

**EFFECT OF FEAR AROUSING MESSAGES AND FEAR OF PROSECUTION ON  
RISKY DRIVING AMONG DRIVERS IN GHANA**

**BY**

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### DECLARATION

This is to certify that this thesis is the result of research undertaken by Anakwah Nkansah under supervision towards the award of MPhil in Psychology degree in the University of Ghana.

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## ABSTRACT

Road safety advertisements incorporating fear arousing messages are not uncommon in the media. Years of research into fear appeals has yielded inconsistent results and this notwithstanding, they are usually used as a road safety campaign strategy. In Ghana, where all efforts are being made to reduce traffic accidents, the use of fear arousing messages has not been spared. In an experimental study, the researcher investigated the effectiveness of this message on risky driving attitude and also explored the effect of an alternative strategy, fear of prosecution. The interaction effect that such messages could have with the variables age, gender and driving experience were also examined. Findings from this study suggest that fear arousing messages do not have an independent effect on risky driving. There was also no independent effect for fear of prosecution on risky driving, and even after fear arousing messages and fear of prosecution have been combined, risky driving attitude was not significantly affected. However, the findings indicate that driving experience has an interactive effect with fear arousing messages with drivers with long driving years experience responding positively to fear arousing messages. Drivers with short years of driving experience only responded positively after being exposed to fear of prosecution. Again, age was found to have an interactive effect with fear of prosecution on risky driving attitude, as young drivers reduced their risky driving attitude after watching that message. Fear arousing messages did not have any interactive effect with gender. These findings are used to make conclusions about the design of road safety campaigns incorporating fear arousing messages and fear of prosecution.

## **DEDICATION**

To families who have lost their loved ones through road accidents.



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**LIST OF ABBREVIATIONS**

AID	Alcohol Impaired Driving
ASIRT	Association for Safe International Travel
CBT	Compulsory Breath Testing
CG	Control Group
EG	Experimental Group
GCTU	Ghana Co-operative Transport Union
GPRTU	Ghana Private Road Transport Union
MTTU	Motor Traffic and Transport Unit
NRSC	National Road Safety Commission
UN	United Nations
WHO	World Health Organisation

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Fear appeals have been one of the communication strategies that are often used in health education practice. Fear appeals are prevalent in health communication campaigns and advertisements where they are used to convince audiences to adopt protective and healthy behaviours (Levine, Muthusamy & Weber, 2009). Such healthy behaviours people are persuaded to engage in include eating a healthy and balanced diet, refraining from smoking and abusing alcohol, exercising regularly etc. For example, an advertisement can show pictures of diseased lungs, someone in agony lying on the sick bed diagnosed of HIV/AIDS or a gruesome scene of an accident. In Africa, fear appeals are often used in public health campaigns to prevent the further spread of HIV/AIDS (Levine et al. 2009). Fear appeals are usually used on the grounds that people will be attentive to messages and be persuaded to change their risky behaviour if their related fears are activated (Schneider, Gruman & Coutts, 2005). Hence, fear appeal studies have sought to address pressing health issues such as HIV/AIDS (Levine et al., 2009), performing breast self-examination (Ruiter, Kok, Verplanken & Brug, 2001), tetanus vaccination (Ordonana, Gonzalez-Javier, Espin-Lopez & Gomez-Amor, 2009) and smoking (Devlin, Anderson, Hastings & Macfadyen, 2005). Hence, the role of fear in behaviour change is considered very important in health promotion.

Fear appeal is a persuasive communication that presents threatening information to arouse fear in order to promote safer behaviour (Rogers, 1983). In order to arouse fear, fear appeal messages present a threat (e.g. negative consequence of a risky behaviour) that is severe and the recipient of such a message is susceptible to. The presentation of this threat prompts an attitudinal change and the adoption of a safe one. The present study therefore explored the

effect of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana.

## **1.2 Road Safety as a Public Health Concern**

All over the world, road safety continues to be a significant public health issue as loved ones and individuals that could contribute to national productivity lose their lives through road accidents. Since the first documented motor vehicle death in 1899, over 30 million people are reported to have died worldwide through road accidents (Noyes, 2013). Daily on our streets there are occurrence of accidents leading to injuries, disabilities, loss of lives and a burden to the economy of nations. Data from the World Health Organisation (WHO) shows that about 1.3 million people die from motor-vehicle accidents each year while about 20-50million are injured or disabled (World Health Organisation, 2009). Recently, the Global Status Report released by the World Health Organisation suggested that injuries from road accidents is the eighth leading cause of death, and the leading cause of death for young people, aged 15 – 29 (World Health Organisation, 2013). Unless urgent steps are taken, the WHO indicates in this report that road accidents are likely to be the fifth leading cause of death by 2030. Amongst the various means of transportation (marine, road, rail and air), road transport have been found to be the one that puts people at greater risk per kilometer travelled (World Health Organisation, 2004). Middle income countries, particularly those in African countries have also been found by the WHO to have the highest road traffic fatality rates (World Health Organisation, 2013). Even though the total number of vehicles in these middle income countries are less than half of the vehicles in the world (48%), about 91% of road accident fatalities occur in such countries (World Health Organisation, 2009).

Individuals are subjected to pain and suffering due to road accidents and it also have an impact on families who's loved ones get involved in such crashes. Such families can be subjected to emotional torture and this takes away their happiness and causes distress and psychological trauma. Again, partners and even children can find themselves performing the role of care givers when their loved one is hospitalised as a result of road accident. This can affect the productive hours of spouse and children, as the time spent at work must now be spent with those they love to cater for them especially when they are seriously injured from the accident. Thus such families do not only suffer from emotional torture but can also be plunged into poverty as they sometimes have to spend their life savings taking care of their loved ones who survive road accidents. Also, in typical Ghanaian communities where much value is placed on funeral ceremonies, if the family has to bear funeral expenses for the loss of their loved one in an accident, it becomes a burden to the family. In instances where the deceased is the breadwinner, this becomes a big blow to the deceased's family and children of the deceased are usually the most affected as their education may be disrupted. Thus, innocent people bear the consequences of someone's recklessness.

The impact of road accidents goes beyond the individual and family to affect the economy of nations. The economic and social cost that results from road accidents around the world is estimated at \$518 billion annually (World Health Organisation, 2004). Statistics by the Association for Safe International Road Travel (ASIRT) also show that road crashes cost low and middle-income countries \$65 billion annually, and this exceeds the total amount they receive in developmental assistance (Association for Safe International Road Travel, 2012). Ghana for example loses about \$165 million each year to road accidents accounting for 1.6% of her Gross Domestic Product, hence having a negative effect on the economy (National Road Safety Commission, 2009). In addition, victims of road accidents may die or get

disabled, therefore not being able to work effectively to increase productivity and national development. The WHO Global Status report on road safety (World Health Organisation, 2013) has revealed that the economically active are those mostly involved in road accidents. Thus road accidents in Ghana are seen as both a developmental and a public health issue. It is in light of these alarming statistics that at the 66<sup>th</sup> session of the United Nations (UN) General Assembly, 2011 - 2020 was declared as a Decade of Action for Road Safety, with a call on all member countries to reduce by 50%, death and injuries that result from road accidents (World Health Organisation, 2013). Hence governments all over the world are committed to taking the necessary steps to saving lives on their roads.

### **1.3 Efforts Towards Road Safety in Ghana**

As an institution mandated to plan, develop, promote and coordinate road safety activities in the country, the National Road Safety Commission (NRSC) has to live to expectation. It has in this regard adopted various mechanisms and intensified its efforts over the years to reduce road accidents and the fatalities, injuries and disabilities that result from it. Currently, the approaches adopted by the NRSC include road safety education in schools, driver training and development, street education etc. (National Road Safety Commission, 2011). In an effort to reduce risky driving the commission has adopted a strategic framework (National Road Safety Strategy III) and this is the third in a series of strategies developed since 2001. This is to be accomplished together with the key pillars of the UN's Decade of Action (2011-2020). However, reducing road accidents will not just require strategies such as the National Road Safety Strategy III but will also call for an examination of the effectiveness of road safety advertisements, which usually incorporates fear arousing messages.

## 1.4 The Key Variables

### 1.4.1 Fear Arousing Message

Fear is as “a negatively valenced emotion, accompanied by a high level of arousal” (Witte & Allen, 2000, p. 591). Fear thus elicits a response to physical and emotional danger. Such responses are made to protect one from health risk and also to help one survive. Fear is therefore an emotion as indicated by Witte and Allen (2000) and according to Williams, Briley, Grier and Henderson (2003) they stimulate persuasion, motivate people to establish goals and subsequent actions. This is why it has often been used as a social marketing strategy to persuade people to engage in a safe behaviour. Levine, et al. (2009) used fear arousing messages on their Namibian samples to examine its impact on risky sexual behaviours such as unprotected sex. Paek, Kim and Hove (2010) also did a content analysis of anti-smoking videos and it has been found that fear arousing message is a prominent message strategy. Thus research on fear arousing messages has usually focused on a host of health promotion behaviours.

Daily in the media, it is not uncommon to read and hear of words such as ‘*over speeding kills*’, ‘*kill your speed before your speed kills you*’ and ‘*better to reach home in peace than in pieces*’. Scenes of accidents, crashed vehicles and statistics on road fatalities are shown in the media and bill boards as part of road safety campaigns with the aim of persuading drivers not to engage in risky driving. These have always been intended to communicate to drivers the consequences of reckless driving, and in this way scaring them to change their behaviour. Thus, road safety advertisement usually stress on such consequences thereby appealing to the emotion of fear.

However, even though research in fear appeal messages dates back to over five decades, findings that have been produced over the years are inconsistent. Some studies have provided evidence to support the effectiveness of fear arousing messages (e.g. Lennon & Rentfro,

2010; Thornton, Rositter & White, 2000). Conversely, there are findings that also suggest that fear arousing messages are not effective (e.g. Levine et al., 2009; Taubman-Ben-Ari, 2000). In view of this, Elliot (2003) has suggested that campaigns should use fear with caution.

As a result of these ambiguities, Ruiter et al. (2001) has suggested that certain mediating factors may be the reason for such inconsistencies. More recent studies have also gone ahead to consider how some variables can moderate the effectiveness or otherwise of fear arousing messages (e.g. Lewis, Watson & Tay, 2007; Mukherjee & Dube, 2012). Elliot (2003) for example after his meta-analysis on fear appeals has concluded that gender has been largely ignored and suggests that further investigations be conducted on the role this variable plays in the effectiveness of fear arousing messages. Consequently, other studies have been undertaken not just to look at gender but other demographic variables (e.g. Henley & Donovan, 2002, Mowen, Harris & Bonne, 2004). For such studies, determining how relevant a fear arousing message is to a particular target audience would be an important first step to consider if a fear appeal is to be effective (Lewis, Watson & Tay, 2007). Interestingly, Witte & Allen (2000) have also suggested that practitioners do not need to consider individual differences (target audience) when designing fear arousing messages. They thus concluded in their studies that:

*'Individual differences such as personality traits or demographic characteristics (e.g., gender) do not appear to influence processing of fear appeal messages, except on rare occasions.'* (Witte & Allen, 2000, p. 606).

In light of the above, fear arousing messages taking into consideration the mediating role played by demographic variables requires further studies.

### 1.4.2 Fear of Prosecution

In every nation, there are laws that govern the conduct of the people therein. Such laws could be enshrined in a constitution, statute or as an Act of Parliament. Penalties for breaking those laws could be costly to the offender, hence such laws serve to punish the offender and also deter others from breaking them. In some of his earliest writings, Jeremy Bentham (1748 – 1832) postulated that crime arose from the conscious, rationale considerations of an individual (Andenaes, 1974). Hence Kennedy (1983) has accordingly suggested that before a person considers committing an offence, the person takes a cost-benefit analysis to determine whether the cost of committing the offence outweighs the benefits. Therefore fear of punishment is seen as a way that laws can influence attitudinal change.

In Ghana, there are road traffic laws which the Ghana Police Service are guided by in their law enforcement duties. The police patrol the streets to enforce such laws by arresting defaulters and giving sanctions to them, all in an effort to '*put fear into drivers*' not to engage in reckless driving. These strategies have been employed over the years targeted at changing the risky behaviour of drivers and in the long run ensuring road safety.

In 2013, it was recommended in the Global Status Report by the WHO that governments of various countries urgently need to pass legislations that meet best practices and invest enough financial and human resources to help enforce these traffic laws (World Health Organisation, 2013). This presupposes that lack of law enforcement contributes to road accidents, hence the need for its improvement. In Ghana Act 683 of the Road Traffic Act stipulates sanctions that must be given when found engaging in risky behaviours such as driving under the influence of alcohol and drugs, careless driving as well as other traffic related offences (Road Traffic

Act, 2004). Such legislations and the efforts of the law enforcement officials notwithstanding, road accidents continue to be a menace to individuals, families and the nation.

Available evidence from studies indicates that using cell phones while driving distracts the attention of the driver from the road which can lead to accidents (e.g. Drews, Pasupathi & Strayer 2008). In view of this, several countries have passed legislations banning cell phone use while driving. This also is targeted at using law enforcement measures to deter drivers from driving recklessly. In July 2012 for example, the Parliament of Ghana passed a similar legislation making it possible for drivers making a phone call while driving to be arrested and prosecuted (Wireko, 2013). According to this new Road Traffic Regulations 2012 (LI 2180) passed by the parliament, drivers caught sending messages or using ear piece will be made to face the law. This again is intended to discourage them from engaging in such a behaviour through *fear of being prosecuted*.

Some studies have called for such alternate strategies as threat of enforcement to be considered in the framing of messages for road safety campaigns (e.g. Tay & Ozanne, 2002). It was also suggested by Tay (2003) that the reason why road safety advertisements do not produce an effect is that they rely heavily on the emotion of fear instead of focusing on the deterrence effects of traffic enforcement. Lewis, Watson, Tay and White (2007) have also recently described the idea of adopting one emotional appeal type as an alternative for another as too simplistic with the reason that each type is associated with different roles and respective shortcomings. Not many studies have explored this strategy of threat of enforcement in road safety advertising. The few that have done so have looked at how enforcing specific legislations such as Speed Camera Program and Compulsory Breath Testing (CBT), can affect risky driving. Example of such a study was by Tay and Ozanne

(2002) which evaluated the effectiveness of the New Zealand Land Transport Safety Authority's advertising campaign that used the Speed Camera Program and found that this legislative initiative was not effective in reducing fatal accident rates. However, aside the fact that such studies were limited to only specific legislative initiatives, they were carried out using the legislations of the countries in which they were conducted. Consequently, it is necessary to replicate such a study in a country like Ghana. Hence, the present study also explored whether this strategy of threat of enforcement (fear of prosecution) can be effective in road safety campaigns in Ghana.

### **1.4.3 Risky Driving**

As has been previously indicated, most public health campaigns employ fear appeal messages. As suggested by Rothman, Bartels, Wlaschin and Salovey (2006, p. 202) however, 'effective health messages should communicate information relevant to the behavioural issue at hand'. It therefore becomes necessary that this study of fear appeals be conducted within the context of risky driving and its resultant road accidents.

Road crashes usually result from poor roads, mechanical factors and human factors (Fernandes, Hatfield & Jobs, 2006). Mechanical factors include tyre blowouts, un-roadworthy vehicles, poor lights, poor vehicle maintenance etc. However, human factors usually contribute a greater percentage of accidents on our roads (70-93%) as the NRSC has identified excessive speeding, driving under the influence of alcohol and drugs, non-use of seat belts, fatigue and inattentiveness as common causes of road accidents in Ghana (National Road Safety Commission, 2009). Over speeding alone contributes to 30% of accidents in the country (Akongbota, 2011). Considering the major role played by human factors in road accidents, it follows that reducing injuries and fatalities brought about by road accidents can

be realised by changing people's risky driving attitudes and persuading them not to engage in reckless driving and adopt safer attitudes. In most cases, the major campaign strategy adopted is a very high level of enforcement that is supported by intensive publicity campaigns, especially television advertising campaigns (Tay, 2005). In such advertisements, motivational themes usually employed to reduce risky driving are the use of messages incorporating fear of harm to self, others and property as well as fear of prosecution.

### **1.5 Problem Statement**

Globally, the WHO has made several efforts towards reducing risky driving with the latest action being the declaration of 2011 – 2020 as a Decade of Action for road safety. Nationally, the NRSC has put in place strategies to reduce accidents and its resultant injuries and fatalities (National Road Safety Commission, 2009). Featuring strongly among these strategies is the use of fear arousing messages and sometimes threat of enforcement in road safety advertisements. In spite of these strategies in force, statistics from the NRSC suggest that something must be done to reduce road accidents in the country. In 2010 for example, the country recorded 11,506 road accidents resulting in 1,986 fatalities, 5,713 seriously injured and 9,205 slightly injured (National Road Safety Commission, 2011). In 2011, approximately 2,199 people died while 5,663 sustained serious injuries and 8,357 became slightly injured in road accidents in Ghana (Ministry of Transport, 2012).

It therefore becomes a matter of concern whether such fear appeal strategies are effective and its usage in road safety campaigns should be continued. Hence, there is the need for a study to explore the use of fear arousing messages and threat of legal consequences in road safety campaigns in Ghana. It is in view of this that the present study investigated the effect of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana.

## **1.6 Aims and Objectives**

This study aimed at examining whether fear arousing messages and fear of prosecution are effective in road safety campaigns in Ghana.

Specific objectives that guided this study include:

1. To examine whether fear arousing messages can influence the risky driving attitude of drivers
2. To find out whether ones gender and age need to be considered when using fear arousing message.
3. To examine whether fear of prosecution can influence the risky driving attitude of drivers.
4. To find out whether age and years of driving experience need to be considered when using fear of prosecution.
5. To examine whether combination of fear arousing messages and fear of prosecution can influence the risky driving attitude of drivers.

## **1.7 Relevance of the Study**

This study is very relevant because the findings from the study would provide a guide for policy makers on road safety in the country. This is because the study would bring to the fore whether fear arousing messages, which is a popular strategy in road safety campaigns is effective or not.

This study would bring added value to national resources such as funds used in designing fear arousing messages. After determining the effectiveness or otherwise of fear arousing messages, this would help national institutions in charge of framing such messages to know whether it is worth investing national resources into them or not.

Also, this study would contribute to literature. Findings from the study would provide an input to the studies already conducted on fear appeals.

## **CHAPTER TWO**

### **REVIEW OF RELEVANT LITERATURE**

#### **2.1 Introduction**

This chapter consists of two sections – theoretical framework and review of relevant literature. Under the theoretical framework, two theories relevant to this study have been considered. The next section – review of related studies – is aimed at taking a critical look at previous works on fear appeals and the significant contributions to literature made by such studies. In light of the research objectives, the areas to be covered in the review of relevant literature are the effect of fear arousing messages on risky driving, considering the role of gender, age and years of driving experience; whether fear of prosecution affect risky driving and finally; the combined effect of fear arousing messages and fear of prosecution.

#### **2.2 Theoretical Framework**

##### **2.2.1 Introduction**

A number of theoretical perspectives have been offered to explain how fear can be used to persuade people to bring about behaviour change. For the purpose of this study, two of such theories were considered. They are the protection motivation theory and the deterrence theory.

##### **2.2.2 Protection Motivation Theory**

One of the theories from which fear appeals have been designed and studied is the protection motivation theory. The Protection Motivation Theory (Rogers, 1983) looks at the cognitive processes by which fear persuade people to engage in a behaviour. This theory postulates that people are motivated to protect themselves from physical, psychological and social threats. This model identifies the components of fear appeal i.e. what makes fear appeal effective.

Adaptive and maladaptive coping with a health threat are identified and according to Rogers (1983), they result from two appraisal processes – threat appraisal and coping appraisal. When health threat and coping response are appraised, they lead to one of two responses which are adaptive or maladaptive response. Adaptive response (protection motivation) is the intention to perform the recommended behaviour whilst a maladaptive response places an individual's health at risk. Such maladaptive responses can include the presence of behaviour that can result in negative consequences (e.g. smoking) or the absence of a behaviour which also results in negative consequences (for example not performing breast cancer screening).

