Job-related factors that predict the psychological health and well-being of urban taxi drivers

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Abstract

A vast body of research conducted over several decades has established that (a) psychological stress is a major occupational health problem, and (b) drivers in the transport industry are one of several occupational groups who report disproportionately high levels of work-induced stress and psychological ill health. Although the psychological health of truck, coach and urban bus drivers has been studied extensively over the past three decades, the taxi industry has not received the same level of research scrutiny. Only two studies have investigated the effects that driving a taxi has on drivers' psychological health and well-being. These studies identified potential job-related factors that may influence drivers' health. The present research aimed to further contribute to knowledge by investigating job-related environmental, organisational and individual factors and their effects on the levels of depression, anxiety, stress and well-being of a sample of taxi drivers in the Brisbane metropolitan area.

The theoretical framework for this research utilised Karasek's (1979) job demand-control model of job strain. In essence, jobs in which demands are high and control is low create an increased level of job strain, which can manifest as psychological illness and a diminished sense of job-related well-being. In addition to the job demands and job control environmental factors, the individual factors of driver aggression, risk-taking and coping strategies, and the organisational factor of safety climate, were incorporated into a proposed 'extended Karasek model' in order to more accurately predict the psychological health and well-being of the taxi drivers. One criticism of Karasek's (1979) job strain model is that it has limited validity in different cultural societies. Since the number of ethnic minority taxi drivers in the Brisbane area approaches 30%, the proposed extended model was tested against ethnic majority (English is first language) and ethnic minority (English is not first language) sub-samples of taxi drivers to investigate this cultural criticism.

In order to examine the ability of the proposed extended Karasek model to predict levels of depression, anxiety, stress and job-related well-being in the taxi drivers, two studies were reported. The first study was quantitative in nature and involved 383 drivers answering a self-report questionnaire. This questionnaire investigated: drivers' level of aggression; perceptions of risk-taking; coping strategies; perceived level of job demands; perceived level of job control; safety climate perceptions; symptoms of depression, stress and anxiety; and the overall level of job-related well-being. Correlation, MANOVA and multiple regression

analyses were performed in order to test the aims of the study and the eight hypotheses relating to each of the predictor variables and their association with psychological health and well-being. Study two was qualitative in nature and consisted of two focus group semi-structured interviews. This study aimed to validate the findings from the first study and also to explore further, and expand on, these findings. Content analysis was utilised to explore themes in the interviews.

Results from the MANOVA analyses in the first study indicated that there were differences between the ethnic majority and minority groups regarding their level of job demands, job control, aggression, risk-taking perceptions, coping strategies and safety climate perceptions, and also their level of stress, depression, anxiety and job-related affective well-being. Regression analyses revealed that all of the factors in the extended Karasek model significantly affected the psychological health and well-being of both ethnic majority and minority drivers. Content analysis of data from the second study validated the results from the first study, as well as identifying the drivers' views on aggressive driving, risk-taking, coping strategies, safety climate, job demands and job control.

In general, the results from this research support the view that Karasek's job demands-control model is too general and simplistic for specific workplaces, and additional measures, such as individual and organisational factors, enhance the predictive power of the basic model when examining psychological health and well-being. Practical implications include: counselling for drivers who are distressed; screening of drivers for levels of aggression and risk-taking; training drivers with cognitive techniques to enhance coping in stressful situations, to deal with aggressive and risk-taking tendencies, and to cope with racial discrimination and abuse; involving drivers in the formulation of appropriate health and safety policies; installing safety screens in all Queensland taxis; and reducing the demands of the job in order to reduce levels of psychological distress and improve well-being levels.

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1.0 INTRODUCTION

1.1 Health and Well-being in the Workplace

The occupational health and safety of the international workforce has been an area of concern for the World Health Organisation (WHO) in recent years because the level of occupational injury and disease worldwide is staggering. It has been estimated that annually: (i) at least 1.1 million people die of work-related injuries and diseases; (ii) there are 250 million accidents in the workplace resulting in 300,000 fatalities and many more disabilities; and (iii) there are 160 million new cases of work-related diseases each year, including respiratory disorders, cardiovascular diseases, cancer, hearing loss, musculoskeletal and reproductive disorders, and mental and neurological illnesses (WHO, 2002). Work-related injury, disease and death are largely preventable, but common and costly. In Australia in 2006-07, there were 148,480 new compensation claims. This equates to an incidence rate of 2.8 work-related compensated injuries/illnesses per 100,000 Australian employees in 2006-07 (DEWR, 2007). Work-related injury and illness is costly to the individual both in pain and suffering, and monetary terms. Work-related injury and illness is also costly to the community. It has been estimated that, for the 2006-07 financial year, the total cost of illness and injury claims to the Australian economy was $38.3 billion, or 6% of Gross Domestic Product (National Occupational Health and Safety Commission, 2007).

The fastest growing health problem, indicative of increased pressures from workplace changes, is in the area of work stress and mental health (Karch, 2000). Work stress is an emerging epidemic, exacerbated by the many changes to the workplace, all of which are heightened by globalisation and technological changes. Globally, mental health and work stress have become serious concerns in recent years as evidence reveals their huge impact on the workforce in terms of the number of people affected, costs to nations and to work organisations. The many symptoms and associated health problems experienced by employees are also producing detrimental consequences for the organisation, such as low productivity due to absenteeism and “presenteeism” (i.e., low performance level while at work) (Goetzel et al., 2004).

As indicated by the growth of stress claims in workers compensation schemes, work stress is a rapidly growing problem in many countries. For example, in the US, there has been a three-fold increase since 1980, with 15% of all workers compensation claims for stress in 1995. In Australia, there was a large increase in the number of stress claims accepted between 1989-90 to

1996-97. Claims for stress grew by 82% form 1991-92 to 1993-94 in Queensland (NOHSC, 2003). The following data relates to mental health and stress at work:

- Mental disorders, including anxiety and depression, are a major and rising cause of disease burden in all countries (Jenkins et al., 2004).
- More than 50% of workers in industrialised nations complain about stress in the workplace, with chronic health problems as a consequence (WHO, 2002).
- Approximately 30% to 50% of the workers in European countries complain about psychological stress and overload. This has been associated with sleep disturbance, depression, anxiety and elevated risks of cardiovascular diseases, particularly hypertension (Mitchell & Mandryk, 1998).
- In the US in 2000, Karch estimated that employers spent about $US150 billion in treatment, lost productivity, and absenteeism related to the mental health of their employees (Karch, 2000).
- In the UK, at least 40 million working days are lost each year due to stress-related disorders (Mitchell & Mandryk, 1998).
- In Australia, the cost to the government in 1998 was about $A50 million per annum and in 2006 the cost was approximately $100 million per annum in the number of stress claims made, with an average stress claim costing $41,591. Stress accounted for 15% of all workplace claims, but 27% of all injury costs in 2006 (Australian Safety and Compensation Council, 2009).

Occupational stress, anxiety and depression in the workplace are contentious issues. While some psychological studies tend to focus on individual coping skills and lifestyle factors, a large body of literature from diverse disciplines has identified that it is the combination of the many physical, social and organisational factors that can cause psychological symptoms and health consequences (Aungles & Parker, 1990; Karasek & Theorell, 1990). Thus, employers must deal with work stress-related problems as an integral part of the work environment and conditions, and not something that can be conveniently treated as a separate issue, or by focusing on an individual's coping skills.

1.2 Occupational Health and Well-being in the Transport Industry

A vast body of research conducted over several decades has established that (a) psychological stress is a major occupational health problem (Brogmus, 1996; Godin & Kittel, 2004; Hill & Boyle, 2007), and (b) drivers in the transport industry are one of several

occupational groups who report disproportionately high levels of work-induced stress and psychological ill health. Hill and Boyle, for example, have reported that the transport sector is the industry with the second highest incidence of stress-related compensation claims over the most recent research period for which Australian data are available (1999-2000). Transport industry drivers have to cope with various job-related factors that are not common to other occupations. For example, long driving shifts, driver fatigue, limited time off between shifts and dealing with the public while trying to maintain a schedule are some of the job characteristics that research has shown to be associated with stress, physical illness and decreased job satisfaction in transport drivers, particularly urban bus, coach and truck drivers. More research is needed, however, to examine the job-related factors associated with the incidence of mental health illnesses, such as depression and anxiety, in the transport industry as a whole.

1.3 The Queensland Taxi Industry

One sector of the transport industry that has not received the same level of research scrutiny as other sectors, both in Australia and worldwide, is that of the taxi industry. Taxis are now considered to be an essential service in Australian society. Their contribution to the day-to-day operation of the business world and tourism are of considerable significance, as is their general social function as a means of transport for those who are unable to use other modes of transport. In Australia, taxis are utilised by all sectors of the population, particularly the aging population, because of the ease and general convenience. For example, the Veteran's Affairs Association in Brisbane uses taxi services for its members. Not all public transport can accommodate people with a disability, and the taxi industry, particularly in Brisbane, is expanding its fleet of cars to cater to such clients (Yellow Cab Company, 2009). In addition, in Brisbane the services provided by public transport (buses, trains) are not in service at certain times in various areas of the metropolitan area, thus taxis are used both at the same time as, and outside of, these particular time constraints. Further, in terms of general road safety, the use of taxis is a key alternative to drink driving, and hence taxis provide a service of potentially great indirect benefit to overall road safety.

In Queensland, there are 3,135 taxis in service, 1,800 of which operate in the Brisbane metropolitan area. There are two taxi companies operating in the Brisbane area: Yellow Taxis and Black and White Taxis. There are no private taxi companies in Brisbane, unlike Sydney and Melbourne. The latest figure for the number of taxi drivers in Brisbane is approximately 3,500, including full-time, part-time, casual and irregular drivers (ATIA, 2008). These drivers come from all walks of life. They have different ethnic backgrounds, different educational levels,

different life experiences and different personalities. Driving may only be a part-time job whilst studying at university or it may be a life-time family profession with the driver following in the footsteps of the family business. Drivers may see the taxi industry as only a stepping stone to another career or a way of making ends meet until the real job starts. The average number of fares per taxi per year in Brisbane is 4,550, and the total number of passengers in Brisbane in 2006 was 20,932,500 (ATIA). The average fare in the Brisbane metropolitan area is $17.70, with an average of 7.5 kilometres travelled. Of this income, taxi drivers receive 55% of the total fare, or a set rate, depending on the arrangements made between the taxi owner and the driver. Anecdotal evidence suggests that the operational costs of a taxi vehicle (i.e., depreciation, maintenance, fuel, rank fees, insurance, etc.) are approximately $30,000 per annum. With an annual industry income of approximately $133 million divided between 1,800 taxis in Brisbane, the gross income per taxi is approximately $74,000, and the net income of operational costs is $44,000. Of this, approximately $20,000, or 45%, accrues to the plate owner for the use of a plate in situations where plates are leased. Thus, the average taxi driver earns approximately $24,000 per year, which is in the lower echelons of paid work in Australia (Queensland Department of Industrial Relations & Queensland Transport, 2001). The generally low rate of pay has the potential to encourage some drivers to sacrifice safety as they attempt to maximise income by speeding, taking other risks on the road, and working long hours, typically 50 to 60 hours per week (Dalziel & Job, 1997b; Queensland Department of Industrial Relations & Queensland Transport). The result is that fatigue is a potential problem among taxi drivers, but several past studies have found limited evidence to support this contention (Dalziel & Job; Koh, Ong & Phoon, 1986).

