An exploratory study on the perspectives of Western Australian drivers towards responding to emergency vehicles

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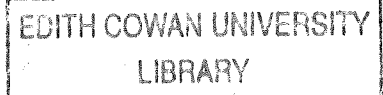
An Exploratory Study on the Perspectives of Western Australian Drivers towards

Responding to Emergency Vehicles

Pauline Grant

A report submitted in Partial Fulfilment of the Requirements for the Award of

Bachelor of Arts (Psychology) Honours, Faculty of Computing, Health and Science

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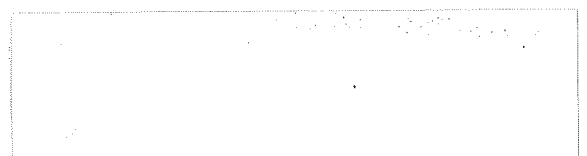
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The perspectives of Western Australian Drivers towards Responding to Emergency Vehicles

Pauline Grant

Abstract

Failing to give way to emergency vehicles has resulted in one crash per day on Australian roads (NRMA, 2009), and delayed emergency service responses to situations that constitute a serious threat to life and/or property. With an anticipated population increase in Western Australia (ABS, 2009) this problem will only worsen. Whilst there have been attempts to address the problem through information leaflets and media campaigns, the success of such initiatives is not clear because of a lack of empirical assessment. The little research available in the area, focused on crash scenarios, emergency vehicle drivers, or other non-psychological processes. The current study explored the perspectives of Western Australian drivers on responding to emergency vehicles. Using a qualitative design and in-depth interviews, data were collected from 11 participants who regularly drove in Western Australian. Thematic analysis, within a constructionist framework, was used to identify themes. It was found that participants' responses to emergency vehicles related to their perceptions of emergency services, safety, lawfulness and legitimacy. Individuals with positive views on emergency services indicated a willingness to give way to emergency vehicles. However, the more positive the views the more likely they were to take risks and/or commit unlawful acts attempting to comply with emergency vehicles. Individuals' negative views were more related to perceptions of legitimacy, which decreased their willingness to take risks or commit unlawful acts. Most participants' responses seem to have been affected by a lack of formal or consistent driver education on giving way to emergency vehicles. Overall, their response process was consistent with Lazarus and Folkman's (1984) model of stress and coping. The findings of the current exploratory study make a unique contribution to the body of knowledge in an under-researched area and may be used to inform the development of future measures to further investigate larger and representative samples. Such investigations could inform policy as well as driver education programmes toward enhancing cooperation with emergency vehicles and better public outcomes.

Pauline Grant

Dr Eyal Gringart

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Acknowledgement

Firstly, thank you to my research participants. Without your willingness to share your thoughts and experiences with me, this could not have occurred. Thank you to those of you who knew me. It is because of your readiness to speak your mind, that I sought your involvement. Thank you to the Social Justice Research Centre for facilitating the additional participants, allowing me to achieve greater depth within my research.

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For a society to function in an orderly manner, it requires its members to cooperate.

In doing so, some pro-social behaviours may limit individual liberties (Tyler, 2006). To guide

society and assist in such cooperation, laws are passed by governing bodies to regulate our

behaviour (Tyler, 1990, 2006). Individuals' compliance with such laws has long been of

interest to psychological and other academic communities (e.g., Eiser, 1976; Grasmick &

Green, 1980).

Research has indicated that individuals are more likely to comply with the law when

they perceive the legislative body as legitimate (Beetham, 1991; Tyler, 1990, 2006). This

legitimacy is derived from perceived procedural fairness and a personal world view that

supports social order (Tyler, 1990, 2006). When perceived legitimacy is absent and laws are

broken, punitive measures are utilised to make the lack of compliance undesirable (Beetham,

1991). Such measures are resource intensive and have been shown to be less effective than

fostering perceptions of legitimacy (Saphire, 1978). A study into public willingness to

cooperate with police generally, found that perceived legitimacy affected people's

willingness to assist police. That is, the more legitimate the actions were perceived to be, the

more likely people were to cooperate (Murphy, Hinds, & Fleming, 2008).

Police in Western Australia have recognised the need for community satisfaction with

policing. The Western Australian Police Annual Report 2010 indicated one of the key

effectiveness indicators for police was community safety (WA Police, 2010). Demonstration

of achievement of this outcome was through the measurement of community perceptions of

safety and satisfaction with services provided by police (WA Police, 2010). Further, all

emergency services organisations have media liaison sections whose purpose is to manage

the organisations' image in the community. It is reasonable to infer that some benefit, such

as cooperation, results from fostering and maintaining positive community perceptions. One

area that requires such cooperation is the passage of emergency vehicles, where their

successful movement through traffic is contingent upon other motorists' compliance.

Motorists' cooperation with emergency vehicles is the focus of the current study.

The following is a review of relevant literature pertaining to emergency vehicles and

traffic behaviour. Limitations in the existing body of knowledge in the area are highlighted

and an apparent need for investigating road users, other than emergency vehicle operators, is

presented. Following this is a report on a qualitative exploratory study of WA drivers'

perspectives on giving way to emergency vehicles, which enhanced understanding in the

area. Finally, proposals are made for future research.

In considering the passage of emergency vehicles, it is important to consider the

Western Australia's road traffic legislation that relates to the safe operation of vehicles

operated by police, fire and ambulance services. These laws outline the actions that can be

taken by the emergency vehicle when responding to urgent situations and the actions required

of other motorists to assist the emergency vehicle. Effectively, when a situation demands it,

an emergency vehicle, operating emergency lights and/or sirens, may break the road rules in

order to speed their passage, provided it is safe and reasonable to do so (RTC, 2000). Other

motorists must make every "reasonable effort" to give them "uninterrupted passage", without

breaking the law (s.60 RTC, 2000). Regardless of the legislation, giving way to emergency

vehicles is a morally appropriate pro-social behaviour as it assists in the functioning of

society and care for the community.

In Australia, every four minutes an emergency vehicle travels under lights and siren to

attend an incident that poses serious threat to life and/or property (FESA, 2007). In Western

Australia, available figures indicate that the Fire and Emergency Service Authority (FESA)

attended an average 77 call outs per day in 2008-2009 (FESA, 2009) and the St John

Ambulance handled an average 358 potentially urgent cases per day (St John Ambulance,

2009). Recent population figures indicate that Western Australia is experiencing a

population growth of 2.8% per annum (ABS, 2009). The population expansion will result in

increased road usage and demand on infrastructure including emergency services. This will

result in more emergency vehicles moving through heavier traffic, thus enhancing the need

for the cooperation of motorists with emergency vehicles.

Despite the legislated and moral reasons to give way to emergency vehicles, this does

not always occur in a timely manner and sometimes not at all. In 2005, the National Roads

and Motorists Association (NRMA) conducted a study, which revealed that failing to give

way to emergency vehicles resulted in one crash per day (NRMA, 2006).

Existing research in the area of emergency vehicles has looked at modern vehicle

design, siren design, driver training, the need for emergency driving, and visibility. Hanbali

and Fornal (2004) reviewed the use of pre-emption systems for traffic control lights to allow

the emergency vehicle to have green lights, highlighting some of the difficulties associated

with those systems. Schultz, Hudak, and Alpert (2009) conducted a review of pursuit-related

data collected from serving officers attending emergency vehicle training at Minnesota

Highway Safety and Research Centre with a view to informing future training. In assessing

the passage of the emergency vehicle, neither study considered the effect of other motorists.

Research relating to siren design (Catchpole & Mckeown, 2007) proposed that failure

to give way to an emergency vehicle resulted from sound resistant vehicle designs, personal

music devices and increased music level. As emergency warning sirens emit a noise level

around 115 to 120dBA (Hong & Samo, 2007), well above the recommended health

guidelines (Department of Commerce, 2008), increased siren output would not be a feasible

solution. Moreover, arguing that modern vehicle design is the cause of the problem would

suggest that failing to give way to emergency vehicles was a recent phenomenon. In a letter

to the editor of the Tri-City Herald in 1968 (Wight) the author, a fire battalion chief, claimed to frequently observe motorists violate laws relating to responding to emergency vehicles. Given the substantial advancement of vehicle designs during the past four decades, the fire chief's letter indicates that modern vehicle design is not likely be the sole cause of lack of compliance with emergency vehicles.

Other research looking into difficulties with emergency driving has focused on situations that result in crashes, finding that emergency driving was more hazardous than normal driving (Custalow & Gravitz, 2004). A study conducted into fire fighter deaths in the United States found that since 1984, 20% of deaths were as a result of motor vehicle crashes (Burton, 2007). A review of emergency vehicle crashes occurring in Denver, from 1989 to 1997 (Custalow & Gravitz, 2004), found that emergency driving conditions accounted for 91% of emergency vehicle crashes despite accounting for only 75% of the driving time. Their recommendations included reduced emergency driving and increased emergency vehicle driver training. Their recommendation for the general public was education on mitigating factors, such as alcohol consumption (Custalow & Gravitz, 2004).