Featuring in road safety campaigns are threatening messages which emphasize the physical harm and death that may occur by engaging in risky driving. These are usually intended to persuade drivers to drive safely (not engaging in risky driving). According to this theory, such messages can lead to adaptive coping, where drivers will be motivated to protect themselves from such negative consequences of reckless driving after being exposed to the message. Another coping mechanism can be maladaptive coping, where the threat message being used in the campaign can lead to a boomerang effect that is, not leading to safe driving or even increasing their risky driving.

### **2.2.3 Deterrence Theory**

Another theory that was considered in light of this study is the deterrence theory. This is a theory from behavioural psychology that focuses on using fear of punishment or retribution to prevent unacceptable behaviours. Proponents of this theory postulate that people choose to obey the law after calculating the gains and also the possible consequences of their actions. From this theory, law enforcement officials are to mete out sanctions to offenders. Thus the theory suggests that the costs or risks for a potential criminal had to be so great that he would

have much to lose than to gain from engaging in a crime. The strategy for preventing unacceptable behaviours under this theory therefore is that much emphasis has to be placed on penalties to encourage citizens to obey the laws. Classical theorists such as Jeremy Bentham and Cesare Beccaria are credited for being responsible for some of the earliest formulations of these theories. There are two types of deterrence theory – general deterrence and specific deterrence. General deterrence is aimed at preventing crime in the general population. Hence, the punishment of offenders by the state serves as an example for other people in the country who, have not yet been involved in criminal acts. Such punishment is meant to bring to their attention, the horrors of being arrested and prosecuted in order to discourage them from committing crimes. Whilst general deterrence focuses on the population, specific deterrence focuses on an individual. It is aimed at discouraging the criminal from committing future offences. At the heart of deterrence is therefore the threat of punishment.

As part of road safety measures is the use of threat of enforcement which usually involves the enforcement of road traffic regulations by the police who arrest defaulters. After such charges are brought against the offenders, they are processed for court and if found guilty, they are either fined or imprisoned. According to the deterrence theory, the purpose for such actions is to put fear in the general population (general deterrence) as well as the offender (specific deterrence), not to engage in the criminal act (risky driving) again.

## **2.3 Review of Related Studies**

### **2.3.1 Introduction**

Statistics on road accidents in the world and specifically in Ghana is alarming (Koryekpor, 2012; National Road Safety Commission, 2011; World Health Organisation, 2009) and this

calls for concern. Among the strategies commonly used in the mass media as road safety campaigns to reduce risky driving include fear of arrest and fear of harm to self, others or property (Elder, Shults, Sleet, Nichols, Thompson & Rajab, 2004). Considering the increasing trend of accidents in spite of the use of fear arousing messages and the enforcement of legislations, it has become important to establish whether fear arousing messages and fear of prosecution are effective in reducing risky driving.

Some studies have suggested that people can be motivated to change their risky behaviours by using messages that stress on the behaviour's negative consequences to arouse fear in them (Lenon & Renfro, 2010; Ruiters, Kok, Verplanken & Brug, 2001). Researchers have thus been studying whether messages that elicit fear in people can be the best and effective way of persuading people to engage in a behaviour (Schneider, Gruman & Coutts, 2005).

### **2.3.2 Fear Arousing Messages**

In a recent study in Namibia, Levine et al. (2009) concluded that the use of fear appeals to persuade audience with high levels of pre-existing fear is ineffective and therefore not to be encouraged. This was after they found out that messages' threat levels had little impact on people's attitude, intentions or behaviour as well as on perceptions of fear. This experimental study which was conducted with 434 college students was based on the extended parallel process model. Their aim was to investigate the effect that high efficacy-only messages have on attitude, intentions, and behaviours relative to the control condition. Levine et al. (2009) presumed that the reason for this finding of ineffectiveness could be that their participants have come face-to-face with the harsh realities of HIV/ AIDS and therefore such messages could now do little to scare them.

The authors in the study cited above considered pre-existing fear which has not been considered in most studies thus serving as strength to the study. This study was however conducted with HIV/ AIDS scary messages hence, findings from this study may not be applicable to other risky behaviours such as reckless driving. The authors also used only student samples in the study, thus majority (91.2%) of the participants were single. Even though the authors had alleged that ‘the logic of the argument should extend to any topic-population’ (p. 337), generalising the finding to another population which includes non-student samples may not be appropriate. Again, the fear appeal messages that Levine et al. (2009) used were not presented on a screen but written for participants to read. This is inadequate in eliciting fear in respondents as graphic content and other real pictures are absent.

Whilst Levine et al.’s (2009) study on fear appeals was within the context of HIV/ AIDS, Thornton et al. (2000) conducted a study of fear appeals within the context of risky driving (specifically over speeding behaviours) with 169 first year university students as participants. Using an experimental design, the aim of the study was to explore the effectiveness of anti-speeding road safety commercials. Even though high level of fear appeal was found to be the most persuasive, the researchers questioned the overall effectiveness of fear appeal as they also found that each of the groups in their experimental study were still willing to drive above the speed limits after being exposed to the fear appeal stimulus.

This study is however limited in the sense that the researchers only focused on over-speeding, which is only a part of the numerous risky driving behaviours. Risky driving include a host of behaviours such as talking on the cell phone whilst driving, drunk-driving, not wearing seatbelts, overtaking from the wrong side, etcetera. Thus the findings made by Thornton et al.

have limited applicability. The limited applicability of their findings is also justified by the fact that participants used in this study were sampled from first year university students. Majority of these participants (75%) had also seen the advertisement used in this experiment before hence, the possibility of prior exposure to this stimulus affecting the outcome of the study. These limitations notwithstanding, their sample of first year university students was largely homogeneous as they considered a host of demographic similarities in terms of gender, driving record, regularity of driving, etcetera.

Also using a university sample, Mukherjee and Dube (2012) recently sought to explore fear advertising effectiveness but this time, they included an element of humour in the message. In this experimental study which explored whether people can be persuaded to use sunscreen lotion to prevent skin cancer, high fear tension and humour were used as independent variables. A total of 121 university undergraduate students participated and it was found that when fear arousal was increased, sunscreen usage reduced suggesting participants could not be persuaded to use the sunscreen lotion by this advertising strategy. However, when humour was added to the fear arousing message, participants were persuaded to use the sunscreen lotion. Thus the conclusion that can be drawn from this study is that fear arousing message alone is ineffective in persuading people to engage in a safe behaviour.

Like Thornton et al. (2000), Mukherjee and Dube (2012) used only university undergraduate students as sample in their study and this makes the applicability of the findings limited. Again, the focus of this study was on persuading people to use sunscreen to help prevent skin cancer. Applying this finding to other risky behaviours such as reckless driving will be inappropriate as they are different behaviours altogether.

This is why Lennon and Rentfro (2010) considered using fear arousing messages within the context of a host of social issues such as drug abuse, drunk driving, HIV testing and smoking. Contrary to the above findings, Lennon and Rentfro (2010) found that the level of fear arousal significantly affect people to adopt safe attitudes. They then concluded that an appeal must arouse high fear for it to be effective. This finding was made in an experimental study that sought to find out whether young drivers rating of fear effectiveness are explained by fear arousal as well as perceived threat and efficacy. This study was conducted using a total of 30 participants in a within group experimental design.

Participants in this study were asked to rate the effectiveness of the fear arousing message they viewed in convincing people to change their risky behaviour. However, the fact that participants may have rated the message to be effective in persuading people to change their behaviour does not mean they would give the same ratings with regards to their own behaviour. The experimental design used in this study was the within-group design. Hence, the finding in the study may have resulted from a carry-over effect.

In view of the inconsistent findings present in the fear arousal literature, researchers like Lewis, Watson, Tay and White (2007) have conducted a study reviewing empirical and theoretical evidence with regards to the effectiveness of fear appeals. They evaluated literature with the aim of examining the effectiveness of fear appeals in improving driver safety. Among other findings, the authors found the conclusion that reduction in fear would not adversely influence acceptance rates. Rejection rates could however be potentially reduced by reduction in fear. They also found that because the fear-persuasion relationship can be influenced by many intervening factors, it has made some of these researchers to suggest that the use of fear messages is very risky and complicated. However they indicated

that one's perception of threat and vulnerability is an important consideration than the fear arousing message itself in the framing of road safety advertisements. This study is limited due to the likelihood of the authors to be biased in their selection of studies for review.

### **2.3.3 Fear Arousing Messages and Gender/ Age/ Years of Driving Experience**

Apart from the above studies that have examined fear arousing message effect on behaviour change, other studies have also sought to demonstrate the role of some demographic variables in fear appeal and behaviour change.

One of such studies was by Henley and Donovan (2003) who conducted a study on the response of young people to death threat appeals. Using an experimental design involving 995 participants, the authors investigated whether young people would respond less to threats of death than to non-death threats and also to find out whether young people as compared to old people would respond less to death threats. They found that overall, death threats were not more effective than non-death threats. They also found a significant difference between the response of young people to death threats and non death threats. Henley and Donovan (2003) argued that until they have been exposed to such fear messages, these young people believed they were less likely to die. After being confronted with their own death however, they responded to the fear appeal message. The authors however found there was a significant main effect for age as younger people responded to all the threats compared to older people. Younger people for example rated the death threats to be more believable compared to older people. A reason Suggested by Henley and Donovan (2003) for younger people responding more to all threats than older people is that, while older people may have been more critical, younger people generally pay more attention to such messages. It was also found in this study that among old people, males and females responded differently to death

and non-death threats. Their response to death versus non death threats is in opposite ways – older males respond more to death threats whilst older females respond more to non-death threats. The key finding from this study was that death threats are effective with young people.

The focus for their study was on smokers as the authors investigated the response to death threats in anti-smoking campaigns. People's response to such death threats may not be the same with every risky behaviour, hence applying their findings to risky driving may not be appropriate. Shore and Gray (1999, p. 3) have thus suggested that an *'appeal most useful for drug campaigns may not be effective for drink driving'*.

Shore and Gray (1999) therefore conducted a fear appeal study within the context of drink-driving. They sought to find out in an experiment how teenagers react to anti drink-driving fear appeals. A total of 300 high school students were selected to participate in this study with key variables being social and physical threats as well as behavioural intentions to drink and drive. They found that physical threats significantly induced positive driving attitudes with participants showing less intention to drink and drive after exposure to these threats. However, one limitation in this study is that the researchers only used printed messages to elicit fear. Road safety advertisements are however not limited to printed messages but also make use of graphic imagery.

In spite of the above finding from Shore and Gray (1999) as well as Henley and Donovan (2003), evidence has been found by Elliot (2003) that fear appeals are least effective with teens and young people. In a meta-analysis, he reviewed literature on fear appeal since 1996 – 2003. He also argued in his review that females are much more likely than males to be

threatened by negative appeals. It was however found in his review that gender is a variable that has largely been ignored in the fear appeal literature. While acknowledging that fear arousing messages may have both inhibiting and facilitating effects and can lead to avoidant coping mechanisms such as ignoring the message presented, he concluded that campaigns should use fear with caution.

The author reviewed literature that focused on the use of fear appeals within the context of varying behaviours that are risky. Thus he did not concentrate on only risky driving but focused broadly on other risky behaviours such as smoking. Hence, it is difficult to apply the findings from this study to risky driving behaviour. This serves as a limitation to the study. Elliot (2003) however concluded in his study that '*The findings in relation to gender warrant further investigation given that only one recent study has even bothered to consider this variable*' (Elliot, 2003, p 7).

In view of this, Lewis, Watson and Tay (2007) conducted a study on the effectiveness of physical threats in road safety campaigns that focused on the role played by third person effect, gender and age. Using an experimental design, 150 drivers were used as participants for this study. It was disclosed in his study that there is a significant gender effect. Males in this study reported classic third-person effects (that is, the message would influence others more than themselves). Females on the other hand reported a reverse third person effects (that is, the messages would have more influence on themselves than others). However, another finding that was made was that after males have been exposed to the threatening messages, it made them reduce significantly their speeding and drink-driving attitude than females. In addition, age did not have any significant effect. The authors therefore suggested that gender

is the main factor that moderates the effect of fear arousing messages used in road safety advertisements.

Unlike some of the studies reviewed so far (e.g. Levine et al., 2009; Mukherjee & Dube, 2012) the authors in this study, used both college students and non college students as participants. Drivers recruited for the study were on and off a university campus. This is an improvement over previous studies that have widely made use of only college students as their participants. This helps make their findings applicable to a larger population.

However, the study is limited by the fact that the researchers used the within group experimental design. All participants viewed both the speeding advertisement and the drink driving advertisement. This has the tendency to bring about practice effect which can affect the study results. The between group experiment could have helped correct this. Again, this within group experimental study did not also include any control group to serve as a baseline of comparison. This is a major flaw in this experimental study as one begins to wonder how comparisons were made to identify any behaviour change.

This is why Mowen, Harris and Bonne (2004) in an experimental study involving 186 participants employed the between group design and also had a control group to serve as a baseline of comparison. The participants in their study were university students. In this study which considered some personality traits and response to fear, they found predictors of fear response for inattentive driving to be agreeableness and emotional instability. The study also disclosed that fear arousal is greater when a photo of the threatening consequences was featured in the advertisement than when it was a written message.

Because Mowen et al.'s (2004) study used only students as participants, it makes the sample more restricted as students do not adequately represent the population of the study as they are usually young and as usually presumed, intelligent. The exclusion of non-university samples makes it inappropriate to generalise the findings to other populations. As Harris (2008) has indicated, such findings are not applicable to any other population or circumstance outside those used.

These limitations notwithstanding, Mowen et al.'s (2004) improved upon previous studies that only made use of written messages by using photos of threatening consequences as part of the stimuli in their studies. Also, the researchers employed the between subject design which subjects every participant to only a single treatment. This design helps to reduce the chances of participants suffering boredom after going through a long series of tests.

In another experiment, Taubman Ben-Ari (2000) studied fear appeals using the terror management perspective. In this study, 695 young men participated and it was aimed at finding out the effects of reminders of death on risk taking while driving, with key variables in the study being mortality salience, reckless driving and self esteem. The finding showed that individuals who perceived driving as relevant to their self esteem increased their risky driving after they were exposed to death reminders than those in the control condition. Using the reactance theory, the authors suggested that the possible reason for this finding could be that the young men (participants) perceived the film incorporating death reminders as coercive and thereby leading to a boomerang effect.

Another major flaw in Taubman Ben-Ari's (2000) study has to do with the use of the simulator. Video games are something young people derive pleasure from. Using it as a

simulator in risky driving experiment to assess proneness to reckless driving will most likely not produce the result as real car might have produced. Participants obviously know that there is no possibility of a crash that will involve human casualty when playing a video game. Hence, driving recklessly in this game may not necessarily predict that they will do same when driving a real car. These shortcomings notwithstanding, the author considered the complex role played by self esteem in risk taking. Self esteem is an important variable that needs to be considered in the framing of fear appeal messages which unfortunately, some fear appeal studies have neglected. The Terror Management Theory has also been used by the author to explain behaviour that may endanger life itself.

### **2.3.4 Fear Arousing Messages, Fear of Prosecution and Years of Driving Experience**

Most young drivers have been found to pay attention to police presence. The same study that made this finding also found that risky driving were more likely to be reported among new drivers who spend much time driving, or avoided actual and anticipated police presence. Such drivers were also more likely to report that they were detected by the police for committing a traffic offence. All these findings were made by Scott-Parker, Watson, King, and Hyde (2011) in a study that was aimed at exploring the punishment avoidant behaviour and driving duration of drivers with short driving experience and their relationship with risky driving, accidents and offences. Using a cross-sectional survey, Scott-Parker et al. (2011) conducted this study in two phases – survey 1 and survey 2. Participants for survey 1 were 1032 drivers (609 females and 423 males) between 17 – 19 years old. Survey 2, which was a follow-up study six months after survey 1, was however made up of 355 of the new drivers (108 males, 247 females) as majority of these drivers who participated in the first study dropped out of the study.

There was therefore an unusually high rate of attrition over the six months period of study. Although the study (survey 1) started with 1032 participants, as at the time the 2<sup>nd</sup> survey was being conducted, this had reduced to 355 with about 70% of this being females. Since females dropped out of the study more frequently than males, the sample that remained in survey 2 is no longer similar to the original sample in survey 1. The remaining sample is therefore not generalisable to the original population that was sampled, and thus this threatens external validity. Scott-Parker et al. (2011) also did not investigate the use of fear messages in mitigating risky driving as they only focused on exploring the punishment avoidant behaviour and driving duration of drivers.

A study conducted in New South Wales found that for drivers with less than three years experience, the relative frequency of accidents begins to rise from age 17 until age 19. For drivers at each level of experience however, there is a progressive fall in the relative frequency of accidents with increasing age beginning from age 19. This study was conducted by Catchpole (2005) to test the hypothesis that, among drivers of the same age, risky driving behaviours become more frequent with increasing driving experience. The study was thus aimed at determining risky driving behaviour by drivers of passenger vehicles as a function of age and driving experience. In this study, he analysed secondary data from 607, 166 accident involved-drivers between the ages of 17 – 60 years. He again found that the relative frequency of accidents initially rises to a peak (at three years experience for males and four years for females) before reducing with further increases in experience. Catchpole (2005) also found evidence that among drivers of the same age, higher levels of experience are associated with a greater tendency to commit a traffic offence and engage in risky driving behaviour.

Only passenger vehicles were however considered in the study leaving out private vehicles that were involved in accidents. Findings from this study are therefore only generalisable to passenger vehicles. Again, the data used by Catchpole (2005) was a record of passenger vehicles involved in reported accidents in New South Wales between 1986-1996. However, his study was conducted in 2005, hence it should have been appropriate to use data updated to the period of study. It therefore becomes a problem when implications are made from such a data to the time the study was conducted and beyond. In addition, among the offences that was not considered for inclusion in this study were driving in an unregistered/ uninsured motor-vehicle as well as offences committed while driving a bus. Such offences are however examples of risky driving that equally affect public health and could have been considered by the author. This study did not also look at the role of fear in mitigating risky driving.

### **2.3.5 Fear of Prosecution and Risky Driving**

Aimed at assessing changes in the attitudes that people have about the use of regulations to prevent road accidents in France between 2001 and 2004, and to also identify some factors that are linked with positive attitudes towards such regulations, Constant, Salmi, Lafont, Chiron and Lagarde (2007) conducted a survey using 9,216 participants between 2001 and 2004. From their findings, support for relaxing regulations significantly reduced (24%) during this period while support for increased enforcement and stricter regulations remained high in 2004. They also found support for strict restrictions increased after traffic law enforcement measures had been increased. They therefore argued that over the 2001 – 2004 period, many respondents realized regulations and restrictions are necessary with regards to driving behaviour. Another finding made was that unlike less educated drivers, the risky driving attitudes of drivers with high education towards traffic regulations reduced.

One way this study has built over other ones is that it considered a host of risky driving behaviours such as drunk-driving, phoning while driving etc. Also, among all the literature reviewed so far, this study is the only one that considered the role of education in responding to enforcement measures. Notwithstanding these strengths, the authors failed to consider the effect of the fear of being arrested for breaking these regulations on attitudinal change.

Accordingly, Tay and Ozanne (2002) conducted a study in New Zealand that considered using threat of enforcement to reduce risky driving. They also examined the impact of fear arousing messages in advertising campaigns targeted at reducing risky driving behaviour and fatal accident rates. The aim for this study was to evaluate the effect of road safety campaigns on fatal accident rates, related to alcohol, drugs and speed. Variables in their study included age, gender, number of fatal accidents per month, Speed camera program and compulsory breath testing. Among the key findings in their study was that risky driving was not reduced by the legislative enforcement, speed camera program. They however found that compulsory breath testing (CBT), also a legislative enforcement was found to be effective in reducing fatal crashes for middle-age male drivers. They suggested that road safety campaigns that target young male drivers may increase in effectiveness if it concentrates on alternative strategies, such as using fear of prosecution instead, as fear arousing messages was found to have no effect on them. They also found that advertising campaigns incorporating fear arousing messages affect females to reduce their risky driving. In their conclusion, they indicated that fear arousing messages will not elicit the same response from different segments of the population.