The organisational environment of the taxi industry is not as conventional as in other industries. The main entities in the taxi organisation are the company, the depot, the taxi owner, the driver, and the taxi licence owner. For any taxi, the entities of driver, operator, owner, company and licence owner may be the same, or different, or any combination of these. Whilst in many other fleets there may be a clear, if not always adequate, chain of responsibility and a hierarchical structure, the taxi industry is best considered as a series of interrelated and overlapping entities (ATIA, 2008). The taxi company usually provides the communication base for both drivers and customers, determines the taxi livery and basic standards for drivers, trains drivers, provides a booking service, and provides emergency communication for drivers. Many taxis in Brisbane operate out of a depot. Depots will look after the rostering of drivers, the pay-in of fares, and the maintenance and repair of the taxis. A depot may have some taxis that are changed over, or garaged, at a driver's residence. The taxi owner is the person or company that

actually owns or leases the taxi vehicle, and may be the depot, the taxi company, or a private individual. Each taxi must be linked to a taxi licence. Taxi licences may be owned by someone quite independent of the industry who leases the licence to the taxi owner as an investment. The current cost of a taxi licence (or plate) in Brisbane is $405,000, second only to Melbourne at $473,917, and this figure increases each year above the rate of inflation (ATIA). Strictly speaking, taxi drivers in Brisbane do not have a supervisor to whom they are answerable. Where and how they work is the driver's prerogative. They are quite at liberty not to take jobs that are advised over the dispatch system, and at peak times, such as Friday and Saturday nights, most drivers prefer to work busy ranks than to accept bookings for passengers who may not turn up or not wait for them (De Souza, 2003). Whilst taxi drivers have a high level of independence, they may have a depot manager or taxi owner who expects a minimum level of pay-ins. There are agreed ways in which fares and costs are split between depots or owners and drivers, and in the event of crashes or customer complaints, drivers may be talked to or reassured by the owner, the depot or the taxi company. Depot managers may refuse to hire a vehicle to a driver, but the driver most likely will quite easily find someone else to drive for. This market includes individual owners and owner-drivers, who make up to 40% of the taxi market in Brisbane.

Though the details of taxi regulations vary from one state to another, they all take the same form. They involve: regulation of entry (that is, the overall number of taxis per state); quality controls; and control of fares and/or fare setting procedures. There are four key objectives for the regulation of the Brisbane metropolitan taxi industry: a vehicle standard that meets the needs of the consumer; a driver customer service that meets the needs of the consumer; taxi waiting times that meet the needs of the consumer; and a fare that is acceptable to the consumer. In Queensland, taxi operators must pass background checks to ensure they are of good character and are fit and proper persons before they are licensed. They must meet government standards on financial viability, safety of passengers and the public, and vehicle maintenance. Operators must also ensure that taxis under their control are affiliated with an authorised Taxi Service Radio Communication Network (in Brisbane, the networks are run by Yellow Taxis and Black and White Taxi networks), and are available for hire at all times as required by the network. Background checks also apply to taxi drivers. They must initially pass a medical fitness test and checks on their personal driving record. Legislative provisions regulate appropriate behaviour towards passengers, presentation of a taxi and network service requirements. A new taxi driver curriculum, drawing on standards from the hospitality industry and requiring comprehensive knowledge of the road network, recently received state accreditation in Queensland. The standards currently required of drivers and vehicles include the following:

- Training requirements for all new taxi drivers include an aptitude test, a course in professional taxi operations and a registration test.
- Identification cards are compulsory and must be displayed in the taxi.
- The maximum age for conventional taxis is 6 years, and the maximum for peak period restricted taxis, multi-purpose taxis and area restricted taxis is 8 years.
- All taxis are required to have a surveillance camera fitted and operational, and
- Annual roadworthiness inspections are mandatory (ATIA, 2008).

Taxi driver training programs are run by both the Yellow Taxi and Black and White Taxi companies in Brisbane. Potential drivers must have proof of a current driver's licence, proof of identification, a current traffic history and they must pass an English assessment before starting training. Training units include information on and implementation of basic occupational health and safety practices, general housekeeping procedures, how to safely operate a taxi vehicle, how to conduct financial transactions correctly, applying quality procedures to taxi operations, applying customer service skills, how to create a customer relationship, basic communication system skills, interpreting road maps and navigating routes, and basic fatigue management strategies (Yellow Cab Company, 2009). Interestingly, training does not include information on potential physical and mental health complications (other than fatigue) when driving a taxi, nor does it provide the drivers with a range of counselling options if required.

1.4 Working Conditions in the Taxi Industry

Although the above information on taxi operations in Brisbane gives the impression to the reader of a well-regulated, fair and equitable industry, arguably this is not the case for the taxi drivers. A number of troubling issues are readily apparent. It has been stated that taxi drivers earn very little per year. This results in pressure on the drivers to take as many fares as possible during a shift, and in doing this both the safety of the driver and the passenger/s may be at risk. For example, the driver may take risks in traffic to gain a fare, or turn to speeding to have the journey over as soon as possible in order to take another fare. Arguably, owner drivers may take more risks than other drivers in order to earn a living. Greater than 50% of taxi drivers in Brisbane work long hours, typically over 60 hours per week, in order to maximise their income (Machin & De Souza, 2004). In addition, competition for fares is fierce, and most drivers will admit that this job aspect is demanding.

Training is another problem area. It is widely acknowledged that taxi drivers become fatigued after a long shift of 12 to 14 or more hours, and fatigue management is covered in the official training process (Yellow Cab Company, 2009). However, advice and skill sets for dealing with psychological health issues, such as driver depression, stress, and anxiety, is lacking. No official counselling services are available to drivers through the taxi companies, and drivers are expected to foot the bill for any help they may need.

Although most drivers who work for a taxi base have gone through the training program offered by the taxi companies, it is the drivers who work for individual owners, and some owner drivers, who can sometimes slip through the net. Some of these drivers are able to obtain a taxi driver's licence without the English assessment process and without any real knowledge of the taxi industry. Often, these drivers come from different ethnic backgrounds, they have questionable English skills and they have little current knowledge of the road system. They have also been known to be under the age of 18 years. A study by Machin and De Souza (2004) estimated that the percentage of ethnic minority drivers was approximately 28% of the total driver population in the Brisbane area, so the problem of lack of training becomes a concerning issue. Another concerning issue is that of the physical health of the drivers. Working as they do in a car, most drivers will eat fast food whenever possible so they do not miss a potential fare, and this may lead to increased cardiovascular diseases and obesity (Kobayashi et al., 2002). Drivers sit in the one position for long periods of time, resulting in musculoskeletal problems (Chen, Chang, Chang & Christiani, 2005). Also, stress takes a toll on the body internally, which may manifest in increased gastrointestinal disorders and sleeping problems (Nakano et al., 1998).

A major problem faced by all taxi drivers is that of psychological and physical abuse by passengers. According to Aamodt (1999), violence is on the increase in most workplaces today. Taxi driving is considered to be one of the most hazardous occupations because of the risks involved, and at least one driver in Australia is murdered on the job each year. This situation is seen not only in Australia (Haines, 1997; Mayhew, 2000a, 2000b), but also in Canada (Kabrick, 2001; Stenning, 1996) and in the United States (Kloberdanz, 2000; Wright, 2000). A paper by the National Institute for Occupational Safety and Health (NIOSH, 1995) stated that taxi drivers in the US were subjected to 21 times the national average of occupational homicide and 60 times the average rate of assault. According to Swanton and Scandia (1990), taxi drivers in Australia experience 28 times the rate of non-sexual assault and 67 times the rate of robbery compared with the community at large. Statistics released by the National Occupational Health and Safety Commission (NOHSC, 1999) revealed that between 1989 and 1992, 8% of the 50 work-related homicides reported involved taxi drivers. Taxi drivers work alone, they work at night, they work

with cash and they are seated in the front of the car. Additional risk factors for assault include picking up inebriated young male passengers at night, taking a 'hail' from the street, inner-city pick-ups (in Brisbane this includes the city and valley precincts), and drivers pursuing fare evaders (Haines, 1997; Keatsdale, 1995; Mayhew, 1999).

The actual incidence of assaults on taxi drivers in Australia is unknown because: data are scattered across agencies; there is significant under-reporting of incidents to the police (for example, in Queensland it was estimated that 90% of incidents are not reported to police); most worker's compensation insurance claims statistics are only collected for government employees in most Australian states and territories, and many taxi drivers are hired under other arrangements (Radbone, 1997); emergency health care facilities treating injured drivers rarely forward data to occupational health and safety authorities; to prevent outbreaks of fear, violent incident reports can be withheld by taxi companies (Elsworth, 1997); and surveys of taxi drivers are unlikely to provide a total "picture" of the incidence and severity of violence because of the "healthy worker" effect. Other reasons for not reporting include perceived police inaction, time demands to report, unknown offender whereabouts, fear the driver will be blamed, not wanting to be involved, incidents not serious enough, and even apathy (Easteal & Wilson, 1991; Stenning, 1996).

Taxi drivers suffer anything from verbal abuse on a daily basis, to bruises, lacerations and fractures to the upper head and upper body as a result of a violent passenger or a robbery. Both these situations may result in increased psychological ill-health over time (such as stress, depression, PTSD) and a diminished sense of job-related well-being. In addition, studies undertaken in other English-speaking countries, in particular Canada and the United States, have found that ethnic minority taxi drivers are subject to more threats, violence, racial discrimination and economic exploitation from passengers than their ethnic majority counterparts (Facey, 2003; Krieger & Bassett, 1993; Mayhew & Quinlan, 2000). This has been shown to increase driver stress and physical ill-health (e.g., Facey; Krieger, 1990; Stenning, 1996). In Australia over the last three years (2006-2009), taxi driver murders have increased in Victoria and Queensland, and taxi drivers have protested in the streets of capital cities for increased safety measures to combat this and other problems of abuse. The media coverage from these protests, plus pressure from the respective state taxi authorities, has resulted in state governments ordering a surveillance camera to be fitted in all Queensland taxis by the middle of 2009, and the fitting of screens in all Victorian taxis as of 2010.