Ray and Kupus (2005) conducted a comparison of crash data, gathered by the Pennsylvania Department of Transportation between 1997 to 2001, of crashes involving ambulances compared with similar sized vehicles. The results indicated that ambulance crashes were more likely to occur in the evening or weekends, more likely to involve more people and more injuries, and had a greater prevalence for angle collisions at four way intersections. Further research recommended assessing the value of emergency vehicle driver education, limited use of emergency driving, and the use of early warning devices or similar interventions (Ray & Kupas, 2005). No recommendations were made regarding other motorists.

Within Australia, a review of NSW crash data from 1996 to 2000 revealed that emergency vehicle crashes accounted for 0.4% (1,425) of NSW crashes (Symmons, Haworth, & Mulvihill, 2005). Fire vehicles were least likely (36%) to involve injury whilst police motorcycles were most likely (88%). Most crashes occurred within the metropolitan area and involved a rear end collusion or a cross-traffic crash (Symmons, et al., 2005). By comparison, emergency vehicles were more likely to involve injury or fatality than non emergency vehicles (Lenne, Triggs, Mulvihill, Regan, & Corben, 2008). Identified causal factors included decreased reaction time due to increased speed, and unpredictability of other road users' behaviour.

The crash research has predominately focused on emergency vehicles and emergency drivers. However, one study in central Florida examined more general causes of emergency vehicle accidents (Burke, Sales, & Kincaid, 2001). Burke et al. (2001) reviewed crash reports and other data sources and found public awareness to be a mitigating factor. Panic and lack of procedural knowledge by motorists were provided as probable causes.

As a general criticism of crash-based research, not all situations of inappropriately responding to emergency vehicles result in crashes. Although no statistics are available, the researcher is an operational police officer of 13 years. As such, experience and anecdotal information indicate that most incidents of failing to respond appropriately to an emergency vehicle result in rerouting and overall delays to the emergency vehicles.

There have been attempts to rectify the problem by educating road users. Internationally, India, Hong Kong and Singapore have conducted advertising campaigns encouraging more appropriate responses towards emergency vehicles (e.g., "Campaign to stress importance of clearing way to ambulances," 2010; Govt Hong Kong, 2009; SCDF, 2006). In Australia, government agencies and motoring organisations have provided information regarding emergency vehicles' potential purpose, appropriate road behaviour,

and penalties for failing to comply (e.g., Department of Transport, 2010a; NRMA, 2006; "Qld: Tougher penalties for motorists," 2007). Emergency service departments have submitted articles to the general press (e.g., FESA, 2007; Stephens, 2010) regarding the matter. Further, perusal of social networking sites revealed discussions relating to giving way to emergency vehicles that suggest failure to notice, lack of procedural knowledge, uncertainty of allowed behaviour, lack of opportunity to comply and unwillingness to yield, are potential causes for failing to respond appropriately to an emergency vehicle. From the existing research, educational attempts and discussions, it appears reasonable to infer that the responses of other drivers may have an effect. It also appears evident that there is a marked absence of research in this area.

One way to consider driver responses to emergency vehicles is through Lazarus and Folkman's (1984) model of stress and coping. This model has been used extensively in various research fields. Within an emergency setting, it has been used predominantly in assessing the issues surrounding emergency service personnel including police stress (Anderson, Plecas, & Litzenberger, 2002), assessing police officers' appraisals (Colwell, 2005), crime scene associated trauma (Ferguson, 2004), ambulance personnel (Smith, Shakespeare-Finch, & Gow, 2005), organisational stressors (Brough, 2004), coping during an emergency (Moran & Britton, 1994), the relationship between stress and emergency work (Moran, 1998), and leadership during rescue operations (Sjoberg, Wallenius, & Larsson, 2006).

The model has previously been applied within the context of driving. Shamoa-Nir and Koslowsky (2010) used the model to assess its utility as an explanation for aggressive driving. Utilising questionnaires and observation of 226 participants, they found an association between aggressive driving and stress, and between hostile behaviour and coping

through problem solving. They concluded that the stress and coping model was a useful tool for understanding driving behaviours (Shamoa-Nir & Koslowsky, 2010).

According to the stress and coping model, attentive arousal follows the presentation of an arousing stimulus(Lazarus & Folkman, 1984) such as hearing a siren and/or seeing an emergency vehicle operating its emergency lights. This follows an initial appraisal. A situation can be appraised as having either an irrelevant, benign or stressful outcome. A situation is likely to be perceived as stressful when the anticipated outcome presents a challenge or a threat of harm or loss (Lazarus & Folkman, 1984).

A secondary appraisal assesses the individual's potential responses including available coping strategies, ability to carry out the strategy, and likelihood of success. Where the appraisal results in a belief of inadequate resources, such as an inability to respond in a way they consider appropriate, the situation can make the individual psychologically vulnerable. This is especially the case when it relates to something important to them, such as a personal need to respond to emergency vehicles.

The appraisal process is affected by the individual's commitments and beliefs (Lazarus & Folkman, 1984). Beliefs are personally and/or culturally formed perceptions that shape our understanding and can include matters of personal control, stereotypes (Hamilton, 2000) or be existential. Commitments are important and meaningful for the individual and result in increased psychological vulnerability when they are threatened. Cue sensitivity is heightened through strong commitments, e.g., individuals with a strong need to respond to emergency vehicles are more aroused by emergency lights and sirens (Lazarus & Folkman, 1984).

Situational appraisals incorporate appraisals of novelty, predictability, uncertainty, ambiguity, and temporal factors (Lazarus & Folkman, 1984). Whilst encounters with emergency vehicle are unpredictable, they are unlikely to be novel. As such, appraisal of

these situations would incorporate pre-existing knowledge or schemas. Emergency vehicle

situations can be ambiguous as the individual is unlikely to know the vehicle's specific task

or direction; however, this is only problematic when the individual is threatened by

ambiguity. It can be resolved through the individual's own interpretation of events or by

choosing not to attend to the ambiguity (Lazarus & Folkman, 1984). Temporal factors such as

imminence come into effect when cues such as sirens are present. Appraisals regarding

threatening or harmful situations become more intense when an event is perceived as

imminent, which can affect decision-making (Janis & Mann, 1977) and increase

psychological distress when there is limited time to determine an adequate response. This

can result in crude decisions through hypervigilant decision-making, rather than high-level

decision-making and may cause individuals to overlook serious consequences (Lazarus &

Folkman, 1984). In other words, if an emergency vehicle is in close proximity, the individual

may conduct a hasty appraisal that can result in unsafe driving practices.

Coping with the stressful situation encompasses the individual's ability to meet the

demands of a situation through emotion focused coping strategies or problem focused coping

strategies (Folkman & Lazarus, 1980). Problem focused coping includes environmental

strategies, which can be facilitated through skill acquisition, and individual strategies such as

altering behavioural standards. Emotion focused coping strategies are intended to change the

meaning of the situation and reduce distress through techniques such as distancing,

avoidance, and positive comparisons (Cramer, 2000; Lazarus & Folkman, 1984). In

responding to emergency vehicles, coping may include responses such as moving out of the

way, or denial/justification of inappropriate action.

In the context of driving a vehicle, there has been substantial research into drivers'

beliefs about their own ability, specifically in relation to their perceptions of others. Svenson

(1981) conducted a study into drivers' perceptions of their ability to drive skilfully and safely

compared with other drivers. Using US and Swedish participants to replicate an earlier study, the results indicated that most participants considered themselves safer and more skilful that their fellow drivers. Although the findings replicated other studies by Preston and Harris (1965 as cited in Svenson, 1981), it was criticised for being overly simplistic. However, a study by Groeger and Brown (1989), incorporating controls for social desirability and assessment of actual ability also reported similar findings to Svenson (1981). Groeger and Grande (1996) furthered this work and found that assessment and ability did not correlate.

It should be noted that there are some limitations to the use of the model for stress and coping (Lazarus & Folkman, 1984). Much of the research utilises self report, which has been criticised (af Wahlberg, 2010) for its susceptibility to social desirability effects. Further, it has been argued that a within subjects design was preferable to the more commonly used between subject designs, as between subjects designs failed to properly account for fluctuations within the individual (Tennen, Affleck, Arneli, & Carney, 2000). Lastly, it is also claimed that the descriptive research conclusions were too general, circular, and confounded (Coyne & Racioppo, 2000).

As can be seen from the literature reviewed thus far, little empirical attention has been given by researchers to factors related to road users, other than emergency vehicle operators, despite the fact that the navigation of emergency vehicles through traffic is mediated, to a large degree, by the cooperation of other drivers. Thus, the aim of the current study was to explore the perspectives of Western Australian drivers on responding to emergency vehicles in order to enhance our understanding and contribute toward future work in the area. The domains considered were compliance with emergency vehicles, past experiences with emergency vehicles and emergency services, perceived legitimacy, prior education and procedural/legal knowledge.

The research question was:

What are the current perspectives of Western Australian drivers on responding to emergency service vehicles?