One strength of this study that makes it differ from other studies is that it explores how effective the campaign is in reducing the rate of accidents (fatal accidents) among different

segments of the driving population. This is in view of the fact that the authors factored age and gender into consideration in their studies. However, the study is limited by the fact that the authors examined the effectiveness of the campaign on only fatal accident rates thereby ignoring injury rates. Injury rates should have been considered as it also results from risky driving. Hence, not all accidents resulting from drink-driving behaviours within the period of study were considered. Using primary data from the Land Transport Safety Authority, New Zealand as the authors did can also flaw the findings. As accident reports are filed by the police, there may be some inconsistencies. This flaw is especially relevant for accidents that are related to alcohol as some police officers are more likely than other officers to suggest that alcohol is responsible for accidents. Another issue for concern is that the number of fatal accidents was compiled from the database on accidents that took place between January 1988 and December 1996. Traffic law enforcement and the fear appeal usage during this period may not be the same as traffic law enforcement and fear appeal usage during the period the study was conducted – 2002. Such findings have limited applicability to this period hence, it will be inappropriate to generalize this finding to the time the study was conducted and beyond. Another setback to this study is that on enforcement of legislations, the authors focused only on speed camera programs and CBT that were being used to check drivers. They neglected other enforcement practices that are being used or could be used by the police.

### **2.3.6 Fear Arousing Messages and Fear of Prosecution**

Tay (2003) sought to find out whether road safety advertisements do not have an independent effect in reducing road accidents but only a complementary role. The study used monthly data from New Zealand between October 1993 and September 1996. The study also examined whether advertising campaign have any independent effect, and to also find out

whether it has an interactive effect with traffic enforcement. He found road safety campaigns that use fear arousing messages reduced the number of fatal accidents, and more importantly, it had an effect that was independent of traffic enforcement. Again, he arrived at the finding that there is no interactive effect between road safety advertisement and traffic enforcement on risky driving. He therefore argued that advertising campaign has no supporting role to traffic enforcement.

Generalising findings from this study to risky driving behaviours in general will be out of place. This is because even though the author's focus was on risky driving, this was narrowed to selected driving behaviour – speeding and drink driving. However, there are other risky behaviours (such as not wearing seat belts and making phone call while driving) which Tay's (2003) study has neglected. It is therefore important that studies on advertising campaigns look at risky driving without limitation to such a narrowed focus.

Because of this, Tay (2005) replicated this study in the Australian state of Victoria using primary data from 1987-1992 on road crash and enforcement/publicity campaigns. This study was aimed at re-evaluating the effect of road safety campaigns that use enforcement and threat of physical harm to reduce drink-driving and speeding. The dependent variable in this study was the total number of serious crashes for each month that involved at least a male driver below 25 years. The number of random breath tests performed monthly, the number of traffic infringement notices issued monthly, anti-driving television advertising and anti-speeding television campaign were the independent variables in this study. It was found that campaigns that highlighted on enforcement and those that highlighted on threat to physical harm reduced accidents independently but like Tay (2003), it was found that their interactive effect was not significant. The author suggested that the reason for the advertisements not

producing a complementary effect was that much emphasis was placed on using physical threats to arouse emotions rather than concentrating on the deterrence effects of traffic enforcements.

One of the shortcomings of this study is that only road accident data and enforcement/publicity data from 1987 to 1992 were evaluated in the study. However, no data for the period of study were collected for evaluation. The anti-speeding enforcement and publicity campaigns used between 1987 to 1992 may not be the same as what was being employed during the period of study. Data on current enforcement measures would have been a good indicator of effectiveness. Another weakness of this study is that since not all accidents leading to death are reported to the police, the data used in the study may not represent the true state of affairs in terms of accident rates. Hence, using this as a measure of the effectiveness of anti-speeding enforcement and publicity campaigns will be inappropriate. Another limitation of the study has to do with the samples used. Focus was only on young males (below 25 years), hence the data used in their analysis was the total number of serious accidents recorded in a month that involved at least a male driver below 25 years. Data on young females and older aged samples were not considered. The author also focused on few enforcement programs like the CBT. Realising this drawback, Tay (2005) suggested in his studies that *“it is important that further research be conducted to examine the total effect of these enforcement and publicity campaigns...”* (Tay, 2005, p. 923).

These limitations notwithstanding, this study is an improvement over previous ones which also made use of primary data. This is because the author considered the combined effect of anti-drink driving enforcement and publicity campaigns which has largely been ignored by previous studies. This limitation notwithstanding, this study is an improvement over previous

ones which also made use of primary data. This is because, the author considered the combined effect of anti-drink driving enforcement and publicity campaigns which has largely been ignored by previous studies. The study also built on other ones (eg. Tay, 2003). Because most literature have concentrated on drink-driving and speeding behaviours and few have looked at accidents in general regardless of the contributing factor.

Despite Tay's (2005) finding that drink-driving enforcement and publicity campaigns do not complement each other, a recent study has provided evidence that drink-driving enforcement and publicity campaigns rather complement each other. This finding was made by Elder, Shults, Sleet, Nichols, Thompson and Rajab, (2004) in a meta-analysis which sought to examine whether road safety campaigns are effective in preventing accidents that are linked to alcohol. According to these authors most of the observed relationship between advertising campaigns and reduction in accidents between 1978 and 1996 could not be solely due to the media campaigns (incorporating fear arousing messages) but could be attributed to legislative initiatives associated with such campaigns. In this meta-analytical study, eight studies met quality criteria for inclusion. Crashes and measured blood alcohol concentration were the dependent variables in this study. Among the independent variables considered in this study were fear of being arrested and sanctioned, fear of physical harm and positive social norms. Again, they did not observe any clear difference between campaigns focusing on legal consequences and those focusing on social and health consequences. Elders et al. (2004) however suggested the possibility of some types of messages being suitable than others in reducing different types of driving behaviour. The researchers concluded that road safety campaigns that are planned carefully and is executed well, in addition to having adequate exposure and implemented with other ongoing law enforcement measures are effective in reducing accidents that are alcohol related.

However, this study suffers some setbacks which include the focus of the study. The researchers narrowly focused only on alcohol impaired driving and alcohol related crashes. Thus the study has neglected the effect of fear of arrest and legal consequences and fear of harm on other risky driving behaviours. There is therefore the need for other risky driving behaviours to be considered. Again, another drawback lies in the fact that in a systematic review, there is the tendency to be biased in favour of studies that made positive findings. This could distort their findings and conclusion. Finally, the eight studies that met inclusion criteria for review were too small to make a generalisation. These limitations notwithstanding, the strength of the study lies in the fact that the researchers considered the combined effect of mass media campaigns and other prevention programs, specifically fear of legal consequences.

#### **2.4 Rationale for the Study**

Most studies on fear appeals reviewed have looked at response to threats in the broader context of health promotion behaviours such as smoking, not participating in breast screening and risky driving (eg. Elliot 2003; Mowen, Harris & Bonne). A number of such studies did not narrow down to a specific reckless behaviour such as risky driving. Such broad focus on varying health behaviours makes it difficult to apply the findings to a specific risky behaviour. The present study therefore focused on risky driving behaviours.

Even in those fear appeal studies that looked at risky driving, emphasis was only laid on specific acts of risky driving. Most of these driving behaviours have either been over-speeding or drunk driving (e.g. Elder et al., 2004; Tay, 2003, 2005). Risky driving in general has been ignored. This study builds on those studies that only looked at specific acts of risky driving. The present study extends this line of research by considering a host of other risky

driving behaviours such as not wearing seatbelt, using cell phone whiles driving and overtaking from the wrong side.

The stimuli used in most of the studies reviewed were written messages. The use of graphic imagery often used in road safety advertisement was not employed in most of these studies. (e.g Shore & Gray, 1999; Levine et al., 2009). Hence, graphic imagery is used as stimuli in this study.

Also, most of the studies have only concentrated on the enforcement of traffic laws. The fear of being prosecuted from breaking those laws has not been considered as a variable. This study seeks to build upon previous ones by looking at the fear of being prosecuted for breaking those laws.

## 2.5 Hypotheses

### 1. *Independent Effect of Messages*

**H1a:** Fear arousing messages would have a significant positive effect on risky driving attitudes.

**H1b:** Fear of prosecution would have a significant positive effect on risky driving attitude.

**H1c:** Combination of fear arousing message and fear of prosecution message would have a significant positive effect on risky driving attitude.

### 2. *Years of Driving and Messages*

**H2a:** Fear arousing messages would have a significant positive effect on the risky driving attitude of drivers with long driving experience than drivers with short driving experience.

**H2b:** Fear of prosecution would have a significant positive effect on the risky driving attitude of drivers with long driving experience than drivers with short driving experience.

### **3. *Gender and Messages***

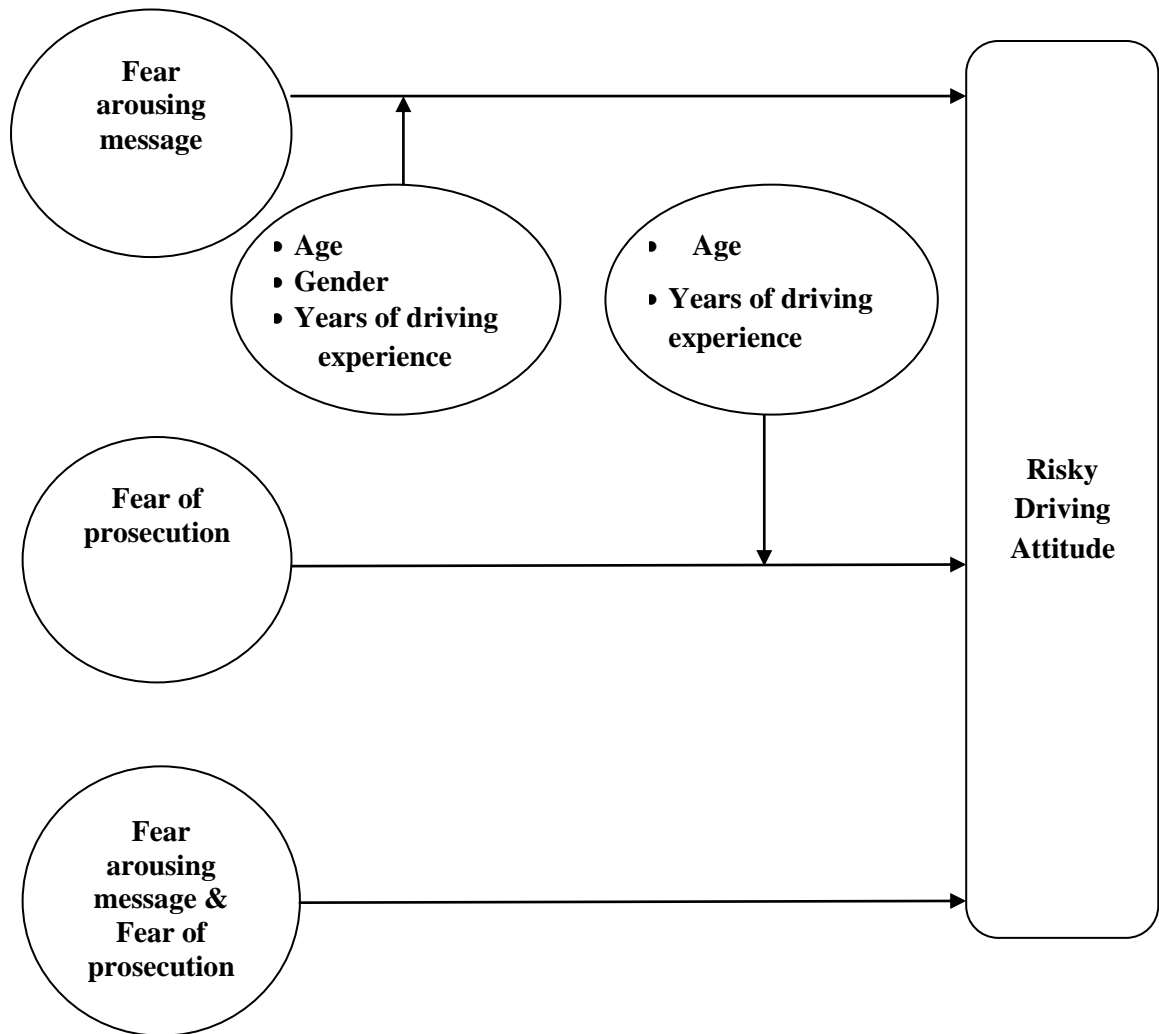
**H3:** Fear arousing messages would have a significant positive effect on the risky driving attitude of female drivers than male drivers.

### **4. *Age and Messages***

**H4a:** Fear arousing messages would have a significant positive effect on the risky driving attitude of young drivers than old drivers.

**H4b:** Fear of prosecution would have a significant positive effect on the risky driving attitude of young drivers than old drivers.

## 2.6 Hypothesised Model



## **2.7 Operational Definition of Terms**

1. Fear arousing messages: Messages used in road safety campaigns incorporating threats of physical harm.
2. Fear of prosecution: Messages used in road safety campaigns that dwell on the criminal charges to be brought against drivers who break traffic laws.
3. Risky driving: A host of reckless driving behaviours such as drink-driving, over speeding, making phone calls while driving etc.
4. Young people: Drivers between the ages of 21 – 34 years.
5. Old people: Drivers with age from 35 – 59 years.
6. Short driving years: Years of driving between 1 – 10 years.
7. Long driving years: Years of driving between 11 – 30 years.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter gives detailed information on methodological issues with regards to the study conducted. The chapter is divided into 7 sections. The first two sections contain information on the study's population, sample and sampling techniques. The third section is made up of the design employed in undertaking the study. This section is followed by a description of the instruments/ measures used in the study. The pilot study conducted for the reliability of the instruments is also in the fifth section. The sixth section presents a detailed account of the procedure followed in this study, while the last section outlines the ethical considerations in this study.

#### **3.2 Population and Sample**

Drivers of commercial and private motor-vehicles in Accra, Ghana were used as the population for the study. As the capital city of Ghana, Accra is also a centre of business and has road networks in and around it with drivers from different parts of the country converging to the city daily with passengers and commodities. The driver and vehicular population in Accra are thus homogeneous. Vehicles are both used for private and commercial purposes within the city. Most commercial vehicle operators in this population usually belong to the Ghana Private Road Transport Union (GPRTU) or the Ghana Co-operative Transport Union (GCTU) or may not belong to any of these. Although located within the smallest among the 10 administrative regions in the country, the city is ranked the highest in the number of road accidents and casualties (National Road Safety Commission, 2011).

Kraemer and Thiemann (1987) suggested that for 14 participants per condition, given at least 3 conditions an effect size of .50 will yield power of approximately 80%. This study had four conditions with an overall sample size of 70 and groups participation ranging from 16 to 19 per condition. Thus the use of 16 to 19 participants per condition was chosen for the experiment to have over 80% power to detect an effect of the independent variable on the dependent variable. Participants for the study were thus randomly assigned to four conditions – control group (CG), experimental group 1 (EG1), experimental group 2 (EG2) and experimental group 3 (EG3). The CG was made up of 16 participants, EG1 had 19 participants, EG2 had 17 participants and EG4 also had 18 participants.

The participants were selected from some major transport terminals in Accra. These transport terminals are the VIP Jeoun Travel and Tours, Circle-Accra; the Kaneshie Transport Terminal, Kaneshie-Accra and the Achimota Transport Terminal. To elicit participation, fruits drinks were provided for those who accepted to participate in the study. Table 1 gives detailed characteristics of the respondents with regards to their age, gender and years of driving experience.

*Table 1: Demographic Characteristics*

VARIABLES	FREQUENCY					PERCENTAGE (%)				
	CG	EG 1	EG2	EG3	Total	EG 1	EG2	EG2	EG 3	Total
<b>Gender</b>										
Males	11	12	13	15	51	15.7	17.1	18.6	21.4	72.9
Females	5	7	4	3	19	7.1	10.0	5.7	4.3	27.1
<i>Total</i>	<b>16</b>	<b>19</b>	<b>17</b>	<b>18</b>	<b>70</b>	<b>22.9</b>	<b>27.1</b>	<b>24.3</b>	<b>25.7</b>	<b>100</b>
<b>Age</b>										
Mean	35.06	55.00	36.24	33.61	34.96					
SD	9.93	11.9	12.90	9.64	10.93					
<b>Driving Years</b>										
Mean	11.19	10.47	11.59	10.11	10.81					
SD	7.86	7.34	8.36	7.20	7.54					

**CG = Control Group**

**EG = Experimental Group**

In all, a total of 70 people participated in this experimental study. This was made up of 16 (22.9%) participants in the control group, 19 (27.1%) in the experimental group one, 17 (24.3%) in experimental group two and 18 (25.7%) in experimental group three. The mean age of participants in the study was 34.96. Participants in this study were also made up of 51 (72.9) males and 19 (27.1) females.

### 3.3 Sampling Techniques

The purposive and convenient sampling techniques were used to select the participants. The purposive sampling technique was used since drivers were the target group and of relevance to the topic that was being investigated. Thus they were selected with the specific purpose of finding out how fear arousing messages and fear of prosecution affect them. The convenience

sampling was then used to select drivers from the selected stations. This sampling technique was also used as the researcher recruited drivers who were available and agreed to participate at the various selected stations during the time of the research. After participants had been sampled, they were randomly assigned to the various conditions.

### **3.4 Design**

This experimental research was conducted using the independent groups design. This design was used because it does not have problem with order effects which is associated with the repeated measures design. Using the independent groups design, four conditions were created in this experiment. These conditions were the Control group (no fear message), Experiment group 1 (fear arousing message), Experiment group 2 (fear of prosecution) and Experiment group 3 (combination of fear arousing message and fear of prosecution). The control group served as a baseline for comparison. In order to rule out systematic bias that could arise from differences between participants, the participants were randomly assigned to each of these four groups by alternating participants sequentially.

#### **3.4.1 Key Variables**

*Independent variable:*

Independent variable in this study was the treatment condition (fear) and it was varied on four levels:

1. No fear: This involved stimuli which do not contain any message that has the tendency to arouse fear in viewers.
2. Fear arousing message: Message that use graphic imagery of crashed vehicles, threats of physical consequences of reckless driving and some statistics of accidents to induce fear.

3. Fear of prosecution: Video messages that showed the police spelling out sanctions to be given to drivers found driving recklessly.
4. Fear arousing messages and fear of prosecution: This is a combination of fear arousing messages and fear of prosecution.

*Dependent variable:*

1. Risky driving attitude

### **3.4.2 Message design**

In consultation with the National Road Safety Commission, a sixty (60) seconds video clip on road safety campaign featuring physical threats and legal sanctions not shown on the Ghanaian media were designed. This was to help minimize previous viewing exposure which could affect participants' response to the message.

The advertisement featuring fear arousing messages was framed using pictures and videos of crashed vehicles taken at the Motor Traffic and Transport Unit (MTTU). This advertisement incorporated current statistics on road accidents from the NRSC and the WHO as well as someone mentioning physical and economic consequences of road accidents at the video background. The advertisement featuring the fear of prosecution was also taken from the MTTU with a police officer stipulating some charges to be brought against drivers when caught driving recklessly. This included an example of an offence which was to be processed at the court. Some pictures of people arrested and put behind bars were used in this clip. The road safety advertisement for the experimental group 3 (fear arousing messages and fear of prosecution) was also framed by blending some parts of the messages for Experimental group 1 (fear arousing messages) and Experimental group 2 (fear of prosecution). The control

condition however featured an automobile sale commercial with no content of a fear message (Appendix I).

Prior driving behaviour of drivers was taken. The questionnaire to measure the prior driving behaviour of participants was made up of three sections (A, B and C). Section A sought information on the demographic details of participants (gender, age and years of driving experience) and also section B consisted of items measuring risky driving attitude (Appendix E). The risky driving behaviour was measured using a combination of the Driver Behaviour Questionnaire and the risky attitude towards traffic safety developed by Reason, Manstead, Stradling, Baxter and Campell (1990) and Ulleberg and Rudmo (2003) respectively and used in a study by Yilmaz (2006). Participants were made to respond to a 5-point likert scale which ranged from 1 'strongly disagree' to 5 'strongly agree'. This questionnaire was also used for the post-test taken in this study. After participants have been exposed to the road safety advertisements, they were made to respond to the five point likert scale to measure their driving attitude (Appendix F).