1.5 Research on the Taxi Industry

It is evident from the above discussion that taxi drivers have a demanding job: they may or may not receive training and English lessons; drivers from ethic minority backgrounds are in increasing numbers in the Brisbane area; drivers suffer from physical ill-health as a result of their profession; drivers face a hazardous work environment and incidents of abuse often go unreported. All of these factors must have an effect on the psychological health and well-being of the taxi drivers in general.

Unfortunately, taxi drivers themselves have been the subjects of little published research, and despite their worldwide significance within modern society, there is little literature available. Where they have been the subjects of research, the majority of studies have exhibited little systematic interest in the issues that taxi drivers face in their day-to-day working conditions, but rather have used taxi drivers as participants for the study of particular issues of interest to the researchers. Examples of this can be seen in research into physiological factors in driving (Corfitsen, 1993; Lisper, Laurel & Stenning, 1972), reaction time studies (Babarik, 1968), driving simulator studies (Edwards, Hahn & Flieshman, 1977), personality studies (Tillman & Hobbs, 1949) and physical health studies (Chen et al., 2005; Kobayashi et al., 2002; Nakano et al., 1998). In Australia, only a handful of studies have investigated the taxi driver population, with most of these focusing on factors related to the safety behaviour of drivers (e.g., Dalziel & Job, 1997b; Sagberg, Fosser & Saetermo, 1997).

Research examining relevant job-related factors that may impact on the psychological health and job-related well-being of taxi drivers has only been indirectly covered by two studies worldwide. The first is a Canadian study by Facey (2003), a qualitative study which examined the health effects of taxi driving in the visible minority taxi driver population in Toronto. Facey concentrated on the effects that racial discrimination, racial abuse and economic exploitation had on the psychological health of the ethnic minority drivers. The second is an Australian study, that of Machin and De Souza in 2004. These two researchers investigated individual, environmental and organisational job-related factors that may impact on the physical health, safety behaviour and job-related affective well-being of a sample of taxi drivers in the Brisbane metropolitan area. Machin and De Souza reported that approximately 28% of the taxi drivers in their sample were from ethnic minority backgrounds (i.e., they did not have English as their first language), and according to the Yellow Cab Company in Brisbane, the percentage of ethnic minority drivers is increasing every year (Yellow Cab Company, 2009). It therefore is important that future research on the health of Brisbane taxi drivers examines the health of both ethnic majority and ethnic

minority samples of drivers in order to identify any similarities and differences in job-related factors, and how these similarities and differences can affect their driving performance.

While these two studies are encouraging, in Australia there appears to have been no specific studies examining relevant job-related factors that may impact on the psychological health of taxi drivers, there have been no studies examining the incidence of stress, depression and anxiety in a taxi driver population, there have been no studies investigating the psychological health and well-being of samples of ethnic majority (i.e., where English is the first language) drivers and ethnic minority (i.e., where English is not the first language) taxi drivers in Australia, and subsequently there have been no studies that have presented a model of individual, environmental and organisational job-related factors that can predict the psychological health and well-being of both ethnic majority and ethnic minority taxi drivers. This thesis aims to present such a model.

1.6 The Theoretical Framework of the Thesis

Despite the evidence accumulated over fifty years of research, Kasl (1996b) has argued that "nearly all the significant issues surrounding the concept of work stress, anxiety and depression remain unsettled and/or controversial" (p.43). Several theories have been proposed to make sense of the diverse research findings. These theories differ in their views of the major determinants of stress, anxiety and depression. Some (e.g., Friedman & Rosenman, 1974; Kobasa, 1979) emphasise personal characteristics; others (e.g., Theorell et al., 1998) emphasise aspects of the work environment; whilst a majority (e.g., Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Edwards, Caplan & Van Harrison, 1998; Siegrist, 1996) view stress, anxiety and depression as a function of the interaction between person and environment.

A clear example of the approach that emphasizes work environmental causes of psychological ill-health and diminished well-being is Karasek's (1979) job demand-control model of job strain. The job demand-control model has perhaps been the most important anchoring point for research on the situational impact of work characteristics on employee health and well-being during the past three decades (Van der Doef & Maes, 1999), and it is this model that holds the theoretical underpinnings of this thesis. In essence, this model considers two psychosocial job characteristics to be important determinants of the psychological health and well-being of workers: (1) psychological job demands; and (2) decision latitude or job control. Psychological demands are defined by Karasek as psychological stressors present in the work environment (e.g., high pressure of time, working pace, difficult and mentally challenging work). The term decision latitude can be described as the potential control that an employee has over his

tasks and his behaviour during a working day. Decision latitude comprises two theoretically distinct constructs: (1) the worker's authority to make decisions on the job (i.e., decision authority, or autonomy); and (2) the breadth of skills used by the worker on the job (i.e., skill discretion; cf. Karasek & Theorell, 1990). Chapter three includes a more extensive analysis of Karasek's model.

One criticism of Karasek's (1979) job demand-control model is that it is overly simplistic and not specific enough for different work environments. As a result, various researchers have successfully incorporated specific individual and organisational factors, in addition to job demands and job control factors, into different models in order to highlight the relationship with job stress and well-being in specific industrial workplaces (Cheyne, Oliver, Tomas & Cox, 2002; Oliver, Cheyne, Tomas & Cox, 2002; Tomas, Melia & Oliver, 1999). These studies have concluded that the additional individual and organisational factors do enhance the ability of the job demand-control model to predict the psychological health and well-being of different occupational groups. This 'extended Karasek model' approach is taken in this thesis in order to predict the psychological health and well-being of a samples of ethnic majority and ethnic minority taxi drivers in the Brisbane metropolitan area. In addition to the job demands and job control environmental factors, the individual factors of driver aggression, risk-taking and coping strategies, and the organisational factor of safety climate, have been incorporated into Karasek's model in order to more accurately predict the psychological health and well-being of the taxi drivers. Psychological health will be measured by levels of stress, depression and anxiety, and driver job-related well-being will be measured by the level of overall affect (i.e., the scoring of positive affect and negative affect measures to obtain an overall level of job-related affective well-being).

Another criticism of Karasek's (1979) job demand-control model is that it may not be applicable in different cultural work environments. The model has been tested extensively in cultures where English is the first language of employees, however some studies in cultures where English is not the first language of employees (e.g., Xie, 1996) have not found significant effects when using Karasek's model. The studies concluded that cultural differences may have an effect on the significance of the job demands and job control factors in the model. In order to address this criticism, in the present research the proposed extended Karasek model will be tested separately on an ethnic majority sub-sample of drivers (drivers who have English as their first language) and on an ethnic minority sub-sample of taxi drivers (drivers who do not have English as their first language) to establish the cross-cultural applicability of the proposed model.

1.7 The Aims of the Thesis

The overall aim of the present study was to identify the main job-related individual, environmental and organisational factors that may contribute towards driver psychological ill-health and a diminished sense of job-related affective well-being in urban taxi drivers. This was achieved by using Karasek's (1979) job demand-control model as a framework for a proposed extended model. The six specific aims of the study were to:

- document the incidence of occupational stress, anxiety, and depression, and to establish the level of job-related well-being in both ethnic majority and ethnic minority taxi driver samples, as well as to investigate whether there were any differences between ethnic majority and minority drivers in terms of levels of stress, anxiety, depression and well-being;
- test the integrity of Karasek's (1979) job demand-control model of job strain (including the interaction hypothesis) on (a) a sample of ethnic majority taxi drivers, and (b) on a sample of ethnic minority taxi drivers;
- extend the job demand-control model, and integrate previous research, by examining the effects of adding specific additional individual and organisational factors to Karasek's model, and whether the proposed extended Karasek model could predict the psychological health and job-related well-being of both ethnic majority and ethnic minority taxi drivers;
- investigate whether there were any differences between ethnic majority and ethnic minority taxi driver samples in terms of perceived job demands, job control, aggression, risk-taking, coping strategies, and perception of the safety climate;
- examine the reasons why taxi drivers may or may not find their job demanding, why they may or may not have less control on the job, why they may or may not be aggressive on the road, why they may or may not take risks while driving, why they use certain coping strategies to deal with stressful driving situations, and why they have a certain perception of the current safety climate in the Brisbane taxi industry.
- investigate whether racial discrimination, economic exploitation and socioeconomic circumstances affect the ethnic minority drivers' levels of stress, depression and anxiety, and their job-related affective well-being level.

1.8 The Approach Taken by the Thesis

In order to achieve the six aims of this thesis, two studies were proposed. The first study was a quantitative study using a taxi driver questionnaire. The questionnaire assessed driver demographics, aggression, risk-taking perceptions, coping strategies, job demands, job control, safety climate perceptions, stress, anxiety, depression and driver affective well-being. Quantitative data analyses were performed in order to examine the first four aims of the thesis. The second study was of a more qualitative nature and took the form of two focus group semi-structured interviews. The second study aimed to validate the results of the quantitative study, as well as to explore and expand on these results. The qualitative study aided in the investigation of the fifth and sixth aims of the thesis.

1.9 The Plan of the Thesis

The thesis consists of seven chapters. Chapter 1 introduces the problem to be studied and the parameters in which the study occurred. It also introduces Karasek's (1979) job demand-control model and the proposed extension of this model as a basis for predicting the psychological health and well-being of ethnic majority and ethnic minority taxi drivers. The aims of the thesis, and the approach taken to achieve these aims, are also outlined. Chapter 2 discusses the outcome variables in this thesis: occupational stress; depression; anxiety; and job-related affective well-being. The effects that each variable has in the workplace will be examined, as well as the definition of each variable, and research on each variable as it pertains to the transport industry. Chapter 3 discusses Karasek's model, its strengths and weaknesses, and introduces the proposed extended model in order to specifically predict the psychological health and well-being of taxi drivers. This chapter also discusses each predictive factor in the extended model with regards to its definition for this thesis. Chapter 4 explains the methods used in each of the two studies in the thesis, including the type of analyses used in each study. Chapter 5 provides the results of the quantitative study, whilst chapter 6 provides the results of the qualitative study. Chapter 7 discusses the general findings and the potential implications of those findings. The limitations of the two studies will be discussed, as well as the practical implications of the results for the taxi industry in general.

1.10 Chapter Summary

This chapter outlined the basic premise of the thesis by providing the aims of the study, an overview of the main theme of the study – that of taxi driver psychological health and job-related well-being – and discussed the conditions faced by drivers in the taxi industry. The

chapter provided a theoretical framework for the thesis, and also suggested the potential significance of the research by signalling the fact that there is little information available regarding the psychological health and well-being of taxi drivers, and the factors that may predict these health states. The next chapter will introduce the outcome measures in the proposed model (occupational stress, depression, anxiety and job-related affective well-being) and will discuss the impact that these illnesses have in the workplace in general and the transport industry in particular.