Method

Research Design and Theoretical Orientation

The current study employed a qualitative research design, utilising in depth personal interviews and thematic analysis. The thematic analysis was used within a constructionist framework (Braun & Clarke, 2006). This was appropriate because the study was exploratory, applied and situated within a non-manipulated context (Breen, 2006).

Constructionism is based upon the premise that humans interpret their world according to their social and cultural perspective, and the meaning attributed to that world is constructed rather than merely objective or subjective (Crotty, 2003). From this, individuals comprehend their experiences in a variety of ways. The meaning given to their experiences arises from their interpretation of those experiences. Within the research process, the interpretation of, and meaning given to, the interview data is a co-construction between the researcher and the participant (Charmaz, 2003).

Thematic analysis is a method for identifying, analysing and reporting patterns within data (Braun & Clarke, 2006). It involves the identification of themes and subthemes, within the data. Whilst Boyatzis (1998) and Ryan and Bernard (2000) view thematic analysis as a process within other methods, Braun and Clarke (2006) argue that it is a technique in its own right that operates as a foundation for qualitative analysis (Braun & Clarke, 2006). Further, they argue that thematic analysis can be used within a number of frameworks, as it is atheoretical. As such, it is not tied to a particular theoretical or epistemological position.

As little research exists regarding the psychological processes associated with responding to emergency vehicles, the study used an inductive style of thematic analysis. By that, I mean that the themes were allowed to emerge from the data rather than having been

guided by an existing framework (Braun & Clarke, 2006). The analysis of the data also sought to identify latent themes (Braun & Clarke, 2006). It sought to analyse the underlying ideologies rather than report superficial meanings (Braun & Clarke, 2006). This analysis was undertaken within the constructionist perspective (e.g. Burr, 1995) where broader meanings are theorised as "underpinning what is actually articulated in the data" (Braun & Clarke, 2006, p. 84).

To facilitate the unbiased analysis, minimal reference was made to existing literature prior to, or during, the analysis process. This allowed the themes within the data to emerge independent of existing theoretical frameworks. In doing this, the results obtained from this exploratory study could then be instrumental in the development of future measures in the area of emergency vehicle response. Such measures may be able to be used to investigate larger, representative samples.

Participants

Participants were 11 men and women ranging in age from 24 to 53 years. There were four males (25 to 53 years) and seven females (26 to 51 years). Each was required to have held her/his driver's licence for a minimum period of four years, the length of time necessary to become experienced enough to supervise novice drivers (s.45 Road Traffic (Authorisation to Drive) Regulations 2008). The driving experience of the group ranged from seven to 36 years. Past and present members of an emergency service, and their immediate family were excluded because of their potential bias. All participants learnt to drive in Western Australia with the exception of one participant who learnt in the United Kingdom but had since driven in Western Australia for ten years. The participants were predominately Caucasian and southern European sample, whose first language was English.

Participants were recruited from two sources. The first group of participants were sourced through the researcher's social network and the second from the research volunteers'

register of the School of Psychology and Social Science at Edith Cowan University. Those

in the first group knew the researcher socially and/or knew of the researcher's policing

background. Potential participants were initially contacted by telephone or e-mail.

Participants were purposefully selected for their previously demonstrated willingness to share

their thoughts and opinions on an array of subjects, including policing and emergency

services generally. Individuals who had previously demonstrated to the researcher a

tendency to express social desirability biases were excluded from the sample.

Four participants were recruited through the research volunteers' register of the

School of Psychology and Social Science at Edith Cowan University at Edith Cowan

University. These participants were unaware of the researcher's background, thus allowing a

comparison to be made to assess biases that may have occurred among those who know the

researcher's policing background. A list of potential participants was provided to the

researcher, of whom 26 fitted within the required age range of 21 to 75 years. The 26

participants were emailed, four emails were rejected, five responses were received and four

were ultimately interviewed. All participants recruited through the research volunteers

register were female with an age range of 34 to 44 years.

Materials

An information letter (Appendix A) was provided during initial contact if done by

email and again prior to the commencement of the interview. A form, summarising the key

points of the information letter and consent were provided to all participants (Appendix B)

prior to the commencement of the interview.

An interview schedule incorporating topics and probes (Appendix C) was used to

conduct semi structured in-depth interviews (Burgess-Limerick & Burgess-Limerick, 1998)

and explore the participants' perspectives on giving way to emergency vehicles. The topics

included the participant's thoughts feelings and beliefs regarding emergency lights and sirens,

responses to emergency lights and sirens, situation specific responses, perceptions of

legitimacy of the emergency vehicle and service, prior education, and understanding of laws

surrounding emergency vehicles.

An audio recorder was used to record the interviews. This allowed for the full

dialogue to be captured for later verbatim transcription (Liamputtong & Ezzy, 2005). The

researcher was left free to make ancillary notes to facilitate the flow of the interview.

Information received from participants' interviews was used to guide the interview

schedule for subsequent interviews, allowing the data to drive the interviews and facilitating

theoretical sampling. For example, earlier interviews commenced with checking participants'

understanding of the term "emergency vehicle". Subsequent interviews, whilst still checking

understanding, commenced with asking the informant "What do you think this interview is

about?"

Procedure

After receiving ethics approval from the Human Research Ethics Sub-Committee of

the Faculty of Computing, Health and Science of Edith Cowan University, participant

recruitment commenced and subsequent interviews were conducted at locations mutually

agreed upon by the researcher and participant. These included the participant's home, the

participant's business, the researcher's home, a cafe, or in a private study room on-campus at

Edith Cowan University. Prior to the commencement of the interview, the researcher spent

time getting to know the participants. This facilitated the creation of more comfortable

atmosphere, established rapport and provided the researcher with a greater understanding of

the participant.

The participant was provided with a hard copy of the information letter (Appendix A)

and consent form (Appendix B). The researcher provided an explanation of the purpose of the

research. The researcher reinforced issues of confidentiality, non-disclosure of identifying

information, audio recording, data storage, and the voluntary nature of participation in the interview. Participants were encouraged to ask questions of the researcher. When it was established that the participant understood the scope and procedure of the study, written consent was obtained by the signing of the consent form.

After consent was obtained, the audio recording commenced. In the early stages of the interview, each participant's understanding of terminology such as "emergency vehicle" was checked to minimise misinterpretation by the participant and researcher. Demographic information was gathered either during or after the interview in order to minimise interruption to the flow of the interview. The schedule was used to guide the interview process and notes were taken to facilitate further questioning (Patton 2002 as cited in Breen, 2006). Note taking was kept to a minimum to reduce distraction (M.Z. Davis 1986 as cited in Breen, 2006) The interview process ranged from 40 minutes to 60 minutes to complete.

After each interview, the audio recording was transcribed verbatim by the researcher. This was done to facilitate the researcher's immersion in the data (Braun & Clarke, 2006). The transcriptions were then checked against the recordings to ensure accuracy (Braun & Clarke, 2006)).

After each interview and transcription, the data were coded. Because the researcher was exploring an un-researched area, the earlier interviews were allowed to guide the interviews/schedules for subsequent interviews (Braun & Clarke, 2006). The first interview resulted in substantial alteration of the interview schedule, as it had highlighted problems with question sequencing. Subsequent interviews were compared with earlier interviews, identifying emerging issues and themes (Charmaz, 2003). These comparisons also resulted in a review of the interview schedule. Emerging themes were incorporated into the interview schedule to further investigate with subsequent interviewees. Where emerging trends identified deficits in earlier data, the interviewer contacted the previous participants for

clarification. Following the ninth interview, little new information had emerged, suggesting that saturation had been achieved (Charmaz, 2003).

Whilst the literature was generally avoided during the data collection and analysis phases, some review was conducted to expand the researcher's understanding of emerging themes and sensitise the researcher to the nuances within those themes as recommended by Tuckett (2005).

Analysis

Initial coding of the interviews was conducted directly onto the transcripts. Comparisons were made of codes within and between interviews, checking for recurrence and inconsistencies (Charmaz, 2003). Preliminary identification of themes commenced after the first three interviews to facilitate understanding of the emerging data and direction of the interview schedule.

Subsequent interviews were coded and likewise compared with the accumulating data. Organisation and analysis of the data was aided using several means including an audit trail and diary, mapping on computer and white board (Braun & Clarke, 2006) and memo writing (Charmaz, 2003). Whilst some review of literature was conducted to facilitate sensitisation to existing theories, the analysis was predominantly inductive, in that the themes were driven by the data rather than by existing theory (Boyatzis, 1998; Braun & Clarke, 2006).

The data analysis sought to identify latent themes and subthemes (Braun & Clarke, 2006) in that it sought to reveal underlying ideologies rather than report superficial meanings (Braun & Clarke, 2006). The themes were identified in the data, not primarily based on their frequency or prevalence within the data but for relevance to the data. Comparisons of the transcripts were made to observe potential social bias arising due to the participant's knowledge, or lack of knowledge of the researcher's policing background.