### **3.5 Instruments/ Measures**

*Video Camera:* This was used in taking video recordings and pictures of crashed vehicles to be used in framing the fear arousing messages. The video camera was also used in taking footage of a police officer stipulating charges that will be brought against drivers found driving recklessly. This video was used in framing messages for the fear of prosecution condition in the experiment.

*Laptops:* This was the medium of exposing drivers to the stimuli (fear messages) that were framed.

### *Questionnaire:*

A combination of the driver behaviour questionnaire developed by Reason et al. (1990) and the risky behaviour attitude towards traffic safety developed by Ulleberg and Rudmo (2003) was adopted for this study. These two scales have been combined into an 18 item scale and used by Yilmaz and Celik (2006). This scale has five factors – Obedience speed rules, caring about traffic accidents, risk taking tendency in traffic, violation of basic traffic rules and risk driver attitudes – and the cronbach alpha for these factors are 0.85, 0.78, 0.69, 0.83 and 0.67 respectively (Yilmaz & Celik, 2006). Items on this scale was answered on five-point Likert scales ranging from 1 “strongly agree” to 5 “strongly disagree”. The scale has a minimum score of 18 and a maximum score of 90 with a low score meaning low risky driving attitude whilst a high score means high risky driving attitude. It had items such as ‘If you have good skills, speeding is OK.’ Items on this scale was appropriate for the study as the researcher was interested in measuring how driving attitudes (which this scale measures) could be affected by fear messages.

### **3.6 Pilot Study**

Before the study was embarked on, the researcher pilot tested the experiment. As indicated by Harris (2008), the purpose of a pilot study is to see whether items on questionnaires make sense to respondents, to identify any serious flaws or problems that might have not been identified at the design stage and to generally ‘fine tune’ the procedure. The pilot study also helped the researcher to familiarize himself with his role as an experimenter and helped determine the reliability of the questionnaires. The experiment was therefore pilot tested at the Achimota Transport Terminal, Accra.

The pilot study was conducted with 12 participants and they were representative of the sample that took part in the actual experiment. They were randomly assigned to the conditions in the experiment with each condition consisting of 3 participants. According to Baker (1994) a sample size of 10 – 20% of the sample size for the actual study is a reasonable number of participants that can be enrolled in a pilot study. The selection of 12 participants for this pilot study is therefore justified as the 12 participants represent 17% of the total sample size for the study (70). In accordance with the Publication Manual of the American Psychological Association (APA) that the researcher should ‘use language that is reasonably understandable to the research participants’ (American Psychological Association, 2001, p. 391), the scales used were also translated into the Twi language, a reasonably understood language by an expert at the Linguistic Department of the University of Ghana (Appendix H). This was to help participants who could not read and understand items on the scale. From this pilot study conducted, it was observed that the items in the scales being used were understood by the participants. The questionnaires were also found to be reliable as shown in table 2 below.

*Table 2: Summary of scales and reliability values.*

<b>Scales</b>	<b>No. of items</b>	<b>Alpha Values</b>
Risky Driving Questionnaire	18	.83

### **3.7 Procedure**

An ethical clearance was sought from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research, University of Ghana (Appendix A). A letter of introduction was taken from the Department of Psychology, University of Ghana to the research sites (Appendix C). After the ethical clearance was given, a pilot study which the researcher has reported above was conducted to test the reliability of measuring instruments that was to be used for the study.

After the pilot study, management of the selected motor stations for the study were then approached to explain the nature of the research to be conducted. Following permission from the management of the various transport terminals, some drivers of commercial vehicles were invited to participate in the study. Private vehicle drivers were also sampled for the study.

Participants were then randomly assigned to one of the four conditions. Pre-test questionnaire were given to participants to measure their risky driving attitudes. The experiment was run on laptop computers. After responding to the questionnaire, participants in each condition were exposed to a stimulus (road safety advertisement). Thus each respondent was exposed to one stimulus only. Immediately after exposure to the advertisement, their risky driving attitude was again measured using the risky driving questionnaire (post-test).

After the study, participants were individually and extensively debriefed. Participants received a refreshment package in the form of a fruit drink and thanked for their participation.

### **3.8 Ethical considerations**

The use of human participant in an experimental situation and more especially, a condition that involved the arousal of fear in these participants required for an ethical approval to be sought for such a study. Hence, the researcher sought an ethical clearance from the Institutional Review Board of the Noguchi Memorial Institute for Medical Research, University of Ghana and an ethical clearance was given on 14<sup>th</sup> March 2013 (Appendix A).

Participants who were invited to participate in this study were each given a consent form which informed them of the purpose of the research (Appendix D). They were also informed that any information obtained from the study remain confidential. Again, they were made aware of the voluntary nature of the study and their right to withdraw any time without explanation or facing any penalty. Participants who agreed to their participation were made to sign the consent form before the study begun. After the study, the researcher debriefed participants.

## CHAPTER FOUR

### RESULTS

#### 4.1 Introduction

This study explored the effect of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana. The study was guided by five key objectives. The first of these objectives was to examine whether fear arousing messages can influence the risky driving attitude of drivers. Secondly, the study was aimed at finding out whether ones gender and age needs to be considered when using fear arousing messages. The third aim that guided this study was to examine whether fear of prosecution can influence the risky driving attitude of drivers. Fourthly, the study aimed to find out whether age and years of driving experience need to be considered when using fear of prosecution. The fifth objective that guided this study was to examine whether combination of fear arousing messages and fear of prosecution can influence the risky driving attitude of drivers.

#### 4.2 Analysis of Data

Based on the above objectives, the present study formulated eight hypotheses. Inferential statistics were employed in analyzing all data in the study. The statistical test used in analyzing hypothesis one was the one-way Analysis of Variance (ANOVA). The remaining hypotheses were analysed with the two-way ANOVA. Where significance difference existed, the Tukey was used to determine where the significance difference existed among the various conditions.

In hypotheses one, attitudes at pre-test were first analysed to check for statistical equivalence on attitude scores before proceeding to analyse the post-test data. In analyzing the data, the software package used was the Statistical Package for Social Sciences, version 16.

## PRESENTATION OF RESULTS

### HYPOTHESIS ONE

#### Independent Effect of Messages

Hypothesis 1a stated that fear arousing messages would have a significant positive effect on risky driving attitude while hypothesis 1b stated that fear of prosecution would have a significant independent effect on risky driving attitude. Hypothesis 1c however stated that combination of fear arousing messages and fear of prosecution would have significant positive effect on risky driving attitude. The one-way ANOVA was used to test these hypotheses and summary of the results are presented in table 2.

*Table 3: Mean and standard deviation of pre-test and post-test scores on risky driving attitudes*

Condition	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
No fear	16	41.13	9.90	42.94	12.47
Fear arousing message	19	44.68	10.53	43.16	10.42
Fear of prosecution	18	39.44	11.24	41.72	15.90
Fear arousing message & fear of prosecution	17	42.59	7.20	40.88	9.66
Total	70	42.01	9.66	42.19	12.12

From the data presented in table 3, the pre-test and post-test mean for drivers in the no fear group is 41.13 and 42.94 suggesting an increase after exposure to the no fear stimulus. Also, for drivers exposed to fear arousing message, the pre-test and post-test mean is 44.68 and 43.16 respectively suggesting a reduction in risky driving attitude. For drivers exposed to fear of prosecution, the pre-test and post-test mean is 39.44 and 41.72 respectively suggesting an increase in risky driving attitude. Also among drivers exposed to combination to fear of

prosecution and fear arousing messages, their pre-test and post-test scores are 42.59 and 40.88 respectively indicating a decrease in risky driving attitude.

*Table 4: Summary table of One-Way ANOVA on message by risky driving attitude*

		Sum of squares	df	Mean Square	F- Ratio	P (Level of significance)
<b>Pre-test</b>	Between Groups	272.568	3	90.856	.973	.411
	Within Groups	6162.417	66	93.370		
	Total	6434.986	69			
<b>Post-test</b>	Between Groups	59.746	3	19.915	.130	.942
	Within Groups	10074.840	66	152.649		
	Total	10134.586	69			

The pre-test data in table 4 was first analysed using the One-way ANOVA with condition (no fear message, fear arousing message, fear of prosecution, and combination of fear arousing message and fear of prosecution) as the independent variable. This analysis showed no statistical significance ( $F_{(3, 69)} = .973, p > .05$ ) indicating that performance was equivalent in all the conditions (no fear group  $M = 41.13, SD = 9.90$ ; fear arousal group  $M = 44.68, SD = 10.53$ ; fear of prosecution group  $M = 39.44, SD = 11.24$ ; combined fear group  $M = 42.59, SD = 7.20$ ). All the groups therefore appear to have equivalent risky driving attitudes before they received the independent variable.

Using the one-way ANOVA to conduct further analysis on the groups after they had been exposed to the independent variable (post-test) revealed that at the 0.05 level of significance, there was no significance difference between the four groups ( $F_{(3, 69)} = .130, p > .05$ ). Thus none of the experimental groups differed from the control group (no fear  $M = 42.94, SD = 12.47$ ; Fear arousal group  $M = 43.16, SD = 10.42$ ; fear of prosecution group  $M = 41.72,$

$SD=15.90$ ; combined fear group  $M=40.88$ ,  $SD=9.66$ ). Therefore, fear arousing message did not have any significant positive effect on risky driving attitude. Hence, the hypothesis that fear arousing messages would have a significant positive effect on risky driving attitude was not supported.

Furthermore, in contrast to hypothesis 1b, the results in table 5 suggests that fear of prosecution did not have any significant effect on risky driving ( $F_{(3, 69)} = .130$ ,  $p > .05$ ) and leads to the rejection of the hypothesis that fear of prosecution would have a significant positive effect on risky driving attitudes. Hypothesis 1c which stated that combination of fear arousing messages and fear of prosecution would have a significant positive effect on risky driving has also not been supported as it did not differ significantly from the control group which received no fear message ( $F_{(3, 69)} = .130$ ,  $p > .05$ ). This hypothesis has also been rejected.

## HYPOTHESIS TWO

### Driving Experience and Messages

Hypothesis 2a stated that fear arousing messages would have a significant positive effect on drivers with long driving experience than drivers with short driving experience. Hypothesis 2b stated that fear of prosecution would have a significant positive effect on the risky driving attitude of drivers with short driving experience than drivers with long driving experience. These hypotheses were tested with the two-way ANOVA.

*Table 5: Mean and standard deviation of driving experience and condition by risky driving attitude.*

	<b>Driving years</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>
No fear	Short	45.86	10.84	7
	Long	40.67	13.79	9
Fear arousing messages	Short	48.18	8.52	11
	Long	38.57	6.68	7
Fear of prosecution	Short	33.13	12.55	8
	Long	47.70	15.55	10
fear of prosecution & fear arousing messages	Short	43.92	9.45	12
	Long	33.60	5.77	5

The data in table 5 contains means and standard deviation of the post-test scores of the various groups. By inspecting the scores for no fear group, the difference between drivers with short driving experience and those with long driving experience is 5.19 (45.86 – 40.67) with drivers with short driving experience having more risky driving attitude than those with long driving experience. Also in the fear arousal group, the difference between drivers with short driving experience and those with long driving experience is 9.61 (48.18 – 38.57) with

drivers who have driven for long years having less risky driving attitude compared with those with short driving experience. The difference between drivers with short driving experience and those with long driving experience in the fear of prosecution group is 14.57 (47.70 – 33.13) with short driving experience scoring less on risky driving attitude than long driving experience. With the combination of fear of prosecution and fear arousing messages, the difference between short driving experience and long driving experience is 10.32 (43.92 – 33.60) with long driving experience having less risky driving attitude than short driving years.

Table 6: Summary table of 2-way ANOVA on the data contained in table 5

Source of Variance	Sum of squares	Degrees of freedom	Mean Square	F-Ratio	<i>p</i> (level of significance)	$\eta^2$
Condition	170.501	3	56.834	.448	.720	.02
Driving experience	146.325	1	146.325	1.153	.287	.02
Interaction	2091.938	3	697.313	5.494	.002**	.21
Error (Within cells)	7869.385	62	126.926			
Total	10134.586	69				

\*\*  $p < .05$

From table 6, at the .05 level of significance, there was a significant interaction effect between condition and driving experience on risky driving attitude ( $F_{(1, 69)} = 5.494, p < .05, \eta^2 = .21$ ). Following this significant interaction effect, a simple effect test was conducted using the Tukey to determine where driving years differed in the various conditions.

Table 7: Summary of the Post Hoc Analysis (Tukey)

CONDITION	Driving years	Mean difference	Df	F	<i>p</i> (level of significance)	$\eta^2$
No fear	Short Long	5.19	1,15	.836	.364	.01
Fear arousing messages	Short Long	11.93	1,18	5.195	.026**	.08
Fear of prosecution	Short Long	15.48	1,16	8.386	.005**	.12
fear of prosecution and fear arousing messages	Short Long	10.32	1,17	2.960	.090	.05

\*\*  $p < .05$

From table 7, there is no significant difference between drivers with short driving experience and drivers with long driving experience ( $F_{(1, 15)} = .77, p > .05$ ). However drivers with short experience and drivers with long driving experience in the fear arousing condition are significantly different ( $F_{(1, 18)} = 5.37, p < .05$ ). Partial  $\eta^2 = .08$ , indicating that 8% of the overall variance is attributable to the interaction between the variables. Inspection of the means in table 6 suggests that drivers with long driving experience in the fear arousal group reduced their risky driving attitude (38.57) compared with the control group (40.67). This supports the hypothesis that fear arousing messages would have a significant positive effect on drivers with long driving experience and it is therefore retained. There was also a significant difference between drivers with short driving experience and those with long driving experience in the fear of prosecution group ( $F_{(1, 17)} = 8.20, p < .05$ ). Partial  $\eta^2 = .12$ , suggesting that 12% of the overall variance is attributable to the interaction. Inspection of the means in table 6 also suggests that drivers with short driving experience who were exposed to fear of prosecution stimulus reduced their risky driving attitude (33.13) compared with the

control group (45.86). Therefore the hypothesis that fear of prosecution would have a significant positive effect on the risky driving attitude of drivers with short driving experience has been supported and retained. No significant difference however exists between drivers with short driving experience and those with long driving experience in combination of fear of prosecution and fear arousing message group ( $F_{(1, 16)} = .96, p > .05$ ).

### HYPOTHESIS THREE

#### Gender and Fear Arousing Message

Hypothesis 3 stated that fear arousing messages would have a significant positive effect on the risky driving attitude of female drivers than male drivers. This hypothesis was tested with the two-way ANOVA.

*Table 8: Mean and standard deviation of gender and condition by risky driving attitude.*

Condition	Gender	Mean	SD	N
No fear	Males	42.91	13.90	11
	Females	43.00	10.00	5
Fear arousing messages	Males	45.10	8.25	10
	Females	41.00	12.56	9
Fear of prosecution	Males	43.21	16.47	14
	Females	36.50	14.48	4
Fear arousing messages & fear of prosecution	Males	41.36	9.87	14
	Females	38.67	10.21	3

Table 8 contains the post-test mean scores of the various groups and it indicates that the difference between males and females in the no fear group is 0.09 (43.00 – 42.91) with females scoring more on risky driving attitude than males. Among recipients of the fear arousing message, the difference between males and females is 4.10 (45.10 – 41.00) with

males scoring more on risky driving attitude than females. Also in the fear of prosecution group, the difference between males and females is 6.71 (43.21 – 36.50) with females scoring less on risky driving attitude than males. Also, the difference between males and females who received combination of fear of prosecution and fear arousing messages is 2.69 (41.36 – 38.67) with females having less risky driving attitude than males.

*Table 9: Summary table of 2-way ANOVA on interaction between gender and condition by risky driving attitude.*

<b>Source of Variance</b>	<b>Sum of squares</b>	<b>Degrees of freedom</b>	<b>Mean Square</b>	<b>F-Ratio</b>	<b>p (level of significance)</b>	<b><math>\eta^2</math></b>
Condition	126.409	3	42.136	.266	.850	.013
Gender	146.499	1	146.499	.923	.340	.015
Interaction	79.629	3	26.543	.167	.918	.008
Error (Within cells)	9837.047	62	158.662			
Total	10134.586	69				

Inspection of table 9 suggests that at the .05 level of significance, there was no interaction effect between condition and gender ( $F_{(1, 69)} = .167, p > .05$ ). Therefore the hypothesis that fear arousing messages would have a significant positive effect on the risky driving attitude of female drivers than male drivers has not been supported, hence rejected.

## HYPOTHESES FOUR

### Age and Messages

Hypothesis 4a stated that fear arousing messages would have a significant positive effect on the risky driving attitude of young drivers than old drivers. Hypothesis 4b also stated that fear of prosecution would have a significant positive effect on the risky driving attitude of young drivers than old drivers. This hypothesis was tested with the two-way ANOVA.

*Table 10: Mean and standard deviation of age and condition by risky driving attitude.*

<b>Condition</b>	<b>Age</b>	<b>Mean</b>	<b>SD</b>	<b>N</b>
No fear	Young	43.17	8.95	7
	Old	42.80	14.65	9
Fear arousing messages	Young	46.90	8.46	11
	Old	39.00	11.26	8
Fear of prosecution	Young	33.13	12.55	8
	Old	48.60	15.38	10
Fear arousing messages and fear of prosecution	Young	43.73	9.89	11
	Old	35.67	7.23	6

Inspection of post-test means of young and old drivers in table 10 suggests that the difference between young drivers and old drivers in risky driving attitude in the no fear group is 0.37 (43.17 – 42.80) with old drivers scoring less than young drivers. For those who received the fear arousing message, the difference between young and old drivers is 7.90 (46.90 – 39.00) with old drivers having less risky driving attitude than young drivers. When exposed to fear of prosecution message, the difference between old and young drivers is 15.47 (48.60 – 33.13) with young drivers scoring less in risky driving attitude. Among those who received

combination of fear of prosecution and fear arousing messages, the difference between young and old drivers is 6.82 (42.79 – 35.97) with old drivers scoring less in risky driving attitude.

*Table 11: Summary table of two-way ANOVA on interaction between age and condition by risky driving attitude.*

Source of Variance	Sum of squares	Degrees of freedom	Mean Square	F-Ratio	<i>p</i> (level of significance)	$\eta^2$
Condition	128.946	3	42.982	.315	.815	.015
Age	.756	1	.756	.006	.941	.000
Interaction	1612.614	3	537.538	3.938	.012**	.160
Error	8462.123	62	136.486			
Total	10134.586	69				

\*\*  $p < .05$

The above table suggests that at the .05 level of significance, there was a significant interaction effect between condition and age on risky driving ( $F_{(1, 69)} = 3.938$ ,  $p < .05$ ,  $\eta^2 = .16$ ). Following this significant interaction effect, a simple effect test was conducted to determine where age differed in the various conditions.

*Table 12: Summary of the Post Hoc Analysis (Tukey)*

CONDITION	Driving years	Mean difference	<i>p</i> (level of significance)	$\eta^2$
No fear	Young Old	.37	.952	.000
Fear arousing messages	Young Old	7.90	.146	.034
Fear of prosecution	Young Old	15.48	.007**	.11
fear of prosecution and fear arousing messages	Young Old	8.06	.179	.03

Table 12 indicates that at the .05 level of significance, there was no significant difference between young and old drivers in the no fear group ( $F_{(1, 15)} = .003, p > .05$ ). However young drivers differed significantly from old drivers when they received the fear of prosecution message ( $F_{(1, 18)} = .527, p < .05, \eta^2 = .11$ ). Inspecting the means, young drivers reduced their risky driving attitude (40.33) compared to the control group (46.96) whereas old drivers increased their risky driving attitude (46.87) compared with the control group (41.77). Therefore the hypothesis that fear of prosecution would have a significant positive effect on the risky driving attitude of young drivers was supported. There was also no significant difference between young drivers and old drivers who received fear arousing message ( $F_{(1, 18)} = 3.030, p > .05$ ). No significant difference also existed between young drivers and old drivers who received the combination of fear of prosecution and fear arousing messages ( $F_{(1, 16)} = 3.053, p > .05$ ).