2.0 STRESS, DEPRESSION, ANXIETY AND WELL-BEING IN THE WORKPLACE

This research aims to explore the factors that impact on the psychological health and well-being of samples of ethnic majority and ethnic minority Brisbane taxi drivers. This chapter introduces the concepts of stress, depression, anxiety and well-being in a workplace setting. Each psychological health indicator will be covered in turn. For example, occupational stress will be defined initially, then current research on the impact of occupational stress on the workforce, and in the transport industry, will be examined. Research specifically concerning the psychological health and well-being of taxi drivers will then be discussed.

2.1 Occupational Stress

2.1.1 Definition of Occupational Stress

According to Kahn and Byosiere (1992, p. 573), the term "stress" derives from a Latin verb meaning to injure, molest or constrain. In modern times, the term has acquired multiple meanings and usages (Cooper et al., 2001; Cox, 1983; Kahn & Byosiere, 1992; Lazarus & Folkman, 1984). Most commonly, three kinds of definition are distinguished: stimulus, response and relational (see e.g., Buunk, De Jonge, Ybema & de Wolff, 1998; Cox, 1983; Derogatis & Coons, 1993). *Stimulus* definitions suggest that stress is a property of the environment; it is an external event, circumstance or force that poses a threat to the individual. The second category of definitions refers to stress as a biological, affective and/or behavioural *response* to the (external) stimulus. The third category incorporates various relational, interactive, transactional or person-environment conceptions of stress. As implied by these labels, definitions that fall within this third category emphasize the ongoing, dynamic relationship between the individual and the environment (Cooper et al., 2001). Lazarus and Folkman (1984), for example, define stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19). The emphasis in the definition by Lazarus and Folkman is upon the subjective, cognitively-mediated nature of stress.

This three-way categorical system is not accepted by all writers. For example, Mackay and Cooper (1987) and Kasl (1996b) discuss stress as an appraisal of an environmental condition, thereby drawing attention to the subjective nature of the phenomenon, and helping to distinguish such definitions from those that construe and measure stress more objectively. A

further set of definitions proposes that stress is a *state* of the organism. Karasek (1979; Karasek, Triantis & Chaudhry, 1982), for example, defines stress as a motivational state, a state of "potential energy" within the individual that may be either released into action or, if not so released, "may lead to adverse psychological consequences" (Karasek et al., p. 181).

Even this set of possibilities does not exhaust the range of definitions proposed. Since 1966, Lazarus has argued that the term "stress" should be used as *an organising concept* for understanding a wide range of phenomena of relevance to the process of adaptation. Under this conceptualisation, stress is "not a variable, but a rubric consisting of many variables and processes" (Lazarus & Folkman, 1984, p. 12). Over the past three decades, many writers (e.g., Beehr & Newman, 1978; Hart, Wearing & Headley, 1995; Karasek & Theorell, 1990; McGrath, 1976; see also Briner & Reynolds, 1999, p. 651) refer to stress as an umbrella term for a complex system of variables.

In this thesis, a definition of stress that falls within the second of the major categories described above is adopted. The term is used to refer to an unpleasant affective response. It is a specific psychological reaction, rather than a non-specific physiological response (cf. Selye, 1956, 1993). Stress is similar to anxiety, although compared with anxiety, stress is more likely to have a current environmental referent (Pearlin & Schooler, 1978). This definition is in accord with that adopted by several authors (e.g., King, Stanley & Burrows, 1987; Kyriacou, 1987; Kyriacou & Sutcliffe, 1979; Parker & De Cotiis, 1993; Semner, 1996; Smith, 2005; Taylor, 1999).

Contrary to the views of writers within the transactional tradition, stress is not defined as a person-environment relationship. Whilst such a relational definition has obvious appeal in encouraging a broad, systemic approach to the study of stress, the use of a narrower definition does not preclude such an approach. Indeed, the theoretical underpinning of this thesis is closely aligned with the transactional perspective, in particular its emphasis on the phenomenology of job incumbents' transactions with potential stressors, and the dynamic interactions that take place between people and their environments. Under the current definition and within the broad transactional perspective, stress results from an appraisal that one may not be able to deal effectively with a significant work demand, opportunity or constraint. It arises from a perception of high (environmental) demand and low (perceived) control, as per Karasek's (1979) model.

2.1.2 Occupational Stress in the Workplace

Chronic occupational job strain is regarded as both a serious public health concern and a major impediment to organisational success. In human terms, chronic job strain is associated with a range of physical (e.g., sleep deprivation), psychological (e.g., stress, depression), social (e.g., interpersonal conflict) and behavioural (e.g., alcohol and other drug abuse) health problems (Levi, 1996). For organisations, the psychological outcomes of job strain, such as occupational stress, can contribute to a number of outcomes which are critical to organisational success, including absenteeism, presenteeism, lost productivity, turnover, training new staff and rehabilitation costs.

Over the last twenty years, the escalating costs associated with workplace stress indicate an international trend among industrial countries (Karasek & Theorell, 1990; Shergold, 2007). For instance, in the United States the number of stress claims has trebled from 2007 to 2008, with 15 percent of all workers compensation claims being for stress. The cost to organisations of this level of occupational stress lies anywhere between 200 and 300 billion dollars per year as a result of high staff turnover, increased health and workers' compensation claims and decreased productivity (Wojcik, 1999). In addition, recent figures emanating from Britain have indicated that approximately 120,000 workers were absent from work due to occupational stress in 2007, costing the nation around 7 billion pounds in lost productivity, worker entitlements and health care (Sigman, 2007). A subsequent result of these factors is the loss of 40 million working days per year (Shergold, 2007).

The Canadian Compensation Board (2006) found that 60 percent of Canadian workers 'felt negative stress in the workplace', and 80 percent of this group stated that stress was adversely affecting their job performance and health. Workers between the ages of 25 and 44 years, as well as managers and health professionals, were identified as the groups that were more likely to lodge a stress claim. Four occupational groups showed raised rates of stress, namely teachers, welfare workers, other health professionals and transport industry workers. The stress rate among transport industry workers was particularly marked, being over four times the average (Canadian Compensation Board). In another study conducted by the Northwest Life Insurance Company (2001) in America, 35 percent of those interviewed said that their job was extremely or very stressful and 26 percent said that their job was the greatest stressor in their life. The study also found that the incidence of stress-related disabilities had doubled from 6 percent to 13 percent between 1991 and 2001.

In line with these trends, Australia has witnessed a significant rise in reports of occupational stress, in both the private and public sectors. In Australia, stress claims represented

5.5% of total workplace claims (*N* = 9,875) for the 2006/07 period (Australian Safety and Compensation Council, 2009). This is a significant increase from the 1997/98 stress claims, which represented 2.9% of all claims (*N* = 4,385). It has been suggested that this increase is due to greater demands on workers (e.g., multi-skilling, greater productivity) and better understanding and recognition of occupational stress as a workplace illness. Between 1998 and 2002 in Queensland, mental stress claims increased from a total of 13.1% of all disease claims to 40% of all disease claims, again recognising the increased awareness of occupational stress in the workplace. The average cost of a claim in Queensland was $17,249, over twice that of the next most expensive. A striking statistic is that the average duration of time off in Australia for psychological/stress claims is 96.1 days, compared with 28.9 days for other claims. In the transport industry in Australia, occupational stress claims accounted for 7% of total disease claims in 2007- an increase from 2.2% in 1998 (Australian Bureau of Statistics, 2008).

In researching the costs associated with workplace injuries, the direct costs, including weekly payments, medical and rehabilitation costs can be calculated readily. However, the indirect costs of workers' compensation are estimated to be between four to eight times greater than the direct costs (CCH Australia, 1990). Indirect costs for workplace injuries for employers include increased insurance premiums, lost productivity time, additional labour costs and costs involved with administering a claim. The CCH Australia report stated that workplace stress ultimately impacts on the community through the effect it has on family, unemployment, loss of prospects for further career development and the potential to create a general decline in quality of life (Foley, Gale & Gavenlock, 1995; Sarantakos, 1996).

Over the last decade occupational stress, regardless of whether a claim has been lodged or not, has become an issue of great concern. Where workplace matters once focused on the safety issues of physical working conditions (such as hazardous materials, noise, cleanliness, lighting and physical work overload), concern is now concentrated on the interaction of individual worker characteristics and environmental factors in the workplace in order to better understand the antecedents of occupational stress. This is particularly so in the transport industry. As has been seen, occupational stress is on the rise in industrialised nations, including Australia, which makes identifying factors that contribute to the development of occupational stress of critical importance to overall worker health.

2.1.3 Research on Occupational Stress in the Transport Industry

Professional drivers in general are exposed to a variety of potentially stressful situations while working. Davies and Debney (1989) proposed that driver stress can be expressed as an

emotional response (e.g., increased distress, anxiety), a physiological response (e.g., increased heart rate, increased cortisol excretion) or a behavioural response (e.g., stimulant use, unsafe driving). Research on driver stress in the transport industry, particularly for bus and truck drivers, has been extensive over the last three decades, and researchers have measured the emotional, physiological and behavioural stress responses of drivers using a number of different models in a diverse range of countries, including Australia.

Evans (1994) undertook a critical overview of research findings on urban bus drivers' health status, paying particular attention to aspects of the physical and psychosocial job environment that may cause stress and ill health. He found that the morbidity and mortality profile of urban bus drivers suggested a central etiological role of occupational stress in the psychological and physical health of the driver population. For example, researchers have found that coronary heart disease and gastrointestinal disease rates are elevated in urban bus drivers (e.g., Henry & Stephens, 1977) and also greater levels of psychological disturbance. For example, Duffy and McGoldrick (1990) found that 13% of an American bus operator sample scored in the range equivalent to hospitalised psychiatric patients for anxiety and depressive illnesses. Evans also notes studies which have revealed the underlying biological mechanisms involved with the stress reactions of urban bus drivers. For example, Winkleby and his colleagues (1992), in a large cross-sectional study of black and white male bus drivers in the San Francisco area, revealed elevated rates of hypertension among the bus drivers in comparison to several control groups, including a sample of data from the pre-employment physical of drivers eventually hired by the public transit district. Moreover, the extent of hypertension was directly related to years of service. Pikus and Tarranikova (1975) also found higher rates of hypertension among bus drivers in comparison to other occupational groups. A Norwegian study comparing male bus and truck drivers to industrial workers found similar trends (Hartvig & Midttun, 1983).