Themes and subthemes were reviewed to ensure internal homogeneity and external

heterogeneity (Braun & Clarke, 2006). Internal homogeneity requires that the grouped data

be combined meaningfully. External heterogeneity required that the themes be sufficiently

distinct from other themes. By way of example, the review resulted in themes relating to

appraisal and signals subsuming earlier themes of timing and habituation. Whilst every effort

was made to provide a rich description of the entire data collected, as befitting an under

researched area (Braun & Clarke, 2006), data regarding vehicle design was omitted as it

added little to the understanding of the psychological issues surrounding giving way to

emergency vehicles.

At this point, the "story" of the data and themes were identified to ensure coherence

of the analysis (Braun & Clarke, 2006). The data were reread against the themes, to ensure

their fit and identify data not previously included in the themes.

Rigour

Establishing rigour in qualitative research involves theoretical rigour, methodological

rigour, interpretive rigour and triangulation (Liamputtong & Ezzy, 2005). Theoretical rigour

was established by ensuring the research strategy was consistent with the research goals. In

this case, thematic analysis from a constructionist perspective, was used on data obtained

through semi structured interviews (Braun & Clarke, 2006). This epistemology and

methodology are considered to be suited to an exploratory study in an under researched area

(Boyatzis, 1998; Braun & Clarke, 2006). The thematic analysis within a constructionist

perspective allowed the data, and its subsequent co-constructed interpretation, to drive the

research, rather than attempting to fit the research into an existing theoretical framework.

Methodological rigour is established through careful documentation of procedures

undertaken to ascertain findings (Liamputtong & Ezzy, 2005). All interviews were audio

taped and transcribed verbatim. An audit trail was also established through the use of a

notebook and diary outlining procedures undertaken, analyses conducted, decisions made and memos written during the analysis (Charmaz, 2003). Researcher's reactions to the data were recorded during each phase of the collection, transcription, coding and analysis. These notes, and identified areas, were reviewed to facilitate the detection and reduction of potential researcher biases.

Interpretative rigour is established when an account accurately represented the data on which it was based (Liamputtong & Ezzy, 2005). The study was supervised by an experienced researcher, who provided guidance throughout the data interpretation. Interpretative rigour was further enhanced through the liberal use of direct quotations.

Triangulation required the use of multiple methods, data sources, researchers or theories (Liamputtong & Ezzy, 2005). The current study employed the use of multiple methods by utilising semi-structured interviewing and observation. The resultant analysis was checked with the research supervisor, and key themes were presented to some participants for member checking. Triangulation was also established by using alternate data sources such as legal databases, social network sites and media to establish or enhance matters raised by the informants.

Reflexivity

The researcher is a 40-year-old Caucasian female from a middle class background who has been an operational police officer for 13 years. Eight years of her policing was undertaken in the metropolitan area. The researcher is experienced in the areas of general duties and traffic policing and has been qualified to drive in all levels of emergency (urgent duty) driving including pursuits for the past nine years. Though the researcher has never been involved in a crash resulting from failure to give way to an emergency vehicle, the researcher has personally experienced multiple incidences of motorists failing to respond appropriately to emergency vehicles. Prior to conducting the study, the researcher perceived

an element of wilfulness in the behaviour of other motorists, attributing some responses to the perceived legitimacy of emergency services.

There is often a perception that, as a police officer, one is compelled to respond to all confessions of legal transgressions. Through operating in multiple policing areas, and life experience generally, the researcher has found that being able to refrain from immediately responding to such confessions provides for a richer exchange. In bringing this skill into the interview process, the researcher was able use her policing knowledge to provide greater understanding, without being hindered by admissions of illegality. On the few occasions where interviewees' views vehemently opposed those of the researcher, notations were made, so that the researcher could review the area in question and/or seek clarification through other sources, to minimise any potential bias. As the data collection and analysis proceeded, the researcher was able to use the emerging themes to look past her previous perceptions of wilfulness and see alternate processes behind motorists failing to respond to emergency vehicles.

Social Bias

Of the eleven participants, seven were known to the researcher and aware of the researcher's background. It was expected that any social bias resulting from that knowledge might manifest itself in a variation of more or less, positive or negative expressions regarding emergency services, in particular police. It was also expected that social bias may influence the likelihood of admissions of unlawful behaviour; or failing to give way to an emergency vehicle.

Of the seven participants who were aware of the researcher's background, five overtly admitted to failing to notice an emergency vehicle, four admitted to committing an unlawful act whilst giving way to an emergency vehicle and all spoke of negative stories around police use of lights and sirens. None of the four participants, who were unaware of the researcher's

background, overtly admitted to failing to notice an emergency vehicle and all admitted to

committing an unlawful act. Only two unaware participants spoke of negative stories around

police use of lights and sirens. The participants that made more elaborate positive

expressions towards one or more emergency service, were equally drawn from aware

participants and unaware participants.

One participant, who was aware of the researcher being a police officer, appeared to

test the researcher's orientation and willingness to listen, using profanities and inflammatory

statements in the early stage of the interview. By way of example, when asked what he

thought the interview was about, he stated "the way I feel about giving way to c--ts when

they've got their lights and sirens on".

Findings and Interpretations

Three major themes emerged from the data that were related to responding to

emergency vehicles. These major themes and subthemes are presented in Table 1. Following

is a discussion of each theme in turn.

Table 1

Themes and Sub-Themes

Perceptions and Beliefs

     Emergency Vehicle Defined

     Expressions Regarding Emergency Services

     Perceptions of Legitimacy

     Beliefs Regarding Emergency Vehicles

     Perceptions of Safety and Lawfulness

     Unlawful Acts and Punishment

     Beliefs Regarding Own Abilities

     Beliefs and Expectations about Other Drivers

     Confounding Personal Variables

Arousal, Appraisal and Response

Model of Planned Response

Arousal

Siren as a Signal

Appraisal

Post-Response

Actual Response and Non-Compliance with Response

Perceptions and Beliefs

Emergency Vehicle Defined

All participants recognised the vehicles operated by police, fire and ambulance as emergency vehicles. Other services' vehicles (Western Power, Bush Fire, SES, Red Cross, Airport vehicles) were included in some definitions, dependent on the participants' personal experiences. Some participants elaborated on the classification, stating emergency vehicles were vehicles with "flashing lights" or contactable by 000.

When asked why they gave way to an emergency vehicle, participants' responses included "common courtesy", "civic duty", "common sense", "the right thing", "something everyone should be expected to do" and something "we've all been asked to do". Only one interviewee mentioned lawful requirement as a consideration. He gave way "cos it's the law". Another participant surmised, "I don't know if it's a lawful requirement to move out of the way, it's just something I've always done". A further participant considered that giving way to emergency vehicles was something you had to accept when driving.

Expressions Regarding Emergency Services

Participants' expressed views about emergency vehicles, the emergency services and matters relating to the emergency services. Some expressions related to specific services and some related to emergency services in general. The elaborations appeared related to previous exposure to emergency services, exposure to emergency service personnel, education about

emergency vehicles and interviewees' self-concept. Participants varied as to whether their expressions were positive, negative or neutral.

Several participants made positive expressions about emergency services. These expressions related to experiences of involving an emergency service, or personal associations with a member of an emergency service. Of the participants making positive expressions, two indicated close associations with members of an emergency service. Another participant equated ambulances with her accident-prone son, whilst a further participant had experiences of herself and her brother needing ambulances because of motor vehicle crashes.

Three participants expressed negative views about one or more emergency services or associated matters. Of those, two expressed negative statements about police. The third expressed negative statements about the legal issues associated with giving way to emergency vehicles generally.

The participants expressions varied in elaboration and appeared to work on a continuum from positive to negative. Of those expressing positive perspectives, two expressed views that were more elaborate than the others. Of those expressing negative views, one participant articulated the greatest amount of negative perceptions of police with statements such as "Cops are never your friends ... never out there to help you... rarely are they doing anything to help". Another participant who expressed negative views, made less elaborate statements about police and their propensity to be "always pulling me over".

The positive or negative statements regarding emergency services and associated matters were drawn from individuals personal experiences with the services and service personnel. These expressions were consistent with a continuum from highly positive to highly negative The level of views expressed appeared related to the participants' perceptions of safety and lawfulness, beliefs regarding the omnipotence of emergency

vehicles, specificity of response scripts, effects of non-compliance with scripts, and post encounter cognitions.

Perceptions of Legitimacy

Participants' views on the legitimacy of the emergency services were explored. This reflected a belief held by the researcher that had become evident during the data collection and analysis. The belief was consistent with Tyler (1990, 2006) and Beetham (1991), that perceived legitimacy impacted upon the participants' behaviour associated with emergency vehicles.

In discussing the actions of emergency vehicles generally, there was no suggestion of either ambulances or fire vehicles acting inappropriately. However, when asked about potential emergency warning device misuse, most participants related this to police. All bar two participants (who did not know the researcher) admitted to hearing stories relating to police misuse of emergency lights and sirens. One of these two interviewees stated "I'd be cross if that's what was happening because they're putting the public at risk" whilst the other thought the idea was "disgusting".

The stories that participants had heard included hurrying home for dinner, returning to the office to cease duty, or avoiding traffic lights. One participant equated the stories about lights and sirens to other stories of free or discounted products, "I think it's the whole joke of yeah, they don't pay for McDonalds and they get free coffee... I'm not sure the majority ... would abuse that".