### 4.3 Summary of Findings

#### 1. *Independent Effect of Messages*

1a) Hypothesis 1a stated that fear arousing messages would have a significant positive effect on risky driving attitudes. It was found that fear arousing messages did not significantly affect the risky driving attitude of drivers. The hypothesis was therefore rejected.

1b) Hypothesis 1b stated that fear of prosecution would have a significant positive effect on risky driving attitude. This was not supported as drivers were not significantly affected by fear of prosecution.

1c) Hypothesis 1c stated that combination of fear arousing messages and fear of prosecution would have a significant positive effect on risky driving attitude. This

hypothesis was not confirmed by the data as the message did not significantly affect risky driving attitude.

## **2. *Years of Driving and Messages***

2a) Hypothesis 2a stated that fear arousing messages would have a significant positive effect on the risky driving attitude of drivers with long driving experience than drivers with short driving experience. The data confirmed this hypothesis as drivers with long driving years reduced their risky driving attitude after exposure to fear arousing messages.

2b) Hypothesis 2b stated that fear of prosecution would have a significant positive effect on the risky driving attitude of drivers with long driving experience than drivers with short driving experience. Drivers with long driving years were found to reduce their risky driving attitude after exposure to fear arousing messages. Hence the hypothesis was supported.

## **3. *Gender and Messages***

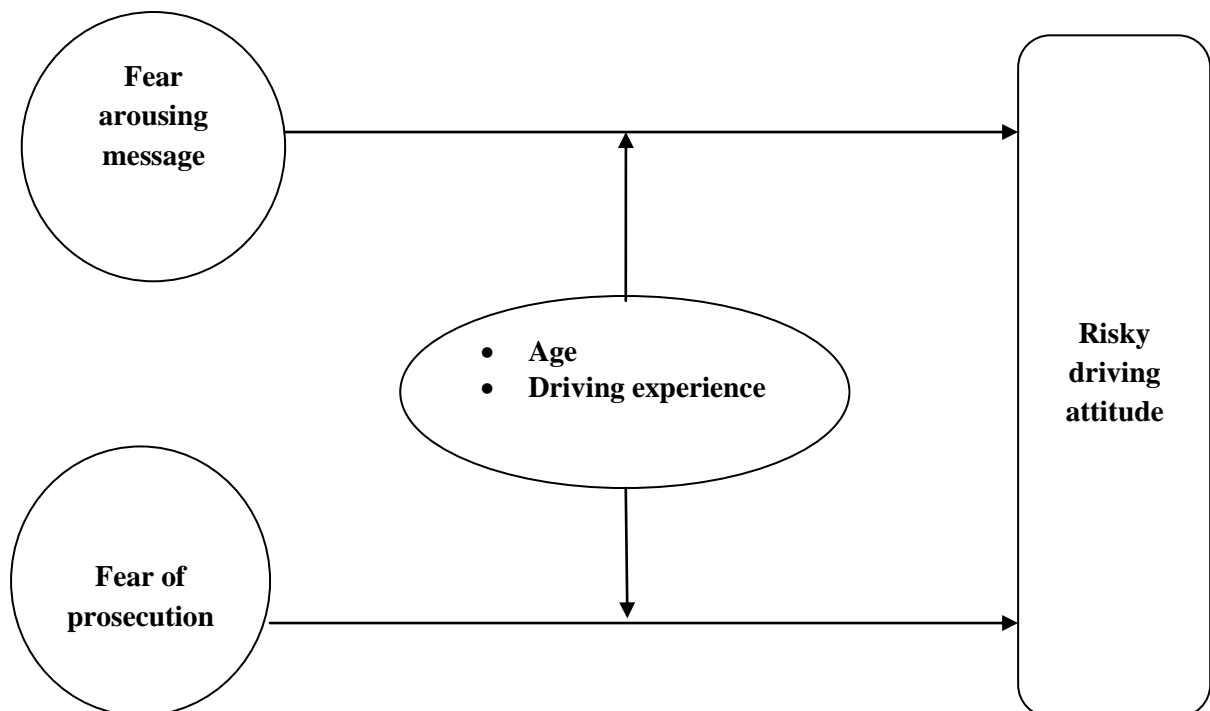
Hypothesis three also stated that fear arousing messages would have a significant positive effect on the risky driving attitude of female drivers than male drivers. This hypothesis was not confirmed as males and females did not differ significantly in their response to fear arousing messages.

## **4. *Age and Messages***

4a) Hypothesis 4a stated that fear arousing messages would have a significant positive effect on the risky driving attitude of young drivers than old drivers. This hypothesis was not supported by the data. Young drivers continued to show the same risky driving attitude after they have been exposed to fear arousing messages.

4b) Hypothesis 4b stated that fear of prosecution would have a significant positive effect on the risky driving attitude of young drivers than old drivers. The data confirmed this hypothesis as young drivers significantly reduced their risky driving attitude after they have watched the fear of prosecution message.

#### 4.4 Observed model



## CHAPTER FIVE

### DISCUSSION

#### 5.1 Introduction

Fear is often used in the media for advertising products and services and also in health promotion where people are persuaded to change some risky behaviours such as smoking, unprotected sex and not performing breast screening. Past research on the use of fear in advertising and health promotion has been inconclusive and researchers have suggested that its usage is ill-advised and ineffective. In the present study, the researcher looked at the effect of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana in an experimental research.

#### 5.2 Discussion

##### 5.2.1 Independent Effect of Fear Arousing Message

This study revealed that fear arousing messages does not affect the risky driving attitude of drivers. This finding is therefore not consistent with the hypothesis – fear arousing messages would have a significant positive effect on risky driving attitude. This finding comes to confirm a great deal of past research in the fear arousal literature that shows that fear arousing messages are least effective in changing attitudes. (e.g. Henley & Donovan, 2003; Levine et al., 2009; Lewis, Watson, Tay & White, 2007; Mukherjee & Dube, 2012; Thornton, Rositer & White, 2000). There are similarities in attitudes expressed by participants in this study and those of previous studies. Rositer and White (2000) for example found that participants were still prepared to speed even after exposing them to fear arousing message. The evidence produced in the present study corroborates such finding and establishes the ineffectiveness of fear appeals if used independently. Participants in this study before being exposed to the road safety advertisements were randomly assigned to the various conditions,

thereby lessening the possibility of individual differences affecting this outcome. Perhaps, the most obvious explanation to this finding is that drivers have become desensitized to the use of fear arousing messages in road safety campaigns hence, have become less responsive to advertisements incorporating threat to life or physical consequences. Such scary messages are used almost everywhere to remind drivers of the consequences of reckless driving. Hence, what probably was otherwise scary messages to them could now do little to persuade them to change their attitude towards risky driving. It seems possible that this desensitization to fear may be the reason why Mukherjee and Dube (2012) suggested that effectiveness of fear arousing messages can be increased by adding an element of humor to the advertisement. Lewis, Watson, Tay and White (2007) have also challenged the persistent believe existing in road safety and health advertising practice that the only way to modify risky behaviour is through graphic scare tactics and have also suggested positive emotional appeals instead.

### **5.2.2 Age, Fear Arousing Messages and Risky Driving Attitude**

In this study, it was also revealed that fear arousing messages did not affect the risky driving attitude of young drivers. The risky driving attitude of young drivers was not reduced when they were exposed to fear arousing messages. This result is not in line with previous studies (e.g. Henley & Donovan, 2002; Shore & Gray, 1999). However in the protection motivation theory, it has been suggested that appraisal of a health threat and coping response can lead to a boomerang effect. The finding from the present study therefore provides support for and sheds light on this theory as the fear arousing message did not motivate the young drivers to decrease their risky driving attitude.

As Lewis, Watson, Tay and White (2007) have suggested that perceptions of vulnerability is very important consideration in persuasion, one possible explanation that could be offered for

this boomerang effect is that young drivers may have appraised themselves as less vulnerable to the threats that the message presented and hence were not persuaded by it hence, not willing to reduce risky driving attitudes that could endanger them. Thus it is possible for young drivers to perceive themselves as not likely to be involved in motor accidents and thereby not seeing the need to reduce their risky driving attitude. Young drivers may also perceive risky driving as rewarding and as a means of offering a sense of identity among their peers. Taubman-Ben –Ari (2000) for example has shown in his studies that messages that emphasized on death threats led to more risky driving among young drivers who perceived driving as relevant to their self esteem.

Some of the studies that have found an effect (e.g. Henley & Donovan, 2003) were conducted using written messages. Thus participants in their studies were made to read fear arousing messages that were in written form. The present study however, made use of a graphic imagery incorporating written messages in the various experimental conditions. Hence, the present study provided information on road safety advertisements framed with both graphic and written messages and suggests – contrary to Henley and Donovan (2002) – that such messages are ineffective and leads to a boomerang effect among young drivers.

The inconsistency in the present findings with that of Henley and Donovan (2003) may also be attributed to the difference in focus between the present study and previous ones that found positive effect. The studies that found the positive effect of fear arousing messages were focused on another risky attitude other than risky driving. Henley and Donovan's (2003) study for example was focused on smoking. The finding from the present study therefore does not come as a surprise as it focused on risky driving attitudes unlike Henley and Donovan (2003). In light of the recent Global Status Report (World Health Organisation,

2013) indicating that young drivers are being killed in road accidents more than any other age group, there is the need to rethink the usage of fear arousing messages in road safety commercials targeted at young drivers and reconsider other possible ways of tailoring persuasive messages targeted at them.

### **5.2.3 Gender, Fear Arousing Messages and Risky Driving Attitude**

The present study also revealed that fear arousing messages did not have any effect on the risky driving attitude of both males and females. Thus contrary to the hypothesis that fear arousing messages would have a significant positive effect on the risky driving attitude of female drivers than male drivers, it became evident in this study that neither males nor females were affected by this message. This does not confirm findings made in previous studies (Lewis, Watson & Tay, 2007; Tay & Ozanne, 2002). Previous studies have either found an effect in favour of females (Tay & Ozanne, 2002) or males (Lewis et al., 2007). According to Madigan, Ryan and Schuemie (2013) different study designs can yield inconsistent findings. This inconsistency in previous studies may perhaps be attributed to the design of such studies. The present study employed the between-group experimental design whilst Lewis, Watson and Tay (2007) used the within-group design. One of the major flaws associated with this design is carry-over effect and there is the possibility that this may have influenced Lewis, Watson and Tay (2007) findings. Tay and Ozanne (2002) also took their data from fatality rates filed to New Zealand's Transport Authority by the police and analysed them. Such an approach is fraught with weaknesses such as the possibility of police not filing all accidents and also being biased in favour of females in issuing tickets for traffic offences as studies have shown this tendency to be biased (e.g. Rowe, 2009).

Also, Tay and Ozanne (2002) only focused on risky driving related to alcohol, drug and speed, neglecting other acts of risky driving. This difference in focus could possibly influence the disparity in findings between the present study and Tay and Ozanne's (2002) study. The present study differed in approach by looking at risky driving in general (over speeding, inattentive driving, not wearing seat belts, wrongful overtaking etc). Studies on risky driving in relation to alcohol, drug and speeding have usually shown that males are more likely to be involved in such offences (Lewis, Watson, White et al., 2012). On the other hand available evidence suggests that females are more likely to engage in inattentive driving than males (Goodwin, Foss, Harrell & O'Brien, 2012). Thus it stands to reason that road safety campaigns incorporating fear arousing messages may have different effects depending on the driving behaviour they focus on.

#### **5.2.4 Fear of Prosecution and Risky Driving Attitude**

The experiment conducted also did not detect any evidence for the independent effect of fear of prosecution on risky driving attitude. This conflicts with the researcher's hypothesis that fear of prosecution would have a significant positive effect on the risky driving attitude of drivers. This finding is not in consonance with previous research that looked at legislative enforcements or threat of enforcement as a means of reducing risky driving (Constant et al., 2007; Tay, 2003, 2005). In his studies for example, Tay (2005) found that the legislative enforcement was found to be effective on any group of drivers. The finding from the present study could be because road traffic regulations are not enforced to the letter hence, using the penalty of breaking those regulations as a strategy could do little to persuade drivers to change their risky driving attitude. More often than not, concerns have been raised in the country about law enforcement officials taking bribes from offending drivers in order to let them go without prosecution. A recent Global Corruption Barometer(Transparency

International, 2013) for the third time, ranked the Ghana Police Service as the public organization perceived to be most corrupt in the country. With such perception of these law enforcement officers, using threat of enforcement as a strategy in changing risky driving attitude of drivers could backfire as drivers may think they can bribe their way through if apprehended.

Perhaps, another possible explanation for the evidence from the present studies is that whereas previous studies that found effect looked at specific legislative initiatives such as compulsory breath testing (e.g. Tay, 2005), this study focused on enforcement practices in general. Also in the present study, emphasis was placed on penalties for breaking road traffic regulations as advocated by the deterrence theory. Previous studies that found effect however emphasized on traffic regulations that drivers need to observe and did not place much emphasis on the threat of enforcement. Thus the effect on drivers in previous studies could be accounted for not by the fear of disobeying those laws but rather from civic responsibility to comply with the laws of the country. This was confirmed in this study as further analysis conducted suggested that participants who were high on agreeableness reduced their risky driving after being exposed to fear of prosecution stimulus compared to those low in agreeableness. Constant et al. (2007) for example found that increasing law enforcement measures led to increased support for restrictions and that many of his respondents realized the necessity of regulations and restrictions on driving behaviour.

### **5.2.5 Age, Fear of Prosecution and Risky Driving Behaviour**

Fear of prosecution has also been found in this study to be effective in reducing the risky driving attitude of young drivers than old drivers. This confirms previous studies that found evidence that young drivers feel threatened by the police or enforcement campaigns (Scott Parker et al., 2011; Tay, 2005). This finding thus suggests that the presence of the police on

the streets and road safety campaigns that emphasise on the arrest and sanctioning of traffic offenders could deter young drivers from engaging in reckless driving. The stigma of arrest and prosecution that young people do not want to go through could be the possible reason for young drivers being deterred by this strategy. In addition, this segment of the population may not be willing to sacrifice few minutes of reckless driving (which can lead to their imprisonment) with their future prospects and major lifestyle decisions ahead.

The deterrence theory has postulated that people choose to obey the law after they have calculated the gains and possible consequences of their action. Hence, it could be that young drivers after receiving this message engaged in this form of appraisal postulated by the deterrence theory. Thus another possible reason for this finding could be because young people after calculating the gains and possible consequences of their actions came to the understanding of what it implies to be arrested for reckless driving. Young drivers also after calculating the gains and possible consequences of their actions may have come to the realization that they have more to lose than to gain as suggested by the deterrence theory if apprehended for reckless driving.

This finding comes at a time when the Ghana Police Service is seeking to enforce spot fine on offending drivers as stipulated in Regulation 157 of Legislative Instrument (LI) 2180 which the Parliament of Ghana passed in 2012. This regulation allows minor vehicle offences such as using cell phones while driving and driving without vehicle reflectors to pay spot fines if apprehended (Appiah, 2013). Thus the awareness of such legislations and the consequences for committing even minor offences is a possible reason for the decrease in risky driving attitude of young drivers. Henley and Donovan (2013) have suggested that while older people could be more critical, younger people pay more attention to such messages generally, hence the possibility of being affected by them. The finding from the

present study therefore suggests that the deterrence theory may not apply to all segments of the population and can at best account for deterring young people.

### **5.2.6 Driving Experience, Fear Arousing Message and Risky Driving**

This study disclosed that the risky driving attitude of drivers with long driving years can be affected by fear arousing messages. The evidence from the study suggests that when drivers with long driving years are exposed to fear arousing messages, they reduce their risky driving attitude. Previous research that have studied this variable – years of driving – have rarely considered its moderating effect with fear arousing messages on risky driving attitude. However, the finding from the present study does not offer support for previous work that found that drivers with high level of experience have the tendency to increase their risky driving (Catchpole, 2005). The lack of agreement between this study and Catchpole's (2005) study could be attributed to the fact that Catchpole (2005) only looked at the association between driving experience and risky driving tendency. Thus the drivers were not exposed to fear arousing messages in such study. The present study however exposed the drivers to the fear arousing messages. Hence, the obvious reason for the reduction in risky driving attitude of drivers with long driving years is that the threats and physical injury presented in the messages could persuade them to change their risky driving attitude.

Again, drivers with long driving years by experience may have come to appreciate the dangers they encounter on the roads over the years while driving and are therefore willing to respond to messages that remind them of such dangers. Thus when they have appraised this threat presented (which reminds them of the dangers they encounter on the roads) and in their effort to escape such dangers, drivers with long driving years make an adaptive response (reducing their risky driving attitude) to the fear arousing message. The drivers could have

therefore been motivated to protect themselves from the negative consequences the message suggests could happen if they engage themselves in reckless driving. Such an adaptive response is one of the responses the protection motivation theory postulates could happen after one has been presented with a threatening message. Drivers in this study who have long years of driving experience therefore adapted to the fear arousing message presented by reducing their risky driving attitude. Thus this finding sheds light on the protection motivation theory which proposes adaptive response to health threat as one possible outcome after being exposed to a fear arousing message.

### **5.2.7 Driving Experience, Fear of Prosecution and Risky Driving**

Drivers with short years of driving experience and drivers with long years of driving experience were also found to change their risky driving attitude in opposite directions after they had been exposed to fear of prosecution message. That is whereas drivers with short years of driving experience reduced their risky driving attitudes after viewing the video incorporating fear of prosecution, drivers with long years of driving experience increased their risk driving attitudes. This is consistent with the hypothesis that fear of prosecution would have a significant positive effect on the risky driving attitude of drivers with short driving years than long driving years. This corroborates previous literature on law enforcement and risky driving (Catchpole, 2005; Scott-Parket et al., 2011). Catchpole for instance found that long driving years are associated with greater tendency to commit traffic offences (Catchpole, 2005). This finding could be accounted for by the fact that drivers with long driving years may have become accustomed to police presence in traffic and habituated to sanctions for traffic offences. Such drivers may have for their long years of driving experience and encounters with the police, found they can always bribe their way out of

trouble if they are charged with reckless driving. They therefore do not pay much attention to police presence and are not deterred by enforcement strategies

On the other hand, those with short driving years even though have some level of exposure to police presence whilst driving, do not have much encounter with police for traffic offences unlike those with long driving years and do not want to risk falling into the hand of law enforcement officials. Thus in the quest to avoid falling into the grips of law enforcement officials, such drivers with short driving years experience feel threatened when presented with messages that emphasize on prosecuting drivers who engage in risky driving. However, as the findings from this study suggest, as they gain much driving experience, they may become habituated to enforcement strategies as shown with drivers with long driving years.

#### **5.2.8 Combination of Fear of Prosecution and Fear Arousing Messages**

When fear arousing messages and fear of prosecution were combined, the risky driving attitude of drivers who watched this video did not reduce. This finding therefore comes to support previous studies such those by Tay (2003, 2005). The likely reason for this finding could be that combining the two fear stimulus led to a boomerang effect. As propounded in the protection motivation theory, one possible response to messages incorporating fear is maladaptive coping which according to this theory could either be the presence of behaviour that can lead to negative consequences or not performing a behaviour (absence of behaviour) that can also result in negative consequence. Drivers who watched messages that combined these two messages were still ready to engage in the same risky driving attitude after watching those messages and this confirms the protection motivation theory.

## **5.3 Implications**

### **5.3.1 Practical Implications**

From the study, it appears drivers have become desensitized to fear arousing messages and hence, they seem not to have an independent effect. The alternate strategy explored in this study, fear of prosecution also appears not to be effective, and again implying practitioners should also use this with caution. However, the study has demonstrated that the messages become effective when other factors are considered by those who frame such messages.

In view of the above, it has become of relevance for message framers to consider other demographic variables, as the study revealed that fear arousing messages elicit different responses depending on age and years of driving. Road safety advertisements incorporating fear arousing messages thus become effective in reducing risky driving attitude when message framers tailor it to suite those with long years of driving experience.