While the above studies reveal evidence of elevated sympathetic activation from chronic exposure to urban bus driving, other studies have reported larger than expected acute elevations in both cardiovascular and neuroendocrine activity on the job among city bus drivers. Evans, Palsane and Carrere (1987) found large elevations of systolic and diastolic blood pressure on the job among urban bus drivers in both the USA and in India. Furthermore, both Evans and his colleagues, and Aronsson and Rissler (1988), reported heightened elevations of neuroendocrine hormones (adrenaline, noradrenaline and cortisol) that are related to psychological stress. One final link in the argument tying occupational stress to ill health among urban bus drivers is provided in a series of studies by Mulders and his colleagues (Mulders et al., 1982; Mulders et al., 1988). These investigators have examined the psychophysiological stress profile of drivers in

relation to ill health. Experienced drivers (i.e., minimum of five years experience) were selected on the basis of high (> 5 health-related absences during the preceding year) versus low (< 2 absences) absenteeism rates. High absenteeism drivers exhibited significantly greater neuroendocrine reactivity on the job. Of additional interest is the fact that off-work resting levels of the neuroendocrine hormones were equivalent for the low vs. high absenteeism groups; only on-the-job elevations differed, indicating a link between the process of urban bus driving and occupational stress.

In contrast to the plethora of studies on the physical health of bus drivers, there are only a few that examine the link between occupational strain and the psychological health of the drivers. For example, Feickert and Forrester (1983), in a study of 289 UK bus drivers, found that the conflicting demands of urban bus driving resulted in elevated levels of tension, fatigue and mental overload in the drivers. Similar results were found in a study of 1,422 Swedish bus, train and tram drivers by Gardell and his colleagues (1982). De Haan et al. (1978), in their study of 1,252 Dutch bus drivers, indicated that the number of days drivers were absent correlated with levels of driver stress, as measured by the Driver Stress Inventory (DSI). This included feelings of irritation, fatigue, tension and difficulty relaxing after work. Meifort (1983) replicated these findings in a study of 600 German bus and tram drivers. Raggatt (1991) found a link between long driving hours, passenger attention, hours of sleep and driver stress symptoms (as measured by the DSI) in a sample of 93 Australian long-distance coach drivers. Raggatt was one of the few researchers who included individual characteristics (such as aggressive driving tendencies, risk-taking) as a correlate of driver stress in the bus industry. Finally, Rowland and his colleagues (2007) interviewed 227 Australian commercial drivers and found that aspects of the work environment (e.g., long hours, pressure to be on time, traffic congestion), relationships (e.g., family difficulties), societal expectations (e.g., risk-taking, competitiveness on the road) and individual characteristics (e.g., aggression) all contributed to elevated driver stress levels, as measured by the DSI.

Urban and long-distance bus drivers appear to have increased levels of occupational stress as a result of job overload, pressure and role conflicts, maladaptive coping strategies and specific driver characteristics (aggression, risk-taking). Stress has manifested itself in the form of physiological abnormalities (e.g., neuroendocrine hormone increases, cardiovascular and gastrointestinal disorders) and psychological symptoms, such as irritability, inability to relax and mental overload. As a flow-on effect, high absenteeism and turnover of drivers occurs. Research with truck drivers largely replicates these results. Carey (2005) reviewed 32 studies involving urban truck drivers and occupational stress outcomes over a 30-year period (1970-2000). She

investigated the antecedents of occupational stress for these drivers initially. Environmental factors leading to stress included long driving hours (81% of studies), time pressure (75% of studies), traffic congestion (69%), dealing with the public (65%), no chance to suggest work changes (60%), shift work (54%), role conflicts (45%), supervisor demands (40%), adhering to safety practices (35%), and pressure to work while sick (31% of studies). Social factors leading to stress outcomes in drivers included family problems (31% of studies), adjusting lifestyle to suit shift work (25%) and colleague relationships (24%). Individual characteristics that were correlated with elevated levels of stress in truck drivers included aggression (77% of studies), risk-taking (70%), dislike of driving (55%), proneness to fatigue (51%) and thrill-seeking tendencies (40%). These environmental, social and individual factors were consistently found to be related to driver stress irrespective of the research methodologies used.

As with bus drivers, various physiological and psychological stress outcomes for truck drivers were observed and reviewed by Carey. Studies by De Croon and his colleagues (2000, 2002, 2004) in particular highlight the physiological body reactions to stress. The researchers found that truck drivers tend to have elevated rates of cardiovascular and gastrointestinal disorders and increased levels of cortisol in urine as a result of the environmental job factors mentioned above. The drivers also had higher rates of absenteeism and turnover as a result of job stress. Musculoskeletal disorders were found by some researchers to be a direct result of occupational stress (e.g., De Croon et al., 2002; Hartley & Hassani, 1994; Orris et al., 1997). Only a few studies have investigated the psychological aspects of occupational stress in truck drivers. In a seminal study by Orris and his colleagues (1997), a cross-sectional survey of 317 commercial truck drivers across three US states was conducted. The researchers found that the drivers scored significantly above the US working population norm on all summary and individual scales derived from the SCL 90-R, indicating a substantial increase in psychological distress for this group. The group also perceived significantly more daily stressful events than the average working adult, and their sensitivity to these events was increased. Role overload, a component of the Occupational Stress Inventory, was the most consistent factor associated with symptoms of psychological distress in multiple regression analyses for this study. In an Australian study by Hartley and Hassani (1994), the environmental and individual factors associated with truck driver psychological stress were identified as driving aggression, dislike of driving, confidence in control, concentration level, intersection stress and driving imperturbability. Psychological symptoms in the sample of 345 truck drivers included irritation, difficulty relaxing, impatience and agitation. These psychological stress symptoms were also related to increased traffic violations by the truck driver sample.

Research has shown that bus and truck drivers, and other professional drivers, suffer from a variety of physiological and psychological symptoms of stress as a result of their occupation. A similar situation appears to be the case for taxi drivers also. In 1989, Ueda and his colleagues were at the forefront of research into taxi driver health. They performed two questionnaire studies (in 1989 and 1992) on 5,523 taxi drivers in Osaka and examined the health effects of taxi driving. The researchers stated that the rate of cardiovascular disorders, gastrointestinal disorders, sensory system disorders, musculoskeletal disorders and haemorrhoids was especially high when compared to the control occupational group. High psychological job demands (particularly shiftwork, work pressure, working alone, working with passengers) and low driver decision latitude were contributing factors to these results. Similar results were found by Gustavsson and his colleagues in 1996 in a Swedish sample of 4,189 taxi drivers. Their research found that occupational stress levels were increased in the driver sample and as a result, both psychological (agitation, irritation, trouble relaxing) and physical symptoms (in particular, cardiovascular and musculoskeletal disorders) of stress were increased in this sample. Similar results were found in a Danish study on taxi drivers by Tuchsen, Hannerz, Roepstorff and Krause (2006) and in two Vietnamese studies on taxi drivers by Chen, Chen, Chang and Christiani (2005) and Chen, Chang, Chang and Christiani (2005). None of these studies quantified the level of occupational stress in the taxi driver samples. This has been done with only one study, that of Berraho and his colleagues (2006), who found that, in a sample of 338 drivers in Fes, Morocco, 46.3% of drivers could be considered stressed, 27% of which could be considered severely stressed by their job.

The taxi industry around the world has seen a large number of ethnic minority drivers employed in the profession (Lillie-Blanton & Laveist, 1996). The reasons for this range from ease of employment to no qualifications required to non-discrimination by taxi employers. There is evidence that racial discrimination in employment can lead to high blood pressure (Krieger, 1990), cardiovascular disorders (Krieger & Sidney, 1996) and gastrointestinal disorders (Lillie-Blanton & Laveist, 1996). Even though the taxi industry has one of the highest proportions of ethnic minority employees when compared to other professions, there is only one study that has investigated the differing effects of job strain and racism on the stress levels of ethnic minority taxi drivers. Facey (2003) found that the apparent normality of visible minority drivers in the taxi industry did not negate racism or its effects. Facey suggested that more research is needed to expand and deepen our understanding of the relationship between ethnicity, work and health in precarious occupations such as taxi driving. An Australian study by Machin and De Souza (2004) found that approximately 28% of taxi drivers in the Brisbane metropolitan area had an

ethnic minority background, and according to the Black and White and Yellow taxi companies in Brisbane, this number appears to be increasing every year (Black and White Cabs, 2009; Yellow Cabs, 2009). Therefore, researching the impact of racism, economic exploitation and economic uncertainty on ethnic minority drivers in Brisbane is an important area of research.

2.2 Depression

2.2.1 Definition of Depression

Barber (1965) once described depression as "a mental state characterised by a pessimistic sense of inadequacy and a despondent lack of activity" (p. 44). Since then, depression has been variously defined by professional counsellors, medical doctors, psychologists, psychiatrists, pastors and Christian leaders, but a general definition of clinical depression is that it is a psychological disorder that affects an individual's mood changes, physical functions and social interactions (Bane, 2003).

Almost all academic understanding about the definition of depression is based on a medical model that assumes all depressive symptoms are fundamentally the presentation of an illness, and it is this medical definition of clinical depression that is adopted in this thesis. Doctors define a clinical depressive episode using very specific criteria, and disorders that include depressive episodes (e.g., major depressive disorder, dysthymia, bipolar disorder, schizoaffective disorder) all contain a number of core symptoms. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, 1994) describes the essential features of a major depressive episode as "a period of at least two weeks during which there is either depressed mood or the loss of interest or pleasure in nearly all activities. The individual must also experience at least four additional symptoms drawn from a list that includes changes in appetite or weight, sleep, and psychomotor activity; decreased energy; feelings of worthlessness or guilt; difficulty thinking, concentrating or making decisions; or recurrent thoughts of death or suicidal ideation, plans, or attempts" (p. 320). To count towards a major depressive episode, a symptom must either be newly present or must have clearly worsened compared with the individual's pre-episode status. The symptoms must persist for most of the day, nearly every day, for at least two consecutive weeks. The episode must be accompanied by clinically significant distress or impairment in social, occupational, or other important areas of functioning. For some individuals with milder episodes, functioning may appear to be normal, but requires markedly increased effort. Thus, a depressive episode consists of five different manifestations: emotional, cognitive, motivational, vegetative and physical, and delusional (Beck, 1967).

For the purposes of this research, the symptoms of a depressive episode will be measured, rather than specific thoughts and actions of an individual with a specific depressive disorder. Thus, somatic, behavioural, cognitive and emotional symptoms will all be represented in the questions related to a depression in this study.

2.2.2 Depression in the Workplace

Depressive disorders are among the most debilitating health problems worldwide. Diagnosable depressive disorders include major depressive disorder (MDD), dysthymic disorder, schizoaffective disorder, bipolar I and II disorders, and cyclothymic disorder. The World Health Organisation ranked MDD as the fourth most common disease in 1990, and MDD is expected to be the second most common disease by 2020, and to account for 15% of the disease burden in the world (Murray & Lopez, 1996). Although there has been growing awareness of the impact of depressive disorders on the population over the past two decades, its impact on the working population has only recently become of interest. Part of the new focus is based on the growing realisation that the number of disability claims for depressive and other mental disorders is increasing. For example, the Health Insurance Association of America 7 reports that between 1994 and 1999, such claims doubled (Dewa, Goering, Lin & Paterson, 2002).