Most participants felt the stories to be historical, exaggerated or untrue. One participant considered that misuse was greater in the past, but now reduced to due increased accountability. Another stated "yeah I've heard that... ... but it's only joking around. Everyone knows that's not why." Other participants expressed the view that, whilst inappropriate use may occur, it was only committed by a minority.

Some participants recalled observing police vehicles operate lights and sirens whilst negotiating intersections, only to turn them off afterwards. Most perceived this to be a legitimate operational procedure, such as attending an important task that was not a "crazy emergency". However, other participants felt the action was questionable. Of those, one observed, "cops getting through red lights. Cheating". Overall, most participants indicated that, without proof to the contrary, the actions of the police were to be judged as legitimate.

One participant questioned the procedural fairness of police and made elaborate negative expressions regarding the actions of police. He considered police lacked empathy and did not use light and sirens properly when pulling over vehicles, forcing further lawbreaking "the way (the police officer) was driving was trying to push me to accelerate. To go faster..." Further, he expressed the view that police procedures resulted in motorists adopting an "aggressive angry mood", increasing danger on the roads. Overall, he expressed the view that the actions of police were not fair or reasonable "I've never had a police officer do anything to reaffirm the fact that they're there to serve and protect. They've only ever seemed to nail me for anything they bloody well can".

Most participants appeared to view the actions and procedures of police as fair and legitimate. However, the one participant, with his differing views on police procedural justice and fairness, did not appear to consider police legitimate. This was consistent with existing research (Tyler, 1990, 2006), that concluded that legitimacy was affected by perceptions of procedural fairness and justice. Additionally, that a willingness to cooperate with police was moderated by their perceived legitimacy (Murphy, et al., 2008) This appeared to be further supported by another participant who did not express a dislike any of emergency services, but criticised the legal procedures surrounding emergency vehicles. His actions, in some areas were consistent with the participant who specifically challenged police legitimacy.

Overall, none of the participants considered the actions of fire vehicles and ambulances to be illegitimate, but most had heard of police misuse of emergency warning devices. The stories cited were in the form of urban myth, with few claiming to have observed questionable actions. Most considered the stories to be baseless refusing to concede police wrongdoing without proof. Those participants who did question legitimacy, did so because of concerns with procedural fairness.

Beliefs Regarding Emergency Vehicles

The extent and directions of participants' views on emergency services appeared to be related to perceptions regarding the omnipotence of the emergency vehicle. Participants, who expressed more moderate views about emergency services, were more likely to hold greater beliefs in the emergency vehicle's omnipotence. Participants with greater number of expressions were less likely to express unwavering belief in the emergency vehicle's success.

Most participants expected the emergency vehicle to triumph, irrespective of their actions or the actions of others, find a path through the traffic, and get to their destination. At time, these beliefs were unrealistic, such as one participant who stated, "I guess if the ambulance can't move then it moves around them". Her statement indicated a belief that even though the emergency vehicle could be stuck in traffic, it was not possible for it to be trapped.

People who more elaborate expressions greater views about emergency services were less likely to express unrealistic beliefs about the emergency vehicle's triumph. Participants with more positive perspectives expressed concern over time delays and the possibility of a loss of life resulting from time delays. One participant stated, "if someone is ... having a heart attack ... the delay to the ambulance could mean that the person dies". Others, who expressed less elaborate, slightly negative views, believed that a delay would not be life threatening. The one participant, with his elaborate negative views regarding police, indicated that police

being detained in traffic was acceptable and that police only had themselves to blame for other drivers refusing to cooperate with them.

By contrast, no participant expressed concern over the safety of the emergency vehicle or its crew.   When discussing matters of safety, participants spoke of themselves, other motorists, pedestrians, and patients within ambulances. Even participants who did not exhibit a belief in the emergency vehicle's omnipotence, did not question the safety of the emergency vehicles.

Participants with moderate views on emergency services were more likely to express a belief in the emergency vehicle's omnipotence, plausible or otherwise. Participants who made more positive expressions were concerned over the possibility of the emergency vehicle's failure. Participants that were more negative were less likely to believe in the emergency vehicles ultimate ability and less likely to be concerned over delays or failure. Irrespective of the extent of their beliefs, the safety of the emergency vehicle was never in question.

Perceptions of Safety and Lawfulness

Participants varied in their perceptions of appropriate behaviours. The extent and direction of the views expressed by the participants appeared related to their expressions regarding behaviour, specifically in terms of risk taking, legal rights and lawfulness. The beliefs regarding safety and lawfulness related to the participant's determinations of acceptable and unacceptable driving in response to emergency vehicles.

The risk and relative safety of actions acceptable to participants appeared related to the extent and direction of the participants' views. Participants who made a greater number of positive expressions were more likely to take risks, whereas participants with greater negative expressions were less willing to risk their safety or that of their vehicle. One participant, who expressed negative views, indicated that safety was paramount to him. He

considered "not putting yourself in jeopardy .... cutting other cars off.... driving onto pavement .... going through lights" to be key considerations when responding to emergency vehicles. Another participant, who also expressed negative views, stated, "I'm not going to put myself in danger just to get out of the way .... I'm not willing to mount a kerb .... I'm not damaging my car". Participants, who made fewer expressions, appeared to adhere to a more moderate level of risk taking. One stated, "You don't just drive on through the lights because they're behind you and think that that's okay".

The extent and direction of the participants' perceptions appeared to be related with views about their own rights and responsibilities. These perceptions appeared to contrast with perceptions of the rights and responsibilities of the emergency vehicle. Participants who made positive expressions afforded more rights to emergency vehicle than participants who made negative expressions. Participants who made negative expressions, attributed greater responsibility and blame to emergency vehicles than participants who made positive expressions.

Participants that made more elaborate positive expressions afforded the emergency vehicles powers and rights that far exceeded other motorists. One participant said "...just get out of their road or it might run you down..." and whilst another felt "you definitely don't have any rights as far as ... getting in their way". However, participants who made more negative elaborations felt that motorists gave way to emergency vehicles because "we've all been asked to", rather than any legal obligation.

Participants who expressed views that were more negative expressions felt that any accident arising from a crash with an emergency vehicle was ultimately the fault of the emergency vehicle because they were breaching the law. One participant stated, "... they're using their lights and sirens and they have an accident, it's always their fault, regardless of the situation." He further stated:

"Can hardly be your fault if you're going through a green light and suddenly an emergency vehicle pops through the red light and you hit them cos you haven't seen them coming, you know. Can hardly be your fault. There has to be someone to blame..."

Another participant with negative views stated, "the person that has the lights and sirens on, has to be more aware than anyone else .... they have to be the ones paying more attention".

Other, more moderate, participants considered the emergency vehicle could act as required, irrespective of the rules, provided it did so safely. Their perceptions were more consistent with the current legal position, which allows the emergency vehicle to disregard the road rules provided their actions are safe and reasonable (RTC, 2000).

The willingness to take risks appeared to exist on a continuum with more positive people being more likely to take risks and act unsafely, and more negative people being unlikely to take risks or act unsafely. Consistent with this were participants' views on the rights of the emergency vehicle, in comparison to their own rights. More positive participants afforded the emergency vehicle more rights than the individual, whereas more negative participants indicated the reverse, that the individual had more rights than the emergency vehicle. The positive or negative perceptions of the individual appeared predictive of the participant's perceptions of the rights of emergency vehicles, rather than a post-hoc justification of their responses.

Unlawful Acts and Punishment

Most participants admitted a willingness to undertake manoeuvres that would ultimately constitute an unlawful act, such as going through a red light in order to give way to an emergency vehicle. They were erroneously of the belief that they, themselves, were excused from complying with road rules in order to give way to the emergency vehicle. Some participants did not perceive such acts to be unlawful whilst others did, but felt that

complying with the emergency vehicle ought to be more important. As one stated, "I'm not concerned about a red light camera, if there's an ambulance behind me". That participant demonstrated her preparedness to undertake whatever manoeuvre she believed necessary irrespective of punishment. She claimed, if she were penalised because of giving way to an emergency vehicle and police refused to withdraw the fine, she would pay the fine. She justified her actions through her existential belief in karma, stating "if it was me ... or one of my kids, I'd want them there real quick". Other participants, who expressed moderate to positive elaborations, had no expectation of being punished for committing unlawful acts in support of an emergency vehicle.

Participants with more negative views expressed an unwillingness to act unlawfully. They believed it was unlikely to avoid punishment, particularly when detection involved automated cameras. One stated

"I believe it has been made too difficult for someone to move their car over that white line and say it was for an emergency vehicle....There's no leeway....We don't have lights and sirens. We don't have that privilege."

Another participant mirrored this view, stating

"I'm not going to risk it ... it's not like I'm going to get off the fine.... they can still pull over and charge me for going through a red light, even though I've done it to do them a favour".