For drivers with short years of driving experience, findings from the study suggest an alternate strategy should be employed. Whilst message framers target drivers with long years of driving experience with fear arousing messages, they should design road safety advertisements incorporating fear of prosecution targeted at drivers with short years of driving experience.

Message framers should also re-think the use of fear arousing messages targeted at young drivers, the age group that the Global Status Report (World Health Organisation, 2013) has recently described as constituting more than three quarters death of all road traffic accidents. The finding from this study implies that using fear arousing messages to reduce the risky driving of young people will be ineffective. Since fear of prosecution was found to be

effective on young people, messages targeted at young people should incorporate threats of legal consequences in order to reduce their risky driving behaviour. Thus emphasis should be placed on sanctions that will be brought on them when found engaging in reckless driving. Therefore the call by the WHO for comprehensive legislations to be put in place in their first Global Status Report (World Health Organisation, 2009) and emphasized again in their recent report (WHO, 2013) is a step in the right direction. As relevant bodies in the country seek to study this report and implement recommendations made with regards to legislation, young people should be the prime target as this study has found evidence for fear of enforcement to reduce risky driving attitude among young people.

However, older people may respond to fear arousing messages because of consequences of harm to them and others who depend on them for livelihood such as wives, children, husbands and other relatives

Practitioners in designing road safety advertisements to be used in the media need not target a particular gender as it has been revealed that both genders give the same response to fear arousing messages.

### **5.3.2 Theoretical implications**

Theoretically, findings from the present study seems to call for a review of the deterrence theory as evidence from this study appears to suggest that using threat of legal consequences independently can backfire. From this study, the deterrence theory only seemed to apply when changing attitudes in young people. This theory postulates that people choose to obey the law after they have calculated the gains and possible consequences of their action. The study however revealed that older drivers were not deterred by the threats of enforcement unlike younger drivers who reduced their risky driving attitude when exposed to this same

message. Hence, it could be that young drivers after receiving this message engaged in this form of appraisal postulated by the deterrence theory. The theory therefore should be reviewed to be applicable to only the behaviour of young people.

#### **5.4 Limitations**

One of the limitations in this study is that the fear messages used in the study were not varied on different intensities. In this study, the independent variable (fear) was varied on four levels though (no fear, fear arousing messages, fear of prosecution and combination of fear arousing messages and fear of prosecution), but not varied on different intensities. Probably, the effectiveness of the fear messages used may have increased if their intensity levels were varied (eg. high fear, moderate fear and low fear). This could have also helped to know what intensity of fear can reduce risky driving attitudes.

Again, this study used only negative appeals (fear) to persuade drivers to change their risky driving behaviours. This is because the study was aimed at investigating the effect of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana. It did not use positive appeals such as the use of humour in advertisement to also find out whether they can help reduce risky driving behaviour. The absence of such positive appeals may have accounted for the ineffectiveness of the fear arousing messages.

#### **5.5 Recommendations**

As it has become evident that fear arousing messages and fear of prosecution elicit different responses from different segments of the population, future research should explore their interaction with variables such as education and personality. This study has shown that fear

of prosecution have an interaction effect with age and therefore other variables need to be explored to find out whether they can interact with the IV (fear) to impact driving attitudes.

Again, as this study revealed that fear of prosecution interacts with age to impact risky driving attitude, it may be likely that combination of fear arousing messages and fear of prosecution can interact with other variables as well to impact risky driving attitude. Future work therefore needs to establish whether combination of fear arousing messages and fear of prosecution can interact with other variables to enhance their effectiveness. As this study disclosed that some demographic variables interacts with fear arousing messages, future work should take a look at combination of fear arousing messages and fear of prosecution and the interactive effect they have on risky driving attitude

## **5.6 Conclusion**

This study was aimed at, exploring the effectiveness of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana. The study specifically sought to find out whether fear arousing messages, fear of prosecution and combination of fear arousing messages and fear of prosecution can influence risky driving attitudes. It also examined whether gender, age and years of driving needs to be considered when using these messages.

Empirical data gathered revealed that generally fear arousing messages are not effective. This therefore calls for serious reconsideration of the general usage of this strategy in road safety campaigns in the country. Already road accidents are sweeping away the country's resources, it therefore becomes a matter of grave worry when efforts (road safety advertisements) aimed at reducing this menace also amount to wasting additional resources. In this study, drivers risky driving attitude did not change even after exposing them to the fear arousing messages.

Another objective in this study was finding out whether gender and age need to be considered when using fear arousing messages. These variables however could not determine ones response to fear arousing messages. Although young drivers could not be persuaded to change their risky driving attitude when exposed to fear arousing messages, that does not rule out considering other alternative approaches by which they could be persuaded.

The study also sought to examine whether fear of prosecution can influence the risky driving attitude of drivers and results from this study showed that in general, fear of prosecution is not effective. The point needs to be emphasised that practitioners in the use of this strategy should use it with caution. In as much as the effort of the police and other enforcement officials are commendable, this finding should cause researchers and practitioners to explore other variables that can moderate the effect of fear of prosecution.

From the foregoing, fear of prosecution in general is not effective in reducing risky driving. However, the results of this study disclosed that age and years of driving can moderate the effect of fear of prosecution, as the study also sought to explore the interactive role these variables have with fear of prosecution. Empirical findings from the study also suggest that this strategy – fear of prosecution – is effective when years of driving experience is taken into consideration. Age and driving experience are therefore two key variables that must be considered in designing road safety campaigns employing fear of prosecution.

The study also explored combination of fear arousing messages and fear of prosecution and empirical evidence coming from this investigation shows that generally, combining these two messages to reduce risky driving is not effective. This evidence put forward is an indication

that when a message is being designed, its effectiveness is not dependent on the intensity of the fear as theoretical perspective from the protection motivation theory suggests this can lead to a boomerang effect. It is therefore concluded from this finding that when message framers use such an approach on drivers, it could possibly lead to a maladaptive outcome

In a nutshell, fear arousing messages and fear of prosecution do not have an independent effect. They can however be effective as a result of the interactive role such messages play with other variables as demonstrated in this study. Findings from this study will be helpful to policy makers and the National Road Safety Commission in their quest to reduce motor accidents.

## REFERENCES

- Akongbota, J. (2011). Reducing accidents on our roads. Retrieved September 10, 2012 from the World Wide Web: <http://www.ghana.gov.gh>
- American Psychological Association. (2001). *Publication manual of the American Psychological Association* (5th ed.). Washington, DC: American Psychological Association.
- Andenaes, J. (1974). *Punishment and deterrence*. Ann Arbor: The University of Michigan Press.
- Appiah, S. (2013, April 11). Spot fines for traffic offences next month. Retrieved May 22, 2012 from the World Wide Web: <http://graphic.com.gh/General-News/spot-fines-for-traffic-offences-next-month.html>
- Association for Safe International Road Travel (2012). Road Crash Statistics. Retrieved September 10, 2012 from World Wide Web: <http://www.asirt.org>
- Aworemi, J. R., Abdul-Azeez, I. A., Oyedokun, A. J., & Adewoye, J. O. (2010). Efficacy of drivers' fatigue on road accident in selected southwestern states of Nigeria. *International Business Research*, 3 (3), 225-232.
- Baker, T. L. (1994). *Doing Social Research* (2<sup>nd</sup> Ed.), New York: McGraw-Hill Inc.
- Catchpole, J. (2005). Learning to take risks: The influence of age and experience on risky driving. Vermont South, Victoria, Australia. Research Report ARR 362.
- Connor, J., Norton, R., Ameratunga, S., & Jackson, R. (2004). The contribution of alcohol to serious car crash injuries. *Epidemiology*, 15, 337-344.
- Constant, A., Salmi, L. R., Lafont, S., Chiron, M. & Lagarde, E. (2007). The recent dramatic decline in road mortality in France: how drivers' attitudes towards road traffic safety changed between 2001 and 2004 in the GAZEL cohort. *Health Education Research*, 23(5), 848-858.

- Dejong, W. & Atkin, C. K. (1995). A review of national television PSA campaigns for preventing alcohol-impaired driving, 1987-1992. *Journal of Public Health Policy*, 16 (1), 59-80.
- Devlin, E., Anderson, S., Hastings, G. & Macfadyen, L. (2005) Targeting smokers via tobacco labeling: opportunities and challenges for pan European health promotion. *Health Promotion International*, 20 (1), 41-49.
- Drews F. A, Pasupathi M, & Strayer D. L (2008). Passenger and cell phone conversations in simulated driving. *Journal of Experimental Psychology*. 14 (4), 155-169
- Elder, R. W, Shults, R.A, Sleet, D. A, Nichols J. L, Thompson R. S, Rajab W. (2004). Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: A systematic review. *American Journal of Preventive Medicine*. 27 (1), 57-65.
- Elliott, B. J. (2003, September). *The psychology of fear appeals re-visited*. Paper presented at 2003 Road Safety Research, Policing and Education Conference. Sydney, Australia.
- Fernandes, R. F., Hatfield, J. & Job, R. F. S. (2006, July). *Examination Of Different Predictors Of Different Risky Driving Behaviours In Young Nsw Drivers*. Final report for the motor accident authority of NSW. New South Wales: Injury Risk Management Centre.
- Fletcher, L. & Zelinsky, A. (2009). Driver inattention detection based on eye gaze-road event correlation. *The International Journal of Robotics Research*, 28 (6), 774-801.
- Goodwin, A. H., Foss, R. D., Harrell, S. S & O'Brien, N. P. (2012). Distracted driving among newly licensed teen drivers. Retrieved July 8, 2013 from the World Wide Web: [www.aaafoundation.org/sites/default/files/research\\_reports/DistractedDrivingAmongNewlyLicensedTeenDrivers.pdf](http://www.aaafoundation.org/sites/default/files/research_reports/DistractedDrivingAmongNewlyLicensedTeenDrivers.pdf)
- Harris P. (2008). *Designing and reporting experiments in Psychology* (3<sup>rd</sup> Ed.). Beckshire: Open University Press.

- Henley, N. & Donovan, R. (2002). Young people's response to death threat appeals: Do they really feel immortal? *Health and education research: Theory and practice*, 18 (1), 1 – 14.
- Kennedy, K.C. (1983). A Critical Appraisal of Criminal Deterrence Theory, 88 Dick. L. Rev. 1 (1983-1984)
- Kloeden, C. N., McLean, A. J., Moore V. M, & Ponte G. (2007). Travelling Speed and the Risk of Crash Involvement. Volume 1. Adelaide: NHMRC Road Accident Research Unit. Report No.: CR 172
- Koryekpor A. W, (2012). 250 Killed in road accidents in Accra Annually. The Ghanaian Journal, Retrieved November 19<sup>th</sup> 2012 from the World wide Web: <http://www.theghanaianjournal.com>
- Kraemer, H. C., & Thiemann, S. (1987). *How many subjects? Statistical power analysis in research*. Newbury Park, CA: Sage
- Lennon, R. & Rentfro, R. (2010). Are young adults fear appeal effectiveness ratings explained by fear arousal, perceived threat and perceived efficacy? *Innovative Marketing*, 6 (1), 58-65.
- Levine, T. R, Muthusamy, N. & Weber, R. (2009). Scaring the already scared: Some problems with HIV/AIDS fear appeals in Namibia. *Journal of Communication*, 59, 317–344.
- Lewis, I. M., Watson, B. C., & Tay, R. (2007). Examining the effectiveness of physical threats in road safety advertising: The role of the third-person effect, gender, and age. *Transportation Research Part F: Traffic Psychology and Behaviour*, 10 (1), 48-60.
- Lewis, I. M., Watson, B. C., Tay, R. S. and White, K. M. (2007). The Role of Fear Appeals in Improving Driver Safety: A Review of the Effectiveness of Fear-Arousing (Threat)

- Appeals in Road Safety Advertising. *International Journal of Behavioral and Consultation Therapy*, 3(2), 203-222.
- Lewis, I. M., Watson, B. C., White, K. M., Elliot, B., Thompson, J & Cockfield, M. (2012). How males and females define speeding and how they'd feel getting caught for it: Some implications for anti-speeding message development. In Australian Road Safety Research, Policing and Education Conference 2012, 4-6 October 2012, Wellington, New Zealand.
- Madigan, P., Ryan, P. B., Schuemie, M. (2013). Does design matter? Systematic evaluation of the impact of analytical choices on effect of estimates in observational studies. *Therapeutic Advances in Drug Safety*, 4(2), 53-62.
- Ministry of Transport (2012). *Road traffic crashes in Ghana: Statistics 2011* (National Road Safety Commission Research Report). Retrieved from the National Road Safety Commission head office, Ghana.
- Mowen, J. C., Harris, E. G., & Bonne, S. A. (2004). Personality traits and fear response to print advertisements: Theory and an empirical study. *Psychology and marketing*, 21 (11), 927-943.
- Mutz, D. C. (1989). The influence of perceptions of media influence: Third-person effects and the public expression of opinions. *International Journal of Public Opinion Research*, 1(1), 3-23.
- Mukherjee, A. & Dube, L. (2012). Mixing Emotions: The Role of Humor in Fear Advertising, *Journal of Consumer Behavior*, 11 (2), 147-161.
- National Road Safety Commission (2009). National Road Safety Policy. Retrieved September 26, 2012 from World Wide Web: <http://www.nrsc.gov.gh>

- National Road Safety Commission (2011). 2010 Annual Report. Retrieved September 12, 2012 from the World Wide Web: <http://www.nrsc.gov.gh>
- Neighbors, C., Vietor, N. A., & Knee, C. R., (2002). A Motivational Model of Driving Anger and Aggression. *Personality and Social Psychology Bulletin*, 28 (3), 324-335.
- Noyes, M. (2013). Sobering facts regarding car accidents. Retrieved January 8, 2013 from World Wide Web: <http://www.matthewnoyes.com>
- Ordonana, J. R., Gonzalez-Javier, F., Espin-Lopez, L., & Gomez-Amor, J. (2009). Self-report and psychophysiological responses to fear appeals. *Human Communication Research*, 35, 195-220.
- Paek, H. J., Kim, K. & Hove, T. (2010). Content analysis of antismoking videos on YouTube: message sensation value, message appeals, and their relationships with viewer responses. *Health Education Research*, 26 (6), 1085-1099.
- Reason, J., Mantstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). Errors and violations: a real distinction? *Ergonomics*.33. 1315-1332.
- Road Traffic Act (2004). Act 683. Retrieved September 19, 2012 from World Wide Web: <http://ghanalegal.com>
- Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: a revised theory of protection motivation. In Cacioppo, J. T & Petty, R. E. (eds). *Social Psychophysiology: a sourcebook*. Guilford press, New York, pp. 153-176.
- Rothman, A. J., Bartels, R. D, Wlaschin, J. & Salovey, P. (2006). The Strategic Use of Gain- and Loss-Framed Messages to Promote Healthy Behaviour: How Theory Can Inform Practice. *Journal of Communication*, 56, 202-220.

- Rowe, B. (2009). Gender bias in enforcement of traffic laws: Evidence based on a new empirical test. Retrieved July 8, 2013 from the World Wide Web: [www-personal.umich.edu](http://www-personal.umich.edu)
- Ruiter, R. A. C., Kok, G., Verplanken, B., & Brug, J. (2001). Evoked fear and effects of appeals on attitudes to performing breast self-examination: An information-processing perspective. *Health Education Research: Theory and Practice*, 16 (3), 307-319.
- Schneider, F.W., Gruman, J.A., & Coutts, L.A. (2005). *Applied Social Psychology: Understanding and Addressing Social and Practical Problems*. Thousand Oaks, CA: Sage.
- Scott-Parker B., Watson, B. C., King, M. J. & Hyde, M. K. (2011). Mileage, car ownership, experience of punishment avoidance and the risky driving of young drivers. *Traffic Injury Prevention*. 12 (6), 559-567.
- Shore & Gray (1999). Teenagers reaction to anti-drink driving fear appeals. Proceeding of the 1999 ANZMAC Conference, Sydney, December. Retrieved September 26, 2012 from the World Wide Web: <http://anzmac.org/conference/1999/Site/S/Shore.pdf>.
- Taubman-Ben-Ari, O. (2000). The effect of reminders of death on reckless driving: A terror management perspective. *Current Directions in Psychological Science*, 9(6), 196-199.
- Tay, R. (2003). Effectiveness of Road Safety Advertising in Reducing Fatal Crashes in New Zealand. In Geurson G., Kennedy R., & Monica T. (Eds.) *Australia and New Zealand Marketing Academy Conference*, 1-3 December 2003, Adelaide, South Australia.
- Tay, R. (2005). The effectiveness of enforcement and publicity campaigns on serious crashes involving young male drivers: Are drink driving and speeding similar? *Accident Analysis and Prevention*, 37(5), 922-929.

- Tay, R. & Ozanne, L. (2002). Who are we scaring with high fear road safety advertising campaigns? *Asia Pacific Journal of Transport*, 4,1-12.
- Thorton, J., Rossiter, J., & White, L. (2000). The persuasive effectiveness of varying levels of fear: An anti-speeding advertising experiment. *Visionary Marketing for the 21<sup>st</sup> Century: Facing the Challenge*
- Transparency International (2013).Global Corruption Barometer 2013. Retrieved July 17, 2013 from the World Wide Web: [http://transparency.org/whatwedo/pub/global\\_corruption\\_barometer\\_2013](http://transparency.org/whatwedo/pub/global_corruption_barometer_2013)
- Ullberg, P., & Rundmo, T. (2003). Personality, attitudes and risk perceptions as predictors of risky driving behavior among young drivers. *Safety Science*, 41, 427- 443.
- Williams, J. D., Briley, D. A., Grier, S. A & Henderson, G. R. (2003), "Fear Appeals Between and Within Cultures," in Scott M. Smith (ed.), *Proceedings of the Ninth Cross-Cultural Research Conference*, Jamaica, December. Retrieved July 10, 2013 from the World Wide Web: [http://www.crossculturalresearch.com/ccr\\_website/proceedings03/papers/williams-briley-grier-henderson.doc](http://www.crossculturalresearch.com/ccr_website/proceedings03/papers/williams-briley-grier-henderson.doc).
- Wireko, V. (2013, January 9). Remiscing the year 2012-road carnage tops list of regrets. *The Daily Graphic*. Retrieved January 16, 2012 from the World Wide Web: <http://graphic.com.gh/features/reality-zone-remiscing-the-year-2012-road-carnage-tops-list-of-regrets.html>
- Witte, K. & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education and Behaviour*, 27 (5), 591-615.

- World Health Organisation (2004). World Report on road traffic injury prevention. Retrieved July 17, 2013 from the World Wide Web: <http://whqlibdoc.who.int/publications/2004/9241562609.pdf>
- World Health Organisation (2009). Global status report on road safety: time for action. Geneva, World Health Organization, 2009. Retrieved September 10, 2012 from the World Wide Web: [www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2009](http://www.who.int/violence_injury_prevention/road_safety_status/2009).
- World Health Organisation (2013). Global status report on road safety: Supporting a decade of action. Retrieved July 8, 2013 from the World Wide Web: [www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/en/index.html](http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/index.html)
- Yilmaz, V. & Çelik, H. E. (2006). Risky driving attitudes and self-reported traffic violations among Turkish drivers: The case of Eskişehir. *Doğuş Üniversitesi Dergisi*, 7 (1), 127-138.

**APPENDICES****Appendix A: Ethical clearance from Institutional Review Board**

**NOGUCHI MEMORIAL INSTITUTE FOR MEDICAL RESEARCH**  
*Established 1979* *A Constituent of the College of Health Sciences*  
**University of Ghana**

Phone: +233-302-916438 (Direct)  
+233-289-522574  
Fax: +233-302-502182/513202  
E-mail: [nirb@noguchi.mimcom.org](mailto:nirb@noguchi.mimcom.org)  
Telex No: 2556 UGL GH

**INSTITUTIONAL REVIEW BOARD**

Post Office Box LG 581  
Legon, Accra  
Ghana

My Ref. No: DF.22  
Your Ref. No:

14<sup>th</sup> March, 2013

**ETHICAL CLEARANCE**

**FEDERALWIDE ASSURANCE FWA 00001824**

**IRB 00001276**

**NMIMR-IRB CPN 068/12-13**

**IORG 0000908**

On 14<sup>th</sup> March 2013, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

**TITLE OF PROTOCOL** : **Effect of Fear Arousing Messages and Fear of Prosecution On Risky Driving among Drivers in Ghana**

**PRINCIPAL INVESTIGATOR** : **Anakwah Nkansah, MPhil Student**

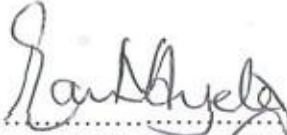
Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 13<sup>th</sup> March, 2014. You are to submit annual reports for continuing review.