Prevalence of depressive disorders in the working population has been reported by major developed countries as between 16.0% to 22.3% for lifetime prevalence, and between 6.2% to 8.4% in the 12 months before the samples were interviewed (e.g., Kessler, Merikangas & Wang, 2008; Melchior et al., 2007; Paterniti, Niedhammer, Lang & Consoli, 2002; Pikhart et al., 2004; Ylipaavalniemi et al., 2005). These figures compare with a lifetime prevalence of between 18.4% to 25.7% and a 12-month prevalence of between 6.0% (for males) and 9.0% (for females) in an Australian working population sample (LaMontagne, Keegel, Vallance, Ostry & Wolfe, 2008). Concordance between the Composite International Diagnostic Interview (CIDI) results and the Structured Clinical Interview for the DSM-IV results was high in these studies, arguing against bias in these estimates. This is an important result in light of recent assertion of critics that prevalence estimates, based on fully structured interviews in working samples, substantially over-estimate the prevalence of clinically significant depressive disorders (Kessler et al., 2008). An Australian study by LaMontagne and his colleagues (2008) examined the Victorian Job Stress Survey and other published literature (Nurminen & Karjalainen, 2001), and estimated that the overall job strain-population attributable risk (PAR) for depressive disorders in Australian males was 13.2% (95% CI 1.1, 28.1) and 17.2% for females (95% CI 1.5, 34.9). There was a clear gradient of increasing PAR with decreasing occupational skill level. The researchers also

found that estimates of job strain-attributable cases (21,437) versus 'mental stress' compensation claims (696) suggest that claims statistics underestimate job strain-attributable depression by roughly 30-fold.

Previous studies have found repeatedly that depression is one of the most costly health problems in the labour force, with two factors accounting for this consistent finding. First, depression is a commonly occurring disorder. Prevalence estimates are generally somewhat lower among working people than in the total population, presumably reflecting selection processes that interfere with chronically mentally ill people obtaining and retaining jobs. Second, depression appears to have substantial adverse effects on workplace functioning (Coryell et al., 1993; Wells et al., 1989). A number of excellent reviews of research document the evidence on this point (e.g., Bauer, Unutzer, Pincus & Lawson, 2002; Hirschfield et al., 2000; Simon, 2003). For example, the Epidemiologic Catchment Area study, the first large-scale (over 20,000 respondents) community epidemiological survey of mental disorders in the United States, found that MDD was associated with 27 times greater likelihood of work loss than among workers without a mental disorder, and that 44% of depressed workers reported that they missed one or more days of work for emotional problems in the prior 3 months (Kouzis & Eaton, 1994). Further, the National Co-morbidity Survey (Kessler & Frank, 1997), the first nationally representative community survey of mental disorders in the US, found that MDD was associated both with a significant elevation of sickness absence days and with a significant elevation of cutback days (days when the respondent was at work but performed poorly). The WHO Collaborative Study of Psychological Problems in General Health Care (Sartorius & Ustun, 1995), a survey of 25,000 primary care patients in 14 countries (including Australia), reported results that were generally consistent with the US results regarding sickness absence days (Ormel et al., 1994). It is important for corporations to recognise that these associations do not necessarily document a causal effect of depression, as the work impairment could be caused by some unmeasured third factor. However, consistent with a causal interpretation, experimental assignment to a depression treatment intervention has been shown to reduce this work impairment significantly (Wang et al., 2007).

Cost-of-illness (COI) studies have been carried out to estimate the workplace costs of depressive disorders. A review of COI studies was undertaken by Luppa and her colleagues in 2007. The costs considered included both direct treatment costs and the costs associated with decreased productive capacity. The researchers warned that COI studies suffer from the problem that the associations of the illnesses under investigation with work impairment are interpreted as due to causes of the illness on these outcomes, even though the associations are not necessarily

causal. The cost estimates in the depression COI studies examined by Luppa et al. were staggering. For example, Greenberg and his colleagues (2006) estimated that the economic costs of depressive illnesses were $53 billion each year in the US, with $33 billion of this total due to work impairment. Depression-related absenteeism was estimated to account for $24.5 billion of this total and depression-related impairment while at work (i.e., presenteeism) was estimated to account for $8.5 billion. An Australian study by Hawthorne and his colleagues (2003), on a sample of 3,010 employees, estimated the total direct costs of depressive illness in the workplace to be $2,489 per employee per year, with indirect costs totalling $8,368 per employee per year. The cost equated to approximately $6.4 billion per year in economic costs for both the employers and the insurance agencies to cover. To the extent that the putative costs are truly causal, which can only be determined definitively in controlled studies, they suggest that the potential to recoup lost work productivity would be substantial if effective treatments for depression were available.

Is developing initiatives to identify and treat depressive disorders a good financial investment for employers? Treating the illness simply to reduce human suffering and distress is probably not the primary concern of most employers. Support for enhanced treatment and benefit programs clearly must come from data that go beyond the simple analysis of direct treatment costs and lost work days. The most sophisticated approach combines data on medical costs, pharmacy costs and disability costs. Lost opportunity costs as well as substantial indirect costs must also be factored in. It is also clear that direct disability payments constitute only a fraction of the costs of workforce disruption. Additional and significant disability-related costs include hiring and training other employees, increased incidence of accidents, poor work performance and the effects on the morale of other workers. The industry rule of thumb is that for every $1 of disability claim paid out, there is an associated cost of $1.50 for workplace disruption (Goldberg & Steury, 2001). Hawthorne et al. (2003) believe that treating depressive illnesses in the workplace is worthwhile, although they do not feel that the evidence that savings exceed costs is totally convincing. In their review of some of the studies of direct and indirect costings, Hawthorne et al. concluded that the savings realised by treating depressive illnesses represent between 45% and 98% of the cost of treatment. These researchers highlight the importance of defining the methods by which costs are calculated, because measuring only direct costs may not provide sufficient support for investing in the treatment of workplace depression.

Clearly, the presence of depressive illnesses in the workplace is a serious concern and encompasses substantial costs to employers. In the taxi industry, the burden of depression could be underestimated due to drivers not completing compensation claims. The cost to the public

could be even worse, resulting in road fatalities. Taxi employers cannot ignore the impact of depressive illness on their employees if they wish to maintain a healthy, productive workforce into the future.

2.2.3 Research on Depression in the Transport Industry

Professional drivers in general are exposed to a variety of potentially stressful situations while working, and they express this strain in a variety of ways. Gulian, Matthews, Glendon, Davies, and Debney (1989) proposed that occupational strain can be expressed as a psychological response (e.g., increased stress, anxiety, depression), a physiological response (e.g., increased heart rate, increased cortisol excretion) or a behavioural response (e.g., stimulant use, unsafe driving). With regard to psychological responses, research specifically focusing on driver depression in the transport industry is scarce, with most studies reporting general psychological health indices rather than specific depressive calculations. However, over the last 20 years there have been a number of studies that have singled out depressive symptoms in drivers, the driving conditions that are correlated with depressive symptoms, and the impact of depression on the physical health, safety behaviour and accident rate of professional drivers.

Evans (1994) undertook a critical overview of research findings on bus drivers' health status, paying particular attention to aspects of the physical and psychosocial job environment that may cause job strain and ill health. He found that the morbidity and mortality profile of urban bus drivers suggested a central etiological role of job strain in the psychological health of the driver population. For example, Feickert and Forrester (1983), in a study of 289 UK urban bus drivers, found that the conflicting demands of driving were associated with an increase in depressive symptoms in the drivers. Similar results were found in a study of 1,422 Swedish urban bus, train and tram drivers by Gardell and his colleagues (1982). Duffy and McGoldrick (1990) found that 16% of an American long-distance bus operator sample scored in the range equivalent to hospitalised psychiatric patients for depressive illnesses. All of these drivers had encountered high job pressure, conflicting demands, role overload and low managerial support. Tse, Flin, and Mearns (2004), in a sample of 201 UK urban bus drivers, found that long hours, passenger conflict, role overload, high job demands and low control all contributed significantly to a four-fold increase in depressive symptoms (compared with a control sample) in drivers who had experienced these job conditions for as little as two years.

It has been established that driving conditions that include high job demands and low job control have been associated with an increase in depressive symptoms in urban and long-distance bus drivers. Several other studies have focused on the impact that depressive symptoms may

have on driver safety behaviour, accident rates, absenteeism and job turnover in bus drivers. For example, Yamada and his colleagues (2008), in a sample of 39 Japanese bus drivers, found that depressive symptoms were correlated with a decrease in safety behaviour by the drivers, which in turn led to an increase in passenger accidents while travelling. In a qualitative study of 15 Indian bus drivers, Dhar (2009) determined that an increase in depressive symptoms was associated with lack of concentration on the road, which was linked with increased near misses and accidents by the drivers involved. The study also found that drivers who were depressed were more fatigued, which led to an increase in accidents and near misses. Another study by Mello, Santana, Souza, Oliveira, Ventura, Stampi, and Tufik (2000), which included 400 Brazilian interstate bus drivers, found that depressive symptoms were correlated with an increase in sleep disturbances, which in turn was related to driving accidents and decreased safety behaviour. Absenteeism, intention to quit and job turnover, and their association with depressive symptoms in bus drivers, has been examined by just one study. Hilton, Scuffham, Sheridan, Cleary, and Whiteford (2008), in a sample of 36 long-distance bus drivers in the UK, concluded that an increase in depressive symptoms in the drivers correlated with higher absenteeism rates, higher job turnover rates and an increased intention to quit the occupation of bus driving permanently. Clearly, depressive symptoms have a significant impact on bus drivers' ability to perform their job successfully and safely.