In considering the laws relating to motorists' obligation to give way to an emergency vehicle, most participants thought such a law would exist but were not aware of the specific requirements or associated penalty. When made aware of the legal requirements, some expressed the view that the penalty should only apply to deliberate acts. However, the application of the law was considered implausible. One participant stated, "they're not going to stop and get somebody's details if they don't get out of the way". In terms of recording

vehicle registrations, "I don't think the ambulance drivers would have time". Another participant questioned the ability of police to be to identify and locate the offending motorists. She stated, "how would the police get hold of you for doing the wrong thing". However, the view was expressed that, "if they're hindering the emergency vehicle getting through and purposefully doing it ... I think fine them". Only one participant expressed the belief that police would deviate from their original task in order to penalise a motorist for failing to give way.

Overall, the lawfulness of an action was not a consideration for most participants, when responding to an emergency vehicle. Some did not perceive actions, such as contravening a red traffic light, as unlawful, whilst others considered unlawful actions committed for a higher purpose, such as giving way to an emergency vehicle, ought to be excused. Most participants considered punishments too impractical to administer. Only those participants with negative perceptions believed in the likelihood of punishment for an unlawful act and were consequently unwilling to commit such acts.

Beliefs Regarding own Abilities

Most participants expressed a belief in their own ability to respond appropriately to an emergency vehicle. However, in relation to actual driving manoeuvres, there was little uniformity across participants as to what constituted an appropriate response. Participants indicated that appropriate actions included maintaining their speed, accelerating, or decelerating. Some participants considered it appropriate to move left, some to remain in place and some to move into the opposite lane of the emergency vehicle (left or right).

The myriad of responses considered acceptable to drivers and their perceptions of lawfully appropriate responses appeared to reflect the absence of formal education on responding to emergency vehicles. With the exception of one participant who learnt to drive overseas, the participants did not recall receiving any formal training on giving way to

emergency vehicles. Most expected they were taught whilst learning to drive but few recalled that being so. One participant speculated that learning about emergency vehicles occurred through observing others and through life experiences in general. The participant, who had learnt to drive in the United Kingdom, recalled receiving specific instruction on giving way to emergency vehicles whilst learning to drive. Whilst she had expressed an elaborate positive association with ambulances, her driver training appeared to have moderated her ability to cope.

A perusal of material associated with learning to drive was undertaken as an indication of the level of education regarding emergency vehicles. It was found that the learner driver handbook contained 120 pages of information relating to driving (Department of Transport, 2010a). Of that, half a page (0.42%) was dedicated to identifying and responding to emergency vehicles. A further review of the practice quizzes, intended to mirror the learner driver theory test provided that, of 330 quiz questions (11 quizzes containing 30 questions), only two questions (0.61%) related to emergency vehicles (Department of Transport, 2010b).

Whilst participants were confident of their ability to respond appropriately, the educational deficit, suggested by their responses and the learner driver literature, undermined the utility of their driving responses. This has the potential to diminish coping through skill deficit, reflective of Lazarus and Folkman's (1984) assertion that skill acquisition increases coping.

Beliefs and Expectations about Other Drivers

Participants' perspectives incorporated beliefs regarding other drivers. These included their driving ability, their willingness to give way and their behaviour towards other motorists. The beliefs were reflected in participants' expectations regarding the other motorists' reactions around emergency vehicles. In turn, these beliefs affected the

participants' response appraisal. The participants' perceptions of other drivers were dependent upon their own beliefs as to what were appropriate responses, and were biased or based on stereotypes.

There was little consistency among the participants as to what constituted poor behaviour by other motorists. This directly reflected individuals' perception of what constituted appropriate behaviour. Some participants considered slow moving motorists to be thoughtless whilst other condemned speeding drivers. Some construed speeding up to get in front of traffic as poor behaviour whilst others considered slowing down to be a riskier action. Some participants expected other motorists to give way, whilst others did not. One participant expected other motorists to behave "consistently badly" when responding to emergency vehicles. Another expressed the view that other motorists' failure to give way to an emergency vehicle was a deliberate act based upon their "stubborn" refusal to "let up that one spot in traffic".

Some participants generalised that a portion of drivers were so unskilled they should not be licensed, whilst others expressed views that were biased and or based on stereotypical assumptions. One participant indicated a bias in assessing the actions of other drivers. His own response to a siren included looking around to locate the source of the siren, however, he viewed this action by other motorists as one of uncertainty, "their little heads are turning around and they just got no idea what to do". The stereotypes used to infer poor response skills on particular classes of drivers were irrespective of their actual ability and included immigrants, the elderly, "18 year old females" and "arrogant" young males(Hamilton, 2000).

Participants' expectations of other drivers' reactions affected their appraisals in terms of their expectations of leading or following traffic. Some that expected drivers to act appropriately incorporated a preparedness to follow others in their script. One participant "tend(ed) to follow the lead of whoever moves first". Some participants did not expect

drivers to act appropriately and their scripts included taking the lead and expecting other drivers to follow. One participant planned to respond and have other motorists follow him. His script included the potential of controlling the actions of others like "slow down traffic if necessary". Some participants' scripts, such as one who said, "I really just think of myself", did not include consideration of other drivers.

Participants who held expectations of appropriate behaviour from other motorists were more likely to express distress when the actions of other motorists were not consistent with their expectations. One participant stated, "you just think, like ... move!", when other drivers did not respond in a way she considered appropriate. Other participants became very frustrated, and would actually shout at other drivers. Participants who did not expect appropriate behaviour from other motorists were less affected by the actions of others. The findings of Groeger and colleagues (Groeger & Brown, 1989; Groeger & Grande, 1996) the beliefs about the driving ability of themselves and others are only partially reflected in the participant's beliefs about other drivers.

Participants' views on other drivers ranged from generally competent, intentionally poor, to being not worthy of holding a driver's licence. Some participants relied upon stereotypes or indicated biases consistent with existing finding on perceptions of ability (e.g., Groeger & Brown, 1989; Groeger & Grande, 1996; Svenson, 1981). The inconsistency among participants as to what constituted appropriate behaviour, was a direct reflection of their beliefs regarding their own actions. Participants' responses reflected their beliefs in other drivers with their intention to lead the poor drivers, or their willingness to follow other reasonable drivers.

Confounding Personality Variables

Two participants made elaborate statements that suggested the existence of potentially confounding psychological antecedents. One participant vividly recalled an incident that occurred when she was as a young probationary driver.

"When I first got my licence there was an incident... where there was nowhere to go, other than pull into the middle of the intersection. And then the ambulance just weaved its way around all these people in peak hour traffic."

She expressed fear over the danger associated with the action and risk of prosecution, and repeated the incident throughout the interview, stating that no other confrontation with an emergency vehicle left such a strong impression "nothing as significant as that one".

The other participant's response to emergency vehicles suggests a compelling need to exhibit pro-social behaviour to the extent that she puts herself in distressing situations in her efforts to give way. This participant reported that she almost bogged her vehicle, became stranded in traffic and was left at the "ridicule of other drivers". Further research is required to look into the psychological antecedents of such behaviour.

Arousal, Appraisal and Response

The underlying beliefs and commitments held by the participants related to their level of arousal from encountering an emergency vehicle, their appraisal of the situation and subsequent ability to cope, and the coping strategies employed in response to the emergency vehicle.

Model of Planned Response

When asked about their response to an emergency vehicle, participants generally demonstrated the existence of a script for responding. Most scripts included the arousing stimuli of hearing a siren, searching for the source and engaging in an appraisal. The appraisal included the emergency vehicle's path, their need to move and their ability to move

safely contingent upon the surrounding environment. The scripts varied in specificity and emotional content. Participants, who made fewer elaborations, indicated a more generalised script, whereas participants that made greater positive or negative elaborations expressed a more specific script with an emotional component.

Participants who expressed fewer views about emergency services, had less specific scripts. One such participant stated he would "look to see where it's coming from .... see if I'm in the way or not .... try and find a spot where I can get out of the way." A participant who made greater expressions, indicated a more specific response script. That participant stated she would

> *"Get out of their way as quick as possible .... If possible, move over to the left,... out of their way and stop, providing I'm not holding up any other traffic that's not going to be get out of their way. If I'm in the right hand lane different story..."*

The more specific scripts appeared to indicate an underlying commitment to respond in a particular way. The expression of the three participants with specific response scripts appeared consistent with Lazarus and Folkman (1984), that the underlying, stronger commitments alluded to, evoked an emotional component within their response script. One participant expected to panic and whilst another indicated an expectation of becoming distressed by the emergency vehicle through difficulty in responding effectively. The third participant claimed an expectation of fear within his response, however, whilst he claimed, he revealed a greater tendency toward anger.

As participants had previous experiences of emergency vehicles, they were able to demonstrate the pre-existence of a script for responding to emergency vehicles. The variation in specificity and emotional content of their scripts related to variations in the level of views expressed regarding emergency services. Participants with greater levels of expressions,

positive or negative were more likely to indicate more specific response scripts and more likely to include an emotional expectation.

Arousal

When discussing participants' first response to emergency vehicles, most demonstrated some form of arousal. The physical responses included widened eyes, sitting taller, slight head movements, indicative of looking around. As one participant recounted, "I suppose you feel ... nervous probably isn't quite right .... I suppose you have a heightened sense of alertness..."