Signature of Chairman: .....

  
Rev. Dr. Samuel Ayele-Nyampong  
(NMIMR – IRB, Chairman)

cc: Professor Kwadwo Koram  
Director, Noguchi Memorial Institute  
for Medical Research, University of Ghana, Legon

**Appendix B: Introductory letter from department to MTU****UNIVERSITY OF GHANA  
DEPARTMENT OF PSYCHOLOGY**Tel: (233-0302) 500381 Ext. 3754/3310  
028 955 04 63

P. O. Box LG 84, Legon Ghana E-mail: psychology@ug.edu.gh

Our Ref. No.....

PSYC 2/33/01

January 30, 2013

The Unit District Commander  
MTTU  
Legon

Dear Sir/Madam,

***LETTER OF INTRODUCTION  
MR. ANAKWAH NKANSAH***

The above-named is an M.Phil Social Psychology student in the Department of Psychology, University of Ghana, Legon.

In partial fulfillment of the requirement for the awards of the M.Phil degree **Mr Anakwah Nkansah** has to write and submit an original thesis.

He has selected the topic: **“Effect of Fear Arousing Messages and Fear of Prosecution on Risky Driving Among Drivers In Ghana.**

To enable him collect data for his work he would need to administer questionnaires and/or conduct interviews. He has selected your institution as suitable for his data collection.

Any assistance you may give him would be greatly appreciated.

Thank you for your co-operation.

Yours faithfully,

Dr. Charity S. Akoffa  
(Head of Department)

**Appendix C: Introductory letter from department to research fields****UNIVERSITY OF GHANA  
DEPARTMENT OF PSYCHOLOGY**Tel: (233-0302) 500381 Ext. 3754/3310  
028 955 04 63

P. O. Box LG 84, Legon Ghana

E-mail: [psychology@ug.edu.gh](mailto:psychology@ug.edu.gh)

PSYC 2/33/01

Our Ref. No.....

11<sup>th</sup> March, 2013

Dear Sir/Madam,

**LETTER OF INTRODUCTION  
MR. ANAKWAH NKANSAH**

The above-named is an M.Phil Social Psychology student at the University of Ghana, Legon.

In partial fulfillment of the requirement for the awards of the M.Phil degree Mr. Anakwah Nkansah has to write and submit an original thesis.

He has selected the topic: **"Effect of Fear Arousing Messages and Fear of Prosecution on Risky Driving among Drivers in Ghana"**

To enable him collect data for his work he would need to administer questionnaires and/ or conduct interviews. He has selected your institution as suitable for his data collection.

Any assistance you may give him would be greatly appreciated.

Yours faithfully,

(Dr. Charity S. Akotia)  
**HEAD OF DEPARTMENT**

## Appendix D: Consent Form

### NMIMR-IRB CONSENT FORM TEMPLATE

Title: Effect of Fear Arousing Messages And Fear of Prosecution on Risky Driving Among Drivers in Ghana

Principal Investigator: Anakwah Nkansah

Address: Department of Psychology, University of Ghana, Legon

#### General Information about Research

You are invited to participate in an academic research project of 'effect of fear arousing messages and fear of prosecution on risky driving among drivers in Ghana'. This study is focused on exploring how drivers respond to some messages used in road safety campaigns. It will find out the effectiveness of fear appeal messages and fear of criminal charges in road safety campaigns among drivers in Ghana. This research is designed to help in the development of campaigns to improve road safety. If you decide to participate, you will be asked to complete a short questionnaire about your attitudes toward road safety and various risky driving behaviours, as well as questions about various personal characteristics (e.g. years of driving, gender etc). This study is an experiment hence you will be made to view videos and pictures of crashed vehicles. It should take you no more than 15-20 minutes to complete. There are no right or wrong answers to the statements provided, kindly respond independently and do not write your name or code that could be linked with your name.

#### Possible Risks and Discomforts

Since you will be exposed to crashed vehicles, there is the possibility that this may create some discomfort to you. However the researcher will be available to help handle any discomfort that might arise. He will also not hesitate to refer you to a clinician if the need be.

#### Possible Benefits

This research will benefit you by helping you know some of the road traffic acts and some strategies in road safety campaigns. The final project output in the form of a completed dissertation will be made available to University of Ghana, and copies could be accessed for references in future for research and/ or practical application for relevant solutions in road safety and other risky behaviours.

#### Confidentiality

Any information that is obtained in connection with this study and that can be identified with you will remain confidential. Results from this project will only be presented to the scientific community. In any publication, information will be provided in such a way that you cannot be identified.

#### Compensation

If you are able to participate till the end of the study, you will be given a refreshment package in the form of a fruit drink.

#### Voluntary Participation and Right to Leave the Research

Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your future relations with the researcher of any official. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

#### Contacts for Additional Information

If you have any questions, please feel free to ask us. If you have any additional questions later, Mr. Anakwah Nkansah (phone 0242584320, email [anaben.afrique@hotmail.com](mailto:anaben.afrique@hotmail.com)) will be happy to answer them. Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

#### Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: [nirb@noguchi.mimcom.org](mailto:nirb@noguchi.mimcom.org) or [HBaidoo@noguchi.mimcom.org](mailto:HBaidoo@noguchi.mimcom.org).



## VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title (*Effect of Fear Arousing Messages And Fear of Prosecution on Risky Driving Among Drivers in Ghana*) has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

---

Date

Name and signature or mark of volunteer

**If volunteers cannot read the form themselves, a witness must sign here:**

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

---

Date

Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

---

Date

Name Signature of Person Who Obtained Consent



## Appendix E: Risky Driving Questionnaire

### SECTION A:

This section seeks information on the biographical details of participants. Please tick the relevant responses.

1. Gender:  Male:     Female
2. Age:  18-35years     35 – 50years     51years+
3. Accident History:  Yes     No
4. Death of close relative through accident:  Yes    No
5. Vehicle type:  Compact/economy     Sedan/family/sport    Other.....
6. Vehicle:  Private     Commercial
7. Number of months/ years driving:  1-12 months     1 – 3 yrs     4 – 9 yrs     10 yrs +
8. No. of hours driven per week:  0-10hrs     11-20 hrs     21-30 hrs     31-40 hrs  
 41-50 hrs     51-60 hrs     61hrs + 70     71-80 hrs     81-90 hrs     91-100 hrs

### SECTION B

This section is on statements about driving rules, traffic accidents and other driving behaviours. Please tick the relevant response to each statement to indicate the extent to which you agree or disagree with the statement. In your view, there are no right or wrong answers.

	<i>Strongly disagree</i>	<i>disagree</i>	<i>Neither agree nor disagree</i>	<i>agree</i>	<i>Strongly agree</i>
1. It is acceptable to drive in 100 km/h on a straight road if there are no other vehicles within 1.5 km.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Safe drivers can exceed speed limits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. There is no problem to drive above the speed limits, if the conditions are proper.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Driving 5 or 10 km above the speed limit is OK because everyone does it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I am afraid to injure a person with my car.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I cannot carry on my life as if nothing happened if I injure a person in traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I wish no body injuries if I get involved in an accident.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. If you have good skills, speeding is OK.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Drivers have a need for fun and excitement in traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. It is not risky to drive after drinking alcohol as it is thought.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	<i>Strongly disagree</i>	<i>disagree</i>	<i>Neither agree nor disagree</i>	<i>agree</i>	<i>Strongly agree</i>
11. Sometimes it is necessary to bend the rules to keep traffic going.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Sometimes it is necessary to ignore violations of traffic rules.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. It is more important to keep up the traffic flow rather than always follow the traffic rules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Sometimes it is necessary to bend the traffic rules to arrive in time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. It is better to drive smooth than always follow the traffic rules.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Sometimes it is necessary to violate the traffic rules to keep traffic going.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Sometimes it is necessary to take risks in traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. A driver who takes risks and violates some traffic rules does not mean he is a less safe driver.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**Appendix F: Risky Driving Questionnaire used to measure risky driving attitude after exposure to stimulus**

<i>Indicate the extent to which you agree/disagree with each statement. It's your view, there are no RIGHT or WRONG answers</i>	<i>Strongly disagree</i>	<i>disagree</i>	<i>Neither agree nor disagree</i>	<i>agree</i>	<i>Strongly agree</i>
1. It is acceptable to drive in 100 km/h on a straight road if there are no other vehicles within 1.5 km.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Safe drivers can exceed speed limits.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. There is no problem to drive above the speed limits, if the conditions are proper.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Driving 5 or 10 km above the speed limit is OK because everyone does it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I am afraid to injure a person with my car.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I cannot carry on my life as if nothing happened if I injure a person in traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I wish no body injuries if I get involved in an accident.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. If you have good skills, speeding is OK.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Drivers have a need for fun and excitement in traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. It is not risky to drive after drinking alcohol as it is thought.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Sometimes it is necessary to bend the rules to keep traffic going.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Sometimes it is necessary to ignore violations of traffic rules.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. It is more important to keep up the traffic flow rather than always follow the traffic rules	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Sometimes it is necessary to bend the traffic rules to arrive in time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. It is better to drive smooth than always follow the traffic rules.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Sometimes it is necessary to violate the traffic rules to keep traffic going.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Sometimes it is necessary to take risks in traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. A driver who takes risks and violates some traffic rules does not mean he is a less safe driver.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Appendix G: The Big Five Inventory

### SECTION C

Here are a number of personality characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with the statement.

Disagree  
Strongly  
1

Disagree  
a little  
2

Neither agree nor  
disagree  
3

Agree  
a little  
4

Agree  
Strongly  
5

I see Myself as Someone Who...

\_\_\_ 1. Is talkative

\_\_\_ 2. Tends to find fault with others

\_\_\_ 3. Does a thorough job

\_\_\_ 4. Is depressed, blue

\_\_\_ 5. Is original, comes up with new ideas

\_\_\_ 6. Is reserved

\_\_\_ 7. Is helpful and unselfish with others

\_\_\_ 8. Can be somewhat careless

\_\_\_ 9. Is relaxed, handles stress well

\_\_\_ 10. Is curious about many different things

\_\_\_ 11. Is full of energy

\_\_\_ 12. Starts quarrels with others

\_\_\_ 13. Is a reliable worker

\_\_\_ 14. Can be tense

\_\_\_ 15. Is ingenious, a deep thinker

\_\_\_ 16. Generates a lot of enthusiasm

\_\_\_ 17. Has a forgiving nature

\_\_\_ 18. Tends to be disorganized

\_\_\_ 19. Worries a lot

\_\_\_ 20. Has an active imagination

\_\_\_ 21. Tends to be quiet

\_\_\_ 22. Is generally trusting

\_\_\_ 23. Tends to be lazy

\_\_\_ 24. Is emotionally stable, not easily upset

\_\_\_ 25. Is inventive

\_\_\_ 26. Has an assertive personality

\_\_\_ 27. Can be cold and aloof

\_\_\_ 28. Perseveres until the task is finished

\_\_\_ 29. Can be moody

\_\_\_ 30. Values artistic, aesthetic experiences

\_\_\_ 31. Is sometimes shy, inhibited

\_\_\_ 32. Is considerate and kind to almost  
everyone

\_\_\_ 33. Does things efficiently

\_\_\_ 34. Remains calm in tense situations

\_\_\_ 35. Prefers work that is routine

\_\_\_ 36. Is outgoing, sociable

\_\_\_ 37. Is sometimes rude to others

\_\_\_ 38. Makes plans and follows through with  
them

\_\_\_ 39. Gets nervous easily

\_\_\_ 40. Likes to reflect, play with ideas

\_\_\_ 41. Has few artistic interests

\_\_\_ 42. Likes to cooperate with others

\_\_\_ 43. Is easily distracted

\_\_\_ 44. Is sophisticated in art



## Appendix H: Translation of Questionnaires to Twi Language

### SECTION A (ƆFA A EDI KAN)

Saa ɔfa yi boa ma yehu nipabae a ɔreyi nsemmisa yi ano. Mesɛwo, Kyere nsemyi mu nea efa wo ho

- 1 Gender:  Obarima  Obaa
- 2 Mfe(ɛ)  18-35  35-50  51+ .....
- 3 Woanya lore akwanhyia pen?  Aane  Daabi
- 4 So w'abusuani bi ahwere ne nkwa enam lore akwanhyia nti?  Aane  Daabi
- 5 Lɔresuo benna wotwi .....
- 6 Lore ben na wotwi: Private  Commercial
- 7 Abosome sen ana amfe(ɛ) ahe na woatwilore .....
- 8 Dɔnhwere dodow ahe wotwi kaannawɔtwebiara: .....

*Risky Driving Questionnaire*

## Section B (OFA A ETŌ SO MIENU)

O fayifansenfua a efammara a efaloretwi ho, lbreakwanhyianenneemaefaloretwi ho. Mesrewokyereseneawogyesaansenfua yi to mu fa. Eyew'adwenena wore kyere, biribiranihoekyereseeyenokwareassaenyenokware.

<i>Kyere senea wo gyesaa nsemfua yi to mu. Eye w'adwene kyere, enkyerese eye nokware anaa enye nokware</i>	<i>Mennye nto mu koraa</i>	<i>Mennye nto mu</i>	<i>Enye emu biara</i>	<i>Megye to mu</i>	<i>Megye to mu paa</i>
1. Yegye to mu se wobetwi kaa wokwantempɔn so akɔdu 100 km/h seeba no se kaa biara emmen wo beye 1.5km.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Dravani anaa drɔbani a ne ho nni asem betumi atwam wo speedi a yeahyehye atohɔ no.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sebiri biara da ne kwan mu, wotu mmirika sen speedi a yeahyehye atohɔ no a ensee hwee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Se wotu mmirika boro speedi a yeahyehye atohɔ no beye 5km kosi 10km enye hwee efiri se obiarareye.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Mesuro se mede me kaabepira obi.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Mentumi nye me ho te se nea hwee nsi iye wobere a mede me kaaa pira obi wo traffic mu.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Menyaea anka obiara mpira wobere a me kaa anya akwanhya.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Se wonim kaa twipaa a, amirikatuo ye.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Adrava foɔ hia anigy ene abotɔyam wobere a wɔretwi kaa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Seyeka kaawobere a yeanomnsa a ensee hwee sen senea yedwene no.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Etɔdabi a eye se yebekyeammara no kakra senea ebeye lɔrebenya kwan atwam.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Etɔ da bi a eye se yebebu mmara a efa kaa twi ho no so.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Ehia se yebema kaa akɔwɔkwan so sen se yebedimmara a efakaa twi ho no so fremkyemm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Etɔ da bi a eye se yekyea mmara a efakaa twi ho no kakra senea ebeyea yebeduntɛm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Eye sewobetwi kaa yiye sen se dabiara wo be dimmara a efakaatwi ho no so.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Etɔ da bi a eye se ye bebu mmara a efakaa twi ho no se nea ebeye a kaa betumi akɔ wo kwan so.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Ete da bi a eho hia se ye bebu mmara so wɔkaa kwan mu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Odravani bummara so naotwikaa biarabiara a enkyere se nye odravaniɔmpɛ asomdwoe wɔkaakwan so	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Appendix I: Description of content of video clip participants were exposed to.***No fear*

This clip was made up of an advertisement of automobiles. The advertisement begun with the features and qualities of these automobiles (Ferrari, Lamborghini and Jaguar) being described. Users of these automobiles shared their experiences of using them and how excited they were to use these cars. The users in the advertisement were made up of two gentlemen and a lady.

*Fear arousing messages*

This begun with a background voice mentioning some statistics on accident casualties in Ghana. Showing simultaneously were slides of severely damaged vehicles involved in an accident. The consequences of engaging in reckless driving were also enumerated in this clip. The advertisement ended with some catchphrases intended to draw driver's attention to the risk of physical harm in risky driving. Among the catchphrases shown in this clip are 'over speeding kills', 'kill your speed before your speed kills you', 'better to reach home in peace than in pieces'.

*Fear of prosecution*

The first scene in this clip was the written sentence 'you can be arrested for reckless driving!'. It was followed by a background voice mentioning some consequences of reckless driving from the Road Traffic Act. In the scene that followed, a police officer was seen in front of a police station standing beside a car that the police has impounded. The police officer narrated that this driver committed a traffic offence and failed to stop when signaled by the police. According to the police officer in this clip, the driver of this impounded vehicle was being

processed for court to be prosecuted. He said even though the driver had pleaded, the police could not countenance such behaviour and are bent on prosecuting this offending driver. The clip ended by showing some people who have been arrested and are seen behind bars.

*Fear arousing messages and fear of prosecution.*

This clip was made up of combination of some selected scenes shown both in the fear arousing and fear of prosecution clips. The scene beginning this clip had two captions – ‘You can be arrested for careless driving’ and ‘Many people have lost their lives as a result of careless driving’. This was followed by a background voice stipulating sanctions that will be given to drivers who are arrested for careless driving. People who have been arrested were shown in this clip standing behind bars. The clip ended with a police man pointing out some of the mistakes drivers make when driving.