Like urban and long-distance bus driver research, examination of depressive symptoms, their aetiology and consequent effects in truck drivers is limited. In a seminal study by Orris and his colleagues (1997), a cross-sectional survey of 317 commercial truck drivers across three US states was conducted. The researchers found that the drivers scored significantly above the US working population comparison norm when depressive symptoms were measured. Role overload and role conflict were the most consistent factors associated with symptoms of depression in multiple regression analyses for this study. In an Australian study by Hartley and Hassani (1994), the environmental and individual factors associated with truck driver depressive symptoms were identified as driving aggression, dislike of driving, confidence in control, concentration level, and intersection stress. The effects of increased depressive symptoms were also reported. Hartley and Hassani concluded that the safety behaviour of drivers was significantly affected when they were depressed, as was the accident rate, with a two-fold increase in the previous 12-month period. Another Australian study by Hilton, Staddon, Sheridan, and Whiteford (2009) examined the impact of depression on the driving performance of 1,324 heavy goods vehicle truck drivers. These researchers reported that depression had little effect on driver absenteeism rates or self-reported driving performance. However, severe and very severe depression was associated with

an increased odds ratio (OR = 4.5 and 5.0, respectively) for being involved in an accident or near miss in the previous 28 days. Given the number of heavy goods vehicle drivers and the prevalence of depression, this equated to 10,950 drivers with an increased statistical risk of accident or near miss. Another study of commercial truck drivers concentrated on the associations between depression and physical outcomes when driving. Tamrin and his colleagues (2007) examined the risk factors associated with lower back pain in 760 drivers from 11 trucking companies in Malaysia. They used the Profile of Mood States (POMS) to evaluate the mood states of drivers who complained of lower back pain. The researchers found that depression-dejection (1.047, 95% CI 1.023-1.072) was a significant risk factor leading to increased complaints of low back pain in these truck drivers. It appears from the research available that high job demands, low job control, individual characteristics and other environmental factors are all affecting the level of depressive symptoms reported in commercial and heavy goods vehicle truck drivers. These depressive symptoms, in turn, may be risk factors when considering lower back pain and other physical complaints by truck drivers. More research is needed to explore these aspects.

The effects of various job demands, job control, individual characteristics and environmental factors on the level of depressive symptoms in taxi drivers has not been studied extensively in Australia nor, indeed, worldwide. However, several studies have investigated the prevalence of depressive symptoms in various occupational groups, including taxi driving. Kawakami and Haratani (1999) investigated the prevalence of depression in a sample of 15,464 Japanese working individuals across 19 occupational groups and 215 specific occupations. They reported the incidence of depressive symptoms (as measured by the DASS-21) in taxi drivers for the year 1996-1997 to be 23% for males and 35% for female drivers. In a Chinese study by Yu et al. (2006), the incidence rate of depression in 2,123 male taxi drivers was 43% (as measured by a Chinese epidemiological depression scale). These researchers also reported that drivers with higher depressive symptoms scored higher in the categories of physical factors, role ambiguity, role conflict, job monotony, mental load, responsibility for passengers and absenteeism than other occupational groups. Eaton and his colleagues (1990), in a sample of 35,463 working individuals in the US, reported that the incidence of depression was 33% in the commercial transport industry, which included 921 taxi drivers. Similar results were found by Roberts and Lee (1993) in a sample of 5,679 US commercial drivers, where an incidence rate for depression was recorded as 37%. In 1998, Grosch and Murphy investigated occupational differences in depression and global health in a national sample of 40,675 US workers, and found that the commercial driving and taxi driving occupations had the highest incidence of depression (43%

and 41%, respectively) in the transport industry occupational group. More recently, Sanne and his colleagues (2003) examined occupational differences in levels of depression and anxiety in a Norwegian sample of 17,384 working individuals using the Hospital Anxiety and Depression scale (HADS). They found that the elementary occupational group, including taxi drivers, had an average score of 4.27 (95% CI, 3.86-4.68) on the depression scale of the HADS. This score topped the depression scores for all occupational groups. Finally, a Canadian study by Marchand (2007) examined the role of occupations and industries in explaining differences among workers reporting poor mental health, including depression, in a sample of 77,377 workers engaged in 139 occupations and 95 industries. Logistic regression analysis was used to identify differences in the odds of reporting poor mental health, adjusting for demographic factors. The prevalence of depression was estimated at 34% for commercial driving occupations, and the odds ratio for poor mental health was calculated as 1.64 (95% CI, 1.29-2.10) for the same occupational group. This ratio represents the third highest risk of reporting poor mental health in the sample of 139 occupations.

It is clear from these studies that the incidence of depression is higher in the transport industry, including taxi driving industry, than in other industries. However, no Australian studies have investigated the incidence of depression in a taxi driver sample, nor have any examined the association of depressive symptoms with various job-related factors such as job demands, job control, individual characteristics and organisational factors. The research in this thesis will investigate these two questions in an attempt to add to the literature on the subject in an Australian context.

2.3 Anxiety

2.3.1 Definition of Anxiety

Although different scientists have different theoretical views of the reasoning behind why anxiety exists, a simple definition of anxiety does exist. In essence, anxiety is a multi-system response to a perceived danger or threat (Franken, 1994). It reflects a combination of biochemical changes in the body, the individual's personal history and memory, and the social situation. It is a state of abnormal or exaggerated arousal to an internal or external event. In addition to these symptoms, anxiety is marked by an intense need to escape from the situation or the stimulus that provokes it. By definition, this response is out of proportion to any objective threat.

Although anxiety is related to fear, it is not the same thing. Fear is a direct, focused response to an immediate, specific threatening event or object, and the individual is consciously

aware of it. Anxiety, on the other hand, is often unfocused, vague, hard to pin down to a specific cause, and the individual is not consciously aware of the stimulus. The fear-producing stimulus is either not present or not immediately threatening, but in anticipation of danger, the same arousal, vigilance, physiologic preparedness, and negative affects and cognitions occur (Franken, 1994). Different types of internal and external factors or triggers act to produce the anxiety symptoms of panic disorder, agoraphobia, post traumatic stress disorder, specific phobias and generalised anxiety disorder.

In response to a perceived threat, with anxiety the human body responds in a number of different ways. According to the DSM-IV (1994), the somatic or physical symptoms of anxiety include headaches, dizziness or light-headedness, nausea and/or vomiting, diarrhoea, tingling, pale complexion, sweating, numbness, difficulty in breathing, and sensations of tightness in the chest, neck, shoulders, or hands. These symptoms are produced by the hormonal, muscular and cardiovascular reactions involved in the fight-or-flight reaction. The behavioural symptoms of anxiety include pacing, trembling, general restlessness, hyperventilation, pressured speech, hand wringing, or finger tapping. The cognitive symptoms of anxiety include recurrent or obsessive thoughts, feelings of doom, morbid or fear-inducing thoughts or ideas, and confusion, or inability to concentrate. There are also emotional responses. These include tension or nervousness, feeling 'hyper' or 'keyed up', and feelings of unreality, panic, or terror. An individual with anxiety can necessarily have many or few symptoms, depending on the nature of the triggering event (DSM-IV, 1994).

For the purposes of research in this thesis, the general symptoms of anxiety will be measured, rather than specific thoughts and actions of an individual with a specific anxiety disorder. Thus, somatic, behavioural, cognitive and emotional symptoms will all be represented in the questions related to anxiety in this study.

2.3.2 Anxiety in the Workplace

Anxiety disorders are common, chronic and crippling, and are one of the most debilitating health problems in the workplace (Murray & Lopez, 1996). Diagnosable anxiety disorders include panic disorder, agoraphobia, social phobia, generalised anxiety disorder (GAD), obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). Although there has been growing awareness of the impact of anxiety disorders on the general population over the past two decades, their impact on the working population has only recently become of interest. Part of this new focus is based on the growing realisation that the number of disability claims for anxiety and other mental disorders is increasing. For example, Dewa,

Goering, Lin, and Paterson (2002) and several health insurance companies reported that between 1994 and 1999, health disability claims for anxiety-related illness almost doubled.

A review of prevalence studies of anxiety disorders in the worldwide working population between 1980 and 2004 was conducted by Somers, Goldner, Waraich, and Hsu in 2006. These researchers found that prevalence of recorded anxiety disorders in the working population in major developed countries was between 18.0% and 26.3% for lifetime prevalence, and between 6.5% to 10.3% in the preceding 12 months (e.g., Kessler, Merikangas & Wang, 2008; Melchior et al., 2007; Paterniti, Niedhammer, Lang & Consoli, 2002; Pikhart et al., 2004; Ylipaavalniemi et al., 2005). This compares with a lifetime prevalence of between 18.4% to 25.7% and a 12-month prevalence of between 5.0% (for males) and 10.3% (for females) in an Australian working population sample (LaMontagne, Keegel, Vallance, Ostry & Wolfe, 2008). The prevalence of anxiety that may not meet the definitional thresholds for DSM-IV (1994) diagnoses in primary care practice settings may be even higher. Data from the Australian Bureau of Statistics (2008) indicates that lifetime prevalence for anxiety disorders is higher than either for mood disorders or substance abuse disorders.

As for depressive illness prevalence studies, Somers and his colleagues argued that concordance between the Composite International Diagnostic Interview (CIDI) results and the Structured Clinical Interview for the DSM-IV results was high in these anxiety studies, arguing against bias in these estimates. Such a result is important in light of recent assertions by critics that prevalence estimates such as these, based on fully structured interviews in working samples, substantially over-estimate the prevalence of clinically significant anxiety disorders (Kessler et al., 2008). An Australian study by LaMontagne and his colleagues (2008) examined the Victorian Job Stress Survey and other published literature (Nurminen & Karjalainen, 2001), and estimated that the overall job strain-population attributable risk (PAR) for anxiety disorders in Australian males was 11.5% for males (95% CI 1.1, 26.1) and 19.2% for females (95% CI 1.5, 36.3). The researchers also found that there was a clear gradient of increasing PAR with decreasing occupational skill level, with occupations requiring minimal skill levels (such as taxi driving) recording the highest PAR results for male and female working adults.

Previous studies (e.g., Kessler, Merikangas & Wang, 2008; Melchior et al., 2007; Paterniti et al., 2002) have found repeatedly that anxiety disorders are one of the most costly health problems in the labour force. Anxiety disorders are commonly occurring illnesses, yet prevalence estimates are generally somewhat lower among working people than in the total population, presumably reflecting selection processes that interfere with chronically mentally ill people obtaining and retaining jobs. Anxiety disorders also appear to have substantial adverse

effects on workplace functioning (Coryell et al., 1993; Wells et al., 1989). A number of recent reviews of research document the evidence on this point (e.g., Bauer, Unutzer, Pincus & Lawson, 2002; Hirschfield et al., 2000; Simon, 2003). For example, the Epidemiologic Catchment Area study, the first large-scale (over 20,000 respondents) community epidemiological survey of mental disorders in the United States, found that anxiety disorders were associated with a 23 times greater likelihood of decreased work productivity than among workers without a mental disorder, and that 34% of workers with one or more anxiety disorders reported that they missed one or more days of work for emotional problems in the previous 3 months (Kouzis & Eaton, 1994). Further, Kessler, Greenberg, Mickelson, Meneades, and Wang (2001) analysed data from the MacArthur Foundation Midlife Development in the United States (MIDUS) survey and found that 52.0% of individuals with panic disorder and 53.5% of individuals with GAD reported a work impairment in the previous 30 days, and that people with panic disorder and GAD lost 5.1 and 5.5 working days, respectively, in the previous 30 day period to either presenteeism or being absent from work altogether. The WHO Collaborative Study of Psychological Problems in General Health Care (Sartorius & Ustun, 1995), a survey of 25,00 primary care patients in 14 countries (including Australia), reported results that were generally consistent with the US results regarding sickness absence days for panic disorder and GAD (Ormel et al., 1994). It is important to recognise that these associations do not necessarily document a causal effect of anxiety disorders, as the work impairment could be caused by some unmeasured other factor. However, consistent with a causal interpretation, experimental assignment to an anxiety disorder treatment intervention has been shown to reduce this work impairment significantly (Wang et al., 2007).

Cost-of-illness (COI) studies have been carried out to estimate the workplace costs of anxiety disorders. As for depressive disorders, a review of COI studies was undertaken by Luppa and her colleagues in 2007. The costs considered included both direct treatment costs and the costs associated with decreased productive capacity. The researchers warned that COI studies suffer from the problem that the associations of the illnesses under investigation with work impairment are interpreted as due to causes of the illness on these outcomes, even though the associations are not necessarily causal. The cost estimates in the anxiety disorders COI studies examined by Luppa et al. were significant. For example, Greenberg and his colleagues (2006) estimated that the total economic costs of anxiety disorders were $46.6 billion each year in the US, with $28 billion of this total due to work impairment. Anxiety-related absenteeism was estimated to account for $22.3 billion of this total and anxiety-related impairment while at work (i.e., presenteeism) was estimated to account for $9.5 billion. An Australian study by Hawthorne

and his colleagues (2003), on a sample of 3,010 employees, estimated the total direct costs of anxiety disorders in the workplace to be $2,234 per employee per year, with indirect costs totalling $9,168 per employee per year. This equated to approximately $7.3 billion per year in economic costs for both the employers and the insurance agencies to cover. To the extent that these putative costs are truly causal, which can only be determined definitively in controlled studies, they suggest that the potential to recoup lost work productivity would be substantial if effective treatments for anxiety disorders were available.

As for depressive disorders, employers must think about whether developing initiatives to identify and treat anxiety disorders is a good financial investment. Support for enhanced treatment and benefit programs clearly must come from data that go beyond the simple analysis of direct treatment costs and lost work days. The most sophisticated approach combines data on medical costs, pharmacy costs and disability costs. Lost opportunity costs as well as substantial indirect costs must also be factored in. It is also clear that direct disability payments constitute only a fraction of the costs of workforce disruption: additional and significant disability-related costs include hiring and training other employees, increased incidence of accidents, poor work performance and the effects on the morale of other workers. As for depressive disorders, Hawthorne et al. (2003) believe that treating anxiety disorders in the workplace is worthwhile, although they do not feel that the evidence that savings exceed costs is completely finalised. In their review of some of the studies of direct and indirect costings, Hawthorne and his colleagues (2003) concluded that the savings realised by treating anxiety disorders represented between 30% and 82% of the cost of treatment. The researchers highlight the importance of defining the methods by which costs are calculated, because measuring only direct costs may not provide sufficient support for investing in the treatment of workplace anxiety.

Along with stress and depressive disorders, anxiety in the workplace is a serious concern and encompasses substantial costs to employers. In the taxi industry, the burden of anxiety disorders could be underestimated due to drivers not reporting their illness to employers or to health insurance organisations. The cost to the public could be even worse, resulting in poor taxi services and even road fatalities. Taxi employers cannot ignore the impact of anxiety disorders on their employees if they wish to maintain a healthy, productive workforce.

2.3.3 Research on Anxiety in the Transport Industry

With regard to psychological responses to job strain, research specifically focusing on driver anxiety in the transport industry is scarce, with most studies reporting general psychological health indices rather than specific anxiety calculations. However, over the last two

decades there have been a number of studies that have singled out anxiety symptoms in drivers, the driving conditions that are correlated with anxiety symptoms, and the impact of anxiety on the physical health, safety behaviour and accident rate of professional drivers. For example, Feickert and Forrester (1983), in a study of 289 UK urban bus drivers, found that the conflicting demands of driving was associated with an increase in anxiety symptoms in the drivers. Similar results were found in a study of 1,422 Swedish bus, train and tram drivers by Gardell and his colleagues (1982). Duffy and McGoldrick (1990) found that 19% of an American long-distance bus operator sample scored in the range equivalent to hospitalised psychiatric patients for anxiety-related illnesses. All of these drivers had encountered high job pressure, conflicting demands, role overload and low managerial support. As for depressive symptoms, Tse, Flin and Mearns (2004), in a sample of 201 UK urban bus drivers, found that long hours, passenger conflict, role overload, high job demands and low control all contributed significantly to a two-fold increase in anxiety symptoms (compared with a control sample) in drivers who had experienced these job conditions for less than five years.

It has been established that driving conditions that include high job demands and low job control have been associated with an increase in anxiety symptoms in urban and long-distance bus drivers. Several other studies have focused on the impact that anxiety symptoms may have on driver behaviour, accident rates, absenteeism and job turnover in bus drivers. For example, Yamada and his colleagues (2008), in a sample of 39 Japanese urban bus drivers, found that an increase in anxiety symptoms was correlated with a decrease in safety behaviour by the drivers, which in turn led to an increase in passenger accidents while travelling. In a qualitative study of 15 Indian urban bus drivers, Dhar (2009) determined that an increase in anxiety symptoms was associated with lack of concentration on the road, which was linked with increased near misses and accidents by the drivers involved. This study also found that drivers who were anxious were more fatigued, which led to an increase in accidents and near misses. Another study by Issever, Onen, Sabunco, and Altunkaynak (2002), which included 208 Turkish bus drivers, found that an increase in anxiety symptoms was correlated with an increase in sleep disturbances, which in turn was related to driving accidents and decreased safety behaviour. Absenteeism, intention to quit and job turnover, and their association with anxiety symptoms in bus drivers, have been examined by just one study. Hilton, Scuffham, Sheridan, Cleary, and Whiteford (2008), in a sample of 36 long-distance bus drivers in the UK, concluded that an increase in anxiety symptoms in the drivers correlated with higher absenteeism rates, higher job turnover rates and an increased intention to quit the occupation of bus driving. Clearly, anxiety symptoms have a significant impact on bus drivers' ability to perform their job successfully and safely.

Like urban and long-distance bus driver research, examination of anxiety symptoms, their aetiology and consequent effects in truck drivers is limited. In a major study by Orris and his colleagues (1998), a cross-sectional survey of 317 commercial truck drivers across three US states was conducted. The researchers found that the drivers scored significantly above the US working population comparison norm when anxiety symptoms were measured. Role overload and role conflict were the most consistent factors associated with symptoms of anxiety in multiple regression analyses for this study. In an Australian study by Hartley and Hassani (1994), the environmental and individual factors associated with truck driver anxiety symptoms were identified as driving aggression, confidence in control, concentration level and intersection stress. The effects of increased anxiety symptoms were also reported. Hartley and Hassani concluded that the safety behaviour of drivers was significantly affected when they were anxious, as was the accident rate, with a three-fold increase in the previous 12-month period.

It appears from the research available that high job demands, low job control, individual characteristics and other environmental factors are all affecting the level of anxiety symptoms reported in professional bus and truck drivers. The effects of various job demands, job control, individual characteristics and environmental factors on the level of anxiety symptoms in taxi drivers has not been studied extensively. However, as with depressive symptoms, several studies have investigated the incidence of anxiety symptoms in various occupational groups, including taxi driving. As well as depression, Kawakami and Haratani (1999) investigated the prevalence of anxiety symptoms in a sample of 15,464 Japanese working individuals across 19 occupational groups and 215 specific occupations. They reported the incidence of anxiety symptoms (as measured by the DASS-21) in taxi drivers for the year 1996-1997 to be 25% for males and 38% for female drivers. In a Chinese study by Yu et al. (2006), the incidence rate of anxiety in 2,123 male taxi drivers was 32% (as measured by a Chinese epidemiological anxiety scale). The researchers also reported that drivers with increased anxiety symptoms scored higher in the categories of physical ill health, role ambiguity, role conflict, job monotony, mental load, responsibility for passengers and absenteeism, than other occupational groups. Eaton and his colleagues (1990), in a sample of 35,463 working individuals in the US, reported that the incidence of anxiety disorders was 39% in the commercial transport industry, which included 921 taxi drivers. Similar results were found by Roberts and Lee (1993) in a sample of 5,679 US commercial drivers, where an incidence rate for anxiety disorders was recorded as 34%. In 1998, Grosch and Murphy investigated occupational differences in anxiety and global health in a national sample of 40,675 US workers, and found that the commercial driving and taxi driving occupations had the highest incidence of anxiety (35% and 38%, respectively) in the transport

industry occupational group. More recently, Sanne and his colleagues (2003) examined occupational differences in levels of depression and anxiety in a Norwegian sample of 17,384 working individuals using the Hospital Anxiety and Depression scale (HADS). They found that the elementary occupational group, including taxi drivers, had an average score of 4.38 (95% CI, 3.86-4.79) on the anxiety scale of the HADS. This score topped the anxiety scores for all occupational groups. Finally, a Canadian study by Marchand (2007) examined the role of occupations and industries in explaining differences among workers reporting poorer mental health, including anxiety, in a sample of 77,377 workers engaged in 139 occupations and 95 industries. Logistic regression analysis was used to identify differences in the odds of reporting poorer mental health, adjusting for demographic factors. The incidence of anxiety was estimated at 38% for commercial driving occupations, and the odds ratio for poorer mental health was calculated as 1.74 (95% CI, 1.49-2.18) for the same occupational group. This ratio represents the second highest risk of reporting poorer mental health in the sample of 139 occupations.

It is clear from these studies that the incidence of anxiety is higher in the transport industry, including taxi driving industry, than in other industries. However, no Australian studies have investigated the incidence of anxiety symptoms in a taxi driver sample, nor have any examined the correlation of anxiety symptoms with various job-related factors such as job demands, job control, individual characteristics and organisational factors. If the best interests of taxi drivers are to be safeguarded by employers, research must focus on factors that impact on the physical and psychological health of the drivers in order to create a healthier workplace for this profession.

2.4 Well-being

2.4.1 Definition of Well-being

According to Ryan and Deci (2001), the term “well-being” derives from a Latin term meaning good or satisfactory condition of existence. In modern times, the term has acquired multiple meanings and usages. Most commonly, three approaches are distinguished to define well-being: the needs approach; the eudaimonic approach; and the hedonistic approach.

The first approach defines well-being in terms of an individual’s basic and universal needs and to which extent an individual’s life meets these needs. The list of needs may include basic needs such as food and shelter or more advanced needs such as the need for social relationships and belonging (Baumeister & Leary, 1995), autonomy (Deci & Ryan, 1985), and meaning (Peterson, Park & Seligman, 2005). A critical examination of this approach from a psychological/normative perspective reveals some shortcomings of this approach (Sumner,

1996). For example, non-basic needs and values vary across individuals and cultures (Inglehart, 1997; Oishi, Schimmack, Diener