One participant did express minimal arousal to the siren. He had become accustomed to hearing the sound through his preferred music that incorporated sirens into the melody. As such, his arousal was triggered more by the observation of the emergency vehicles lights, stating, "You get that moment of fright, like oh f---, how long have they been following me for?" The reduction in response to the stressful stimulus of the siren was consistent with the concept of habituation through continued exposure to a stressful stimulus (Lazarus & Folkman, 1984)

Siren as a Signal

Hearing the siren of an emergency vehicle signalled the commencement of the person's response script. This facilitated coping through earlier commencement of the appraisal process, consistent with the concept of predictors facilitating coping (Lazarus & Folkman, 1984). The reporting of false alarms reinforced the concept of the siren as a cue. Two participants reported hearing a siren as part of a musical composition and responding as though it was an emergency vehicle approaching.

For most, the type of siren was not relevant to the response, as most could not distinguish the individual sirens. Only one participant, who expressed elaborate negative

views toward police, indicated an intention of responding differently to the various emergency services.

For some participants, the absence of the siren prior to sighting the emergency vehicle's lights had the effect of shortening the available time for the appraisal and increasing distress. For others, it resulted in a more ambiguous situation. Some reduced this ambiguity, by interpreting the situation as an operational need, such as silently approaching a house being burgled or a delicate patient inside an ambulance where noise was problematic. For others, the lack of noise indicated a less serious situation. One participant stated that, "... then you assume it's not as much of an emergency because they haven't made a noise".

Most participants were aroused by the sound of an emergency vehicle siren as it acted as a cue for the commencement of their response script. That the siren type was ambiguous was not problematic as most participants' response plan was identical for all types of emergency vehicles. Only one participant planned different responses, dependent on the type of emergency vehicle. Not hearing a siren altered the meaning of the event for many or decreased the appraisal time, potentially increasing distress.

Appraisal

As part of the response process, participants conducted a primary appraisal to determine the expected outcome. Their assessment appeared affected by their personal beliefs such as their belief in their obligation to respond. Few participants appraised the situation as irrelevant, with most considering it a stressful situation in that it constituted a threat or challenge (Lazarus & Folkman, 1984). This appraisal was suggested through the incorporation physiological reactions into their responses, such as sitting up, looking around and widening their eyes. The secondary appraisal incorporated situational factors and strategies for responding. The situational appraisal included the current and anticipated route of the emergency vehicle, the surrounding area including other motorists, and the time

available to respond. The problem-solving appraisal included the participant's need to move, their ability to move, the likely outcome of the possible responses.

Timing was an important component of the appraisal. Timing referred to the amount of time needed for each response component. Individuals varied in their concept of sufficient time as demonstrated through the variations in what constituted failing to give way. By that, two participants considered failing to give way occurred when the vehicle was immediately behind them, whereas another believed it to have occurred when the vehicle was first noticed "three cars back".

Each script had an optimum time between hearing the siren, sighting the vehicle, responding and the arrival of the vehicle. For most, the key periods were between noticing the emergency vehicle and needing to move, and between moving and the arrival of the emergency vehicle. By this, the participant had a minimum acceptable amount of time after noticing the emergency vehicle in which to conduct their appraisal. They also required a minimum acceptable amount of time between responding and the arrival of the emergency vehicle. A situation that accommodated both minimum periods was optimal for the participants as it resulted in less psychological distress to the participant.

For some, the time from noticing an emergency vehicle to having to react to it was a crucial point that compelled them to react prematurely even when environmental cues indicated it was not necessary to react yet. One participant's concept of a timely response to react in some way as soon at the siren was heard. She recounted a situation where she responded to a siren at an intersection but other cars continued through and beeped their horns at her.

> "...people behind me were beeping but I knew...and I thought 'I'm not going anywhere' and then a minute later the siren went through and everyone did stop at

that stage but it was, I seem to have stopped before everyone else did. Just about

caused an accident..."

The period between hearing the siren and observing the emergency vehicle had an optimal maximum time rather than a minimum time. Some participants demonstrated this when they recalled false alarms. Two participants had heard sirens within songs on the radio. They both commenced responding by looking around and became distressed when unable to locate the source of the siren. One recalled, "I couldn't see it and I was getting really quite frantic about (it)".

An appraisal that indicated insufficient time moderated their appraisal process, response and potential distress associated with responding to the situation. This resulted in a hasty appraisal and a physical and/or emotional response. Some participants acknowledged undertaking different manoeuvres than they preferred due to the shortened response time. This was consistent with findings on shortened appraisal processes (Lazarus & Folkman, 1984).

Participants varied in their primary appraisal, dependent on their beliefs and commitments, though most appraised the situation as stressful. Their secondary appraisal included situational factors of anticipated routes, need and ability to move and time. Participants varied in their perceptions as to optimal minimum or maximum appraisal and response times in relation to the emergency vehicle. A determination that there was insufficient time affected the quality of their appraisal and coping, and increased psychological distress. Conversely, too much time between stages also increased distress as it increased the uncertainty of the situation.

Post Response

Actual Response and Non Compliance with Response

Participants recalled a variety of responses after the passing of the emergency vehicle. The responses were related to the level of expressions regarding emergency services, their appraisal of the situation, their beliefs and compliance with individual response scripts. Some participants who expressed positive views, and who were able to comply with their response scripts, indicated feeling good for having assisted the emergency "you have the feeling that you've done the right thing". Others felt it inappropriate to feel good as the emergency vehicle indicated to them that someone was hurt. Participants, whose appraisal of the situation appeared somewhat irrelevant stated, "…just get out of their way, let them do their job and leave me alone". One participant's post emergency vehicle expressions indicated that a correct response to the emergency vehicle was positively associated with her existential belief in "karma".

The level of distress caused by not complying with their response script related with the elaborateness of their expressions. People with moderate/neutral attitudes expressed minimal distress. One participant who expressed slightly negative views on procedural fairness, laughed awkwardly when recalling an incident of failing to notice an emergency vehicle. Another participant, who demonstrated moderate positive elaborations towards emergency vehicles, exhibited some distress at failing to notice an emergency vehicle.

The three participants who expressed more elaborate scripts described intentions that were inconsistent with actual behaviours and abilities. This suggests they were unlikely to be able to respond as planned. One participant's response script to police, of taking his time after hearing the siren was inconsistent with his becoming desensitised to sirens as a result of listening to loud music that incorporated sirens into it. Thus, he was less likely than others to be aroused by hearing the siren of an emergency vehicle. As such, he was not able to comply

with his script and became annoyed. He stated "...flogged past me and I felt a bit annoyed... it wasn't until they got up my arse that they put their lights and sirens on". His further expressions reflected his mixed feelings towards the individual services as he felt "sort of happy to have helped" when responding effectively to an ambulance or fire vehicle.

The other two participants, who both expressed elaborate positive perspectives towards ambulances, indicated scripts that involved their responding whilst positioned in the left lane. However one participant was a self confessed "right lane hogger", and the other stated "if I'm in the right hand lane, different story....I always end up being in the right hand lane ... not quite sure in which direction to go". Both interviewees frequently found themselves travelling in the right hand lane when encountering an emergency vehicle. The inconsistency between their road position and script resulted in their being unable to respond exactly as planned and increased distress.

Coping with not responding was facilitated, by some, through the use of defence mechanisms (Cramer, 2000; Lazarus & Folkman, 1984). One participant used minimisation to cope with his refusal to move through a red light, maintaining that a delay to the emergency vehicle would not jeopardise a life. Another participant used self-deception, by way of denial, to facilitate her coping. This was evident through her contradictory statements that she had never failed to notice an emergency vehicle, yet blamed the sirens for not being loud enough. She claimed "personally, I don't think they're loud enough ... because they're on you before you can actually hear them".

Participants' post emergency vehicle responses were related to their appraisal of the stressfulness of the situation and their beliefs regarding the emergency service. After successfully responding to the emergency vehicle, some reported feeling happy, whilst others felt it inappropriate to be happy, and some reported minimal impact. Failure to respond to as planned increased distress and the use of emotion focused coping such as denial and

minimisation. Those with the more specific scripts were more likely to indicate a failure to comply and subsequent distress due to the improbability of being able to comply with their scripts.

Discussion

This exploratory study was undertaken in response to the concerns raised by media and emergency organisations regarding the risks caused by motorists failing to give way to emergency vehicles. It sought to address the paucity of psychological research into the area and explore the perspectives of Western Australian drivers on responding to emergency vehicles. The research was exploratory, and undertaken prior to the literature review, to minimise theoretical presumption during the investigation. Three major themes and accompanying sub-themes emerged from the data.

It was found that participants defined the emergency services, of police, fire and ambulance as being the main emergency vehicles, elaborating their definition in accordance with their own exposure to other services. They gave way to these vehicles out of a sense of duty or moral compulsion; rarely for any legal obligation.