## Appendix J: Distribution of demographic variables

Figure 1. Bar graph for number of participants by gender

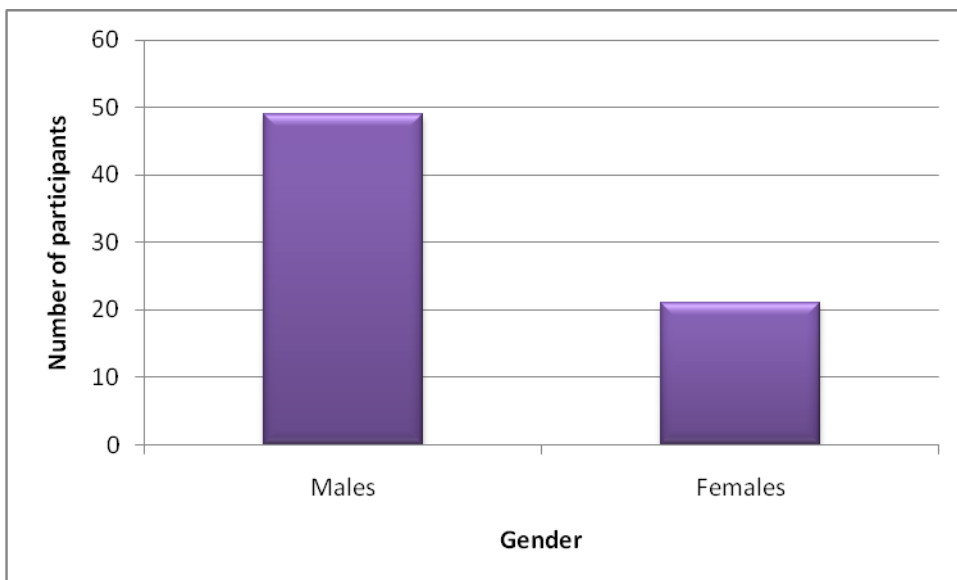


Figure 2. Bar graph for number of participants by age

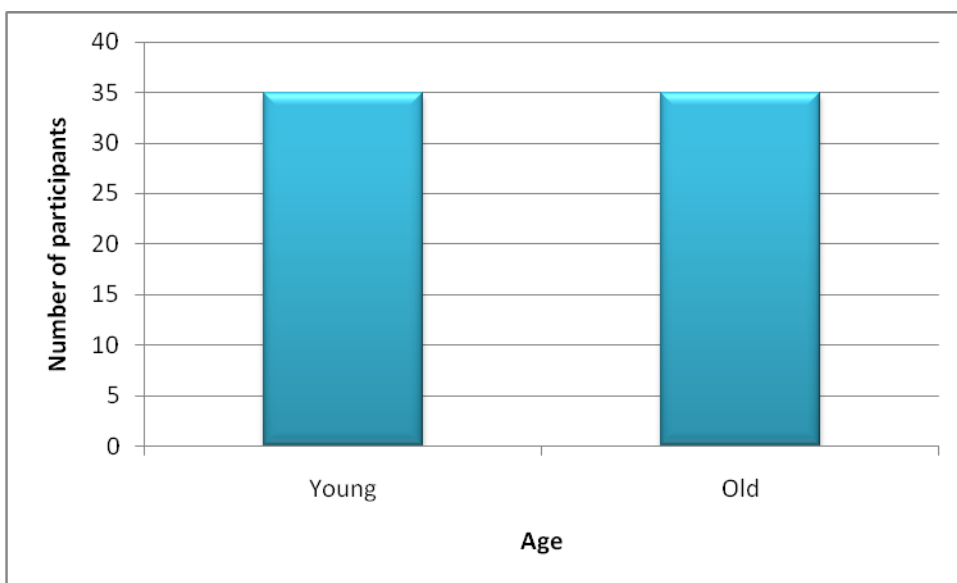
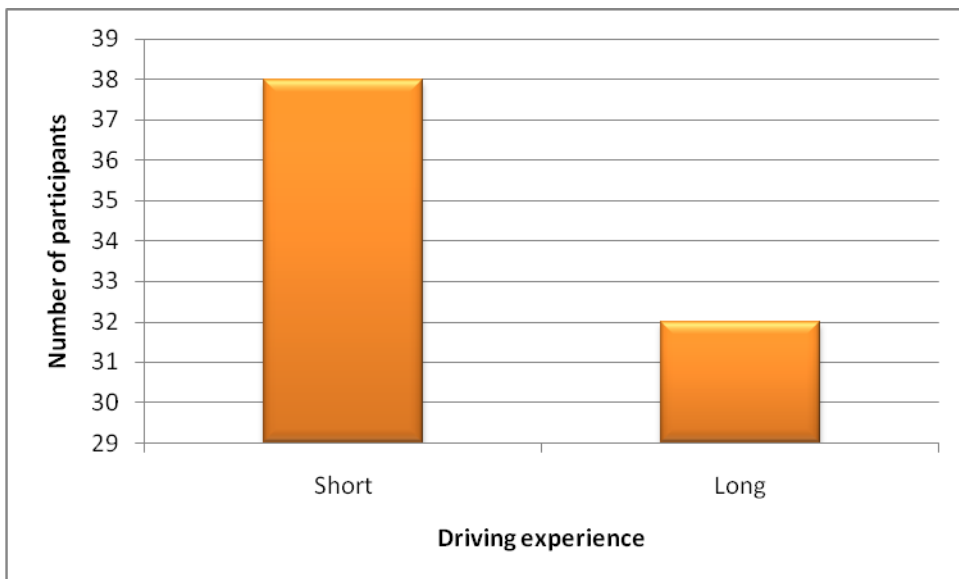


Figure 3. Bar graph for number of participants by years of driving experience



## Appendix K: Effect of messages

Figure 4. Bar graph for Pre-test and Post-test means of risky driving attitude in various treatment conditions.

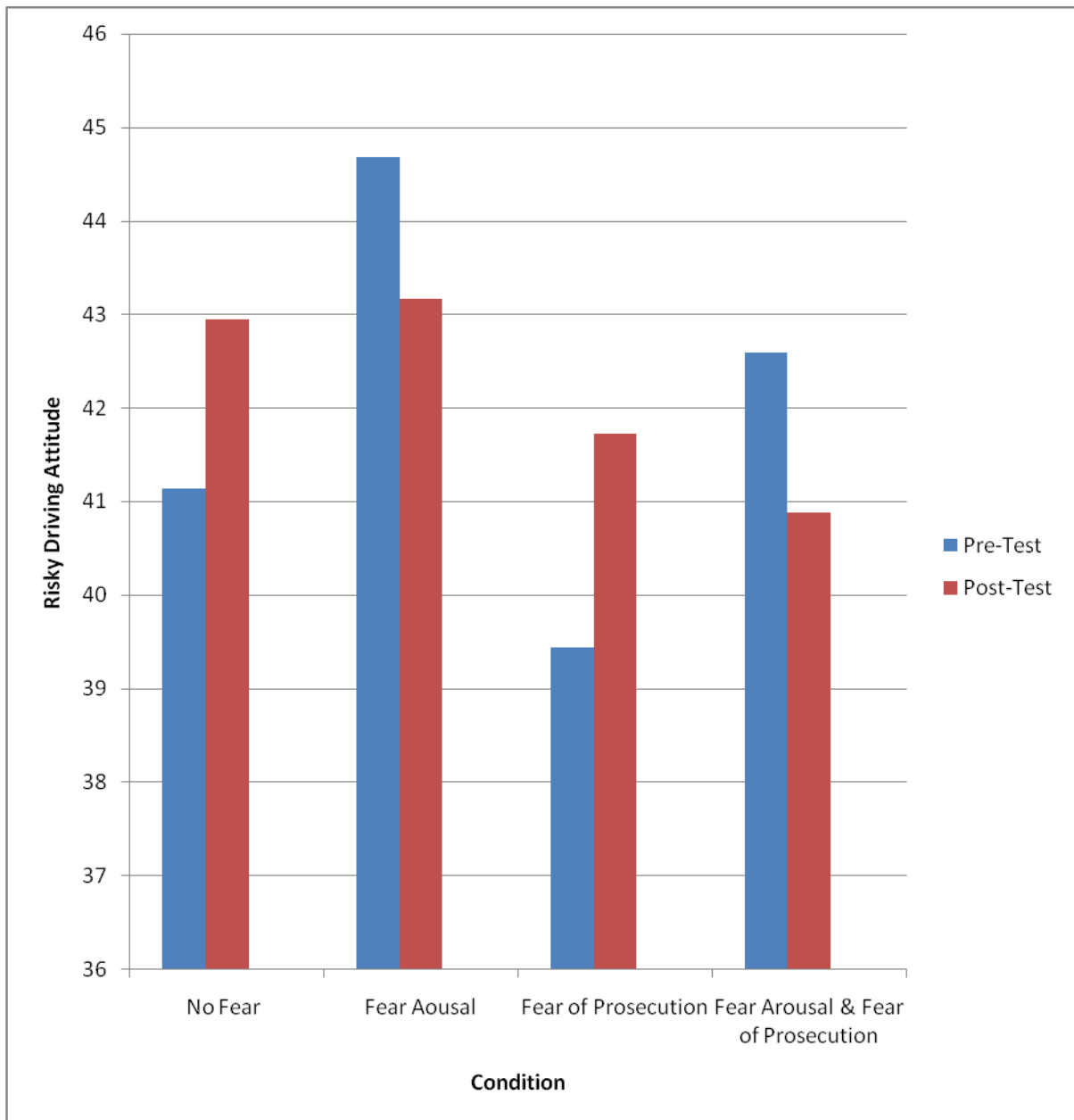


Figure 5. Means of interaction between years of driving experience and condition on risky driving attitude.

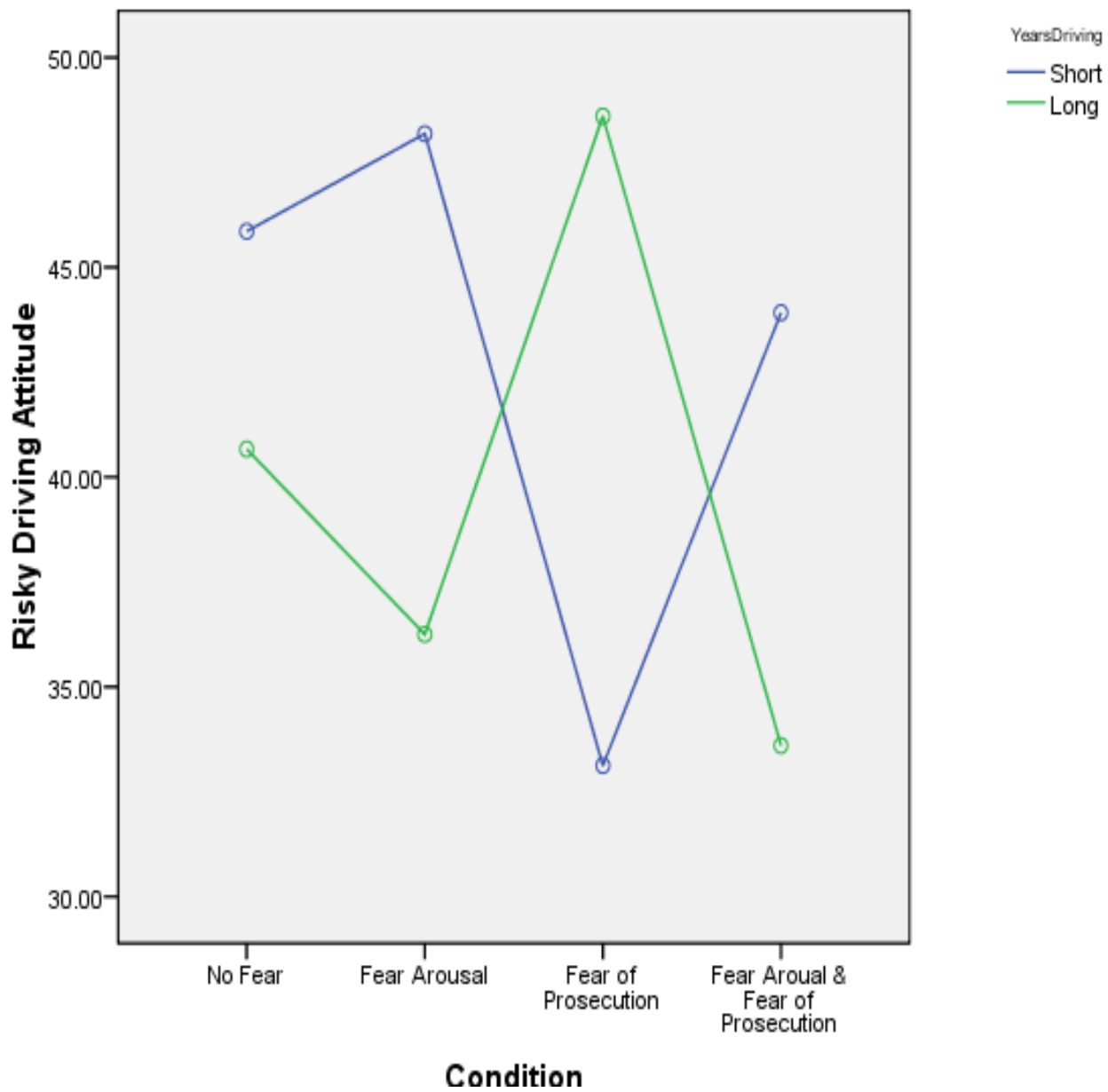


Figure 6. Means of interaction between gender and condition on risky driving attitude.

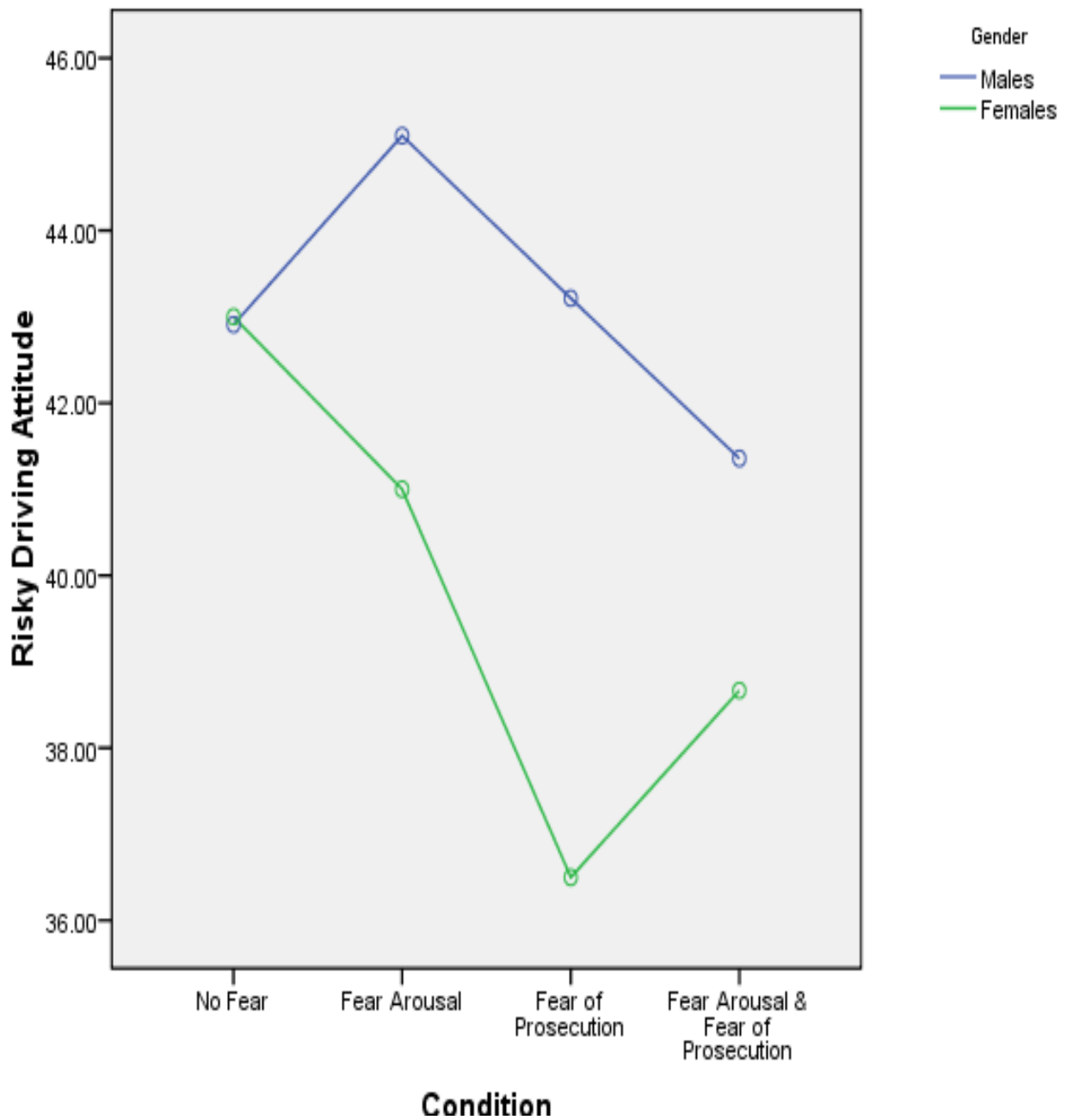
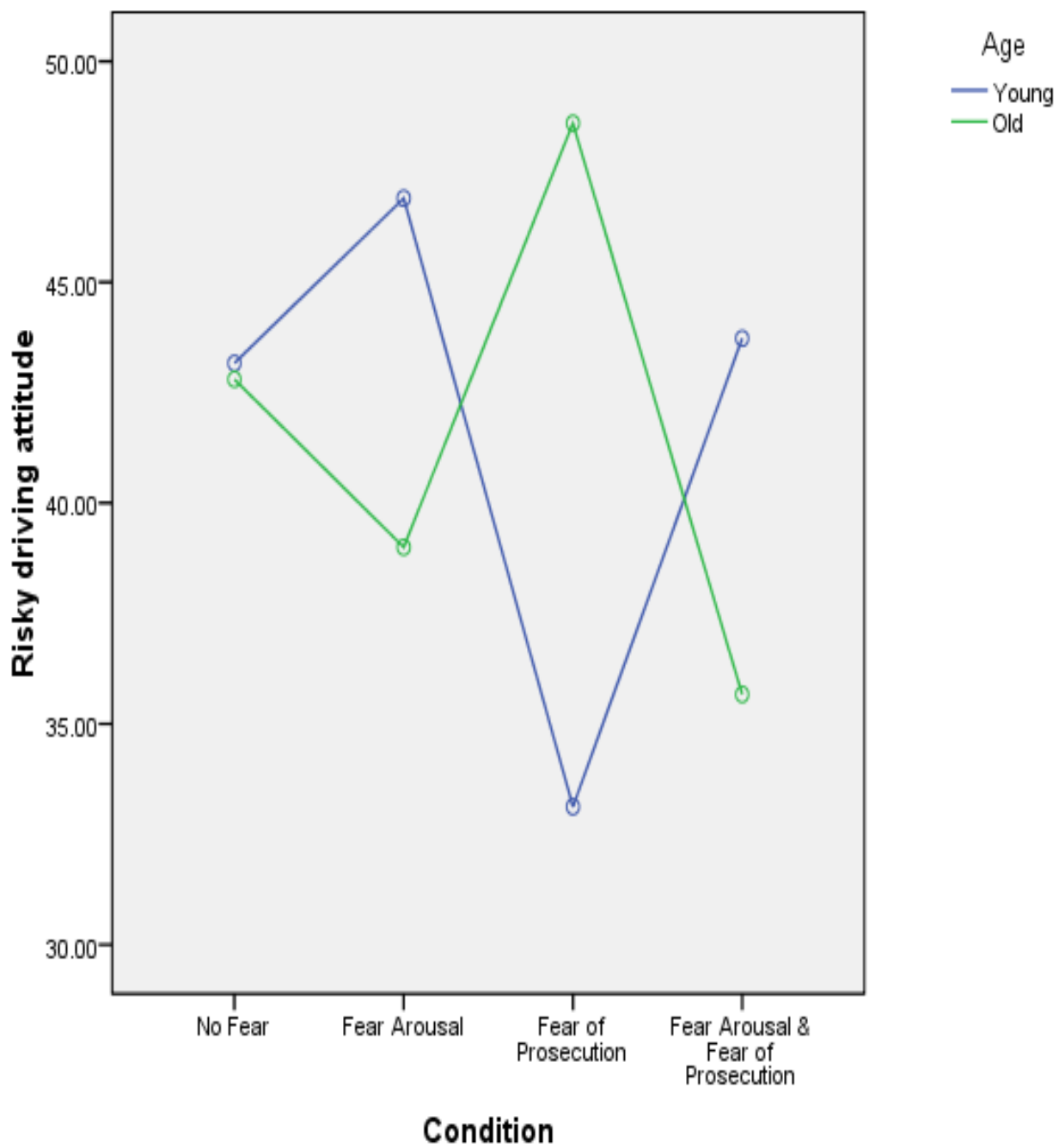


Figure 7. Means of interaction between age and condition on risky driving attitude.



**Appendix L: Scores and interaction effects***Table A: Sum of squares, df, mean square and F of interaction effect between years of driving experience and condition.*

<b>Condition</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>	<b>Partial Eta Squared</b>
No fear	Contrast	106.080	1	106.080	.836	.364	.013
	Error	7869.385	62	126.926			
Fear arousing message	Contrast	659.390	1	659.390	5.195	.026	.077
	Error	7869.385	62	126.926			
Fear of prosecution	Contrast	1064.336	1	1064.336	8.386	.005	.119
	Error	7869.385	62	126.926			
Fear arousing message & Fear of prosecution	Contrast	375.648	1	375.648	2.960	.090	.046
	Error	7869.385	62	126.926			

*Table B: Sum of squares, df, mean square and F of interaction effect between years of driving experience and condition.*

<b>Condition</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>	<b>Partial Eta Squared</b>
No fear	Contrast	.504	1	.504	.004	.952	.000
	Error	8462.123	62	136.486			
Fear arousing message	Contrast	295.626	1	295.626	2.166	.146	.034
	Error	8462.123	62	136.486			
Fear of prosecution	Contrast	1064.336	1	1064.336	7.798	.007	.112
	Error	8462.123	62	136.486			
Fear arousing message & Fear of prosecution	Contrast	252.250	1	252.250	1.848	.179	.029
	Error	8462.123	62	136.486			

**Appendix M: Reliability of Questionnaires**

<b>Scales</b>	<b>No. of items</b>	<b>Alpha Values</b>
Risky Driving Questionnaire	18	.83