents...some don't see in the night and they make mistakes" (P19)* *"..there are some of the drivers who naturally have less confidence and such people should not drive. Even if they will drive then it should be private cars but not "trotro" because they always drive mistake..." (P10)* *Some participants also believed that driving experience and skills can compensate for machine failure leading to crashes.* *"...the second hand parts fail us when we are on the road ...and if you are not experienced there will be accident..." (P8)*

	Training and performance	*"..I trained as an auto electrician, and when you are at the shop there is no job so I turned to commercial driving. My mother had a car and through that, I and my brother learnt the driving ourselves" (P8)* *"...For me, I served as a mate and became an apprentice for 4 years before I started driving but now these young boys just if they know how to change the first and second gear, then apply brakes and the clutches, they say they are drivers..." (P13)*
	Ability to interpret road signs	*"...I say that before you become a commercial driver you must be educated small before you can do it well. When you see some road signs they write 50 and you have to drive according to the road sign. Some people have not been to school so they are just driving...." (P14)*
Behavior of other road users	Pedestrians and cyclists	*"..Some pedestrians cross anywhere and if they cross you like that and you don't take care you hit them, or brake and summersault, or you will swerve and enter the gutter, or hit something by the road. For example, the N1 Highway, the footbridges there, many pedestrians will not use the footbridge and they will cross the road when you are speeding" (P5)* *"...When driving...you will see plenty of people selling on the road. Some days they take more than half of the road...." (P13)*
Corruption	Improper licensing practices	*"...Some of the guys do not even go for a driving test, they stay in the house and they bring them their license. If I tell the truth and die is better…me myself when I went for the driving test they did the eye test and after that, they were frustrating me so I had to pay somebody and I was given my license" (P2)*
	Police hold-ups and extortion	*"...We will dodge and pass through some places just to avoid the police...The police too like coming on the road during rush hours and a very small thing they will detain you and collect money from you. You see as part of the pressure, you buy petrol [fuel], give your mate money and the police will take about 20gh cedis [$5.00] from your out of the 50 gh cedis [$12.00] you made on a trip. How much will be left for you to make sales?" (P8)* *"...The police are there to enforce the law but even that when they catch you they just take money from you and let you go...." (P20)*