Participants varied in their views on the emergency services, from highly positive, to highly negative, relative to their personal experiences with those services and associated matters. Whilst all considered the actions of fire and ambulance personnel to be legitimate, there was some doubt as to the legitimacy of police. Participants who questioned legitimacy, appeared to do so as a result of their perceptions of procedural unfairness.

Risk taking and willingness to undertake unlawful actions was dependent on the participants' views of emergency services, with highly positive participants more likely to engage in risky/unlawful behaviour and highly negative participants less likely. More positive participants also afforded more rights and less responsibility to emergency vehicles whereas negative participants afforded less rights to the emergency vehicle and more

responsibility to other motorists. The legality of actions undertaken in response to an emergency vehicle was only a prohibiting factor for participants with negative perspectives. Participants with moderate views were confident in the success of the emergency vehicle, whilst those with more elaborate (positive or negative) outlooks were less so. Participants' beliefs regarding appropriate behaviour were mediated by the lack of formal or consistent education in the area. This, in turn, related to participants' perceptions of other drivers' skills and abilities, and planned their responses to accommodate those other driver expectations.

Due to the likelihood of previously encountering emergency vehicles, participants were able to demonstrate pre-existing response scripts, which varied in specificity and emotional content, relative to their level of expressions. Within that response script, the siren acted as an arousing signal, triggering the appraisal for all except one participant who was habituated to the sound. Upon hearing the siren or seeing the emergency vehicle, most participants appraised the situation as stressful and commenced a secondary appraisal to determine the personal and situational variables available to cope with the stressor, especially time.

Participants' post emergency vehicle responses were dependent on their successful adherence to their planned response. Failure to respond as planned invoked emotion focused coping strategies. This was especially the case for participants with very specific response scripts who were unlikely to succeed as planned.

An analysis of the emergent themes and subthemes, and subsequent review of literature, revealed consistencies with Lazarus and Folkman's (1984) model of stress and coping. The emergency vehicle presented as a stress-arousing stimulus that prompted an appraisal of likely responses. Problem focused and emotion focused strategies were used to cope with the stressful event. The participant's appraisal and subsequent coping were

mediated by their commitments and beliefs regarding emergency services, lawfulness, safety and acceptable risks. Their coping was undermined through insufficient skill acquisition.

This expands on the stress and coping model's previous application within the context of emergency responses. It uniquely contributes to the body of knowledge by exploring and identifying the previously unresearched, psychological themes associated with motorists' responses to emergency vehicles. The findings are also consistent with associated research in which cooperation was found to be mediated by perceived legitimacy (Beetham, 1991; Murphy, et al., 2008; Tyler, 1990, 2006), and crash data findings that indicating motorists responded inconsistently (Lenne, et al., 2008) and lacked procedural knowledge (Burke, et al., 2001).

The non-random sampling employed in this study resulted in a predominately Caucasian and southern European sample, whose first language was English. This afforded little opportunity to explore linguistic or cultural dimensions. None of the participants had been involved in a crash resulting from responding to an emergency vehicle, although, this was expected, given the unlikely prospect of inappropriate responding resulting in a crash.

Utilising thematic analysis of in-depth interviews, within a constructionist framework, resulted in the meaning and interpretation of matters associated with responding to emergency vehicles being a co-construction between the participants and the researcher. Refraining from prior consultation of the literature minimised theoretical presumption and allowed the themes to emerge from the data. There was some indication of confounding psychological antecedents within the data that also require further exploration. It should be acknowledged that data collected through interviews can be subject to social bias, irrespective of the researcher's background (af Wahlberg, 2010). However, this is true of many social research techniques.

Future research of the area can be more purposefully designed toward assessing responding to emergency vehicles using the social psychological theme of the stress and coping model (Lazarus & Folkman, 1984), and the consideration of alternate models, such as the theory of planned behaviour (Ajzen, 1991). Future research may incorporate alternative designs, such as within-subjects components, and measures to control for social desirability bias. It may incorporate the development of quantifiable measures, to further investigate larger, representative samples. Such research may be instrumental in informing policy in the area of responding to emergency vehicles, as well as driver education programmes toward enhancing cooperation with emergency vehicles and better public outcomes.

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Appendix A

Information Letter

Dear Potential Participant,

You are invited to participate in an interview regarding drivers' perspectives towards giving way to emergency service vehicles. Your interview will form the basis of a publishable report submitted as part of my course requirement as a Psychology honours student at Edith Cowan University. This research project has been approved by the ethics committee of the Faculty of Computing Health and Science.

During the interview, I would like to talk with you about your experiences, thoughts and feelings in relation to giving way to emergency service vehicles.

The interview will take approximately one hour to complete and will be conducted in an agreed location that would be suitable for audio recording. Upon completion of each interview, the audio recording will be transcribed by me. Any information that has the potential to identify you will be omitted from the transcript. No identifying information will accompany, or form any part of, the final report.

During the research, the transcript and consent form will be stored by in a secure location. At the completion of the research, the documents will be stored by Edith Cowan University. After five years, all documentation will be destroyed.

Participation in this research is voluntary. You can withdraw your consent at any time and any recordings, transcripts and documents relating to you will be destroyed.

If you have any queries regarding this research or require further information, please contact me or my supervisor, Dr Eyal Gringart. Alternatively, the Honours Coordinator, Dr Justine Dandy, is available as an independent point of contact.

If you are happy for me to interview you, please contact me to arrange a time and location.

Sincerely,

Pauline Grant

Supervisor:	Student:	Honours Coordinator:
Dr Eyal Gringart	Pauline Grant	Dr Justine Dandy
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School of Psychology and		School of Psychology and
Social Science		Social Science

Appendix B

Consent Form

An Exploratory Study of the Perspectives of Western Australian Drivers Towards Giving Way To Emergency Services Vehicles

In signing this letter of consent, you agree to the following:

- I have been provided with a copy of the information letter, which I have read and understood.

- I have been given opportunity to ask questions and received satisfactory answers.

- I understand that participation in this project will involve an interview that will be recorded using an audio recording device.

- I understand that the information obtained from the interview will form the basis for a publishable report.

- I understand that the audio recording will be transcribed after the interview and the original recording destroyed.

- I understand that the researcher will secure all documentation relating to myself and my interview whilst the research project is ongoing.

- I understand that, at the completion of the research project, all transcripts and consent forms will be stored by Edith Cowan University for a period of five years before being destroyed.

- I understand that I may withdraw permission or cease to participate at any time.

I agree to participate in the project

Participant's signature_____Date:_____

Interviewer's signature:_____Date:_____

Supervisor:	Student:	Honours Coordinator:
Dr Eyal Gringart	Pauline Grant	Dr Justine Dandy
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Edith Cowan University	Edith Cowan University	Edith Cowan University
School of Psychology and		School of Psychology and
Social Science		Social Science

Appendix C

Interview Schedule

What do you think this interview it about?

When I talk about emergency vehicles, what type of vehicles do you think I'm talking about?

If you see a FIRE/AMBULANCE/POLICE using lights and sirens, what do you imagine they are doing?

What is your understanding of giving way to emergency vehicles?

What is your reaction when you hear a siren or see the lights of an emergency vehicle?

- Approach from behind
- Alternating lanes
- Intersections. _ (check mount kerb, pull into intersection, remain stationary)
- Heavy traffic

Have you ever had a situation where you could not give way to an emergency vehicle?

Have you had any experiences of failing to notice emergency vehicle?

Have you ever seen anyone else fail to give way to an emergency vehicle?

- What happened then?
- If no - What do you think I mean by fail to give way

Recent studies indicate that failing to give way to an emergency vehicle causes one crash per day in Australia, what immediately comes to mind?

What are your thoughts on why those crashes occur?

- Panic (panic from sirens, panic from seeing police car – what causes people to panic)
  - How does panic cause a problem?
- Vehicle design
  - How does this cause a problem?
- Inattention
  - How does this cause a problem?
- Refusal to give way
  - How does refusal to give way cause crashes?

When operating with lights and sirens, what sort of things are emergency vehicles allowed to do?

Do you know what the law is in relation to giving way to emergency vehicles?

- A driver shall give way to, and make every reasonable effort to give a clear and uninterrupted passage to, every police or emergency vehicle that is displaying a flashing blue or red light or sounding an alarm.

Do you know what the penalty is?

- $150 and 4 points

From your experience, do you think that people act consistently when faced with an emergency vehicle?

What do you think is the best course of action?

- Move left or change to alternate lane/move aside or stay put?

What education have you received about giving way to emergency vehicles?

Have you ever had any experiences of emergency vehicles changing from emergency to normal driving? By that, I mean using their lights and/or siren and then turning them off for no obvious reason.

Do you think lights and sirens are always used for the right reason?

- Have you heard the stories of emergency vehicles using lights/sirens just to get through the traffic? How true do you think that is?

Can you tell the difference between the various sirens? Would it help if you could?

PROBES

Do you always react the same way? - Light traffic/heavy traffic, rushing, bad day

Would you feel the same if it were police/fire/ambulance?

What feelings do you have about that?

You said …. what did you mean by that?

Can you tell me more about…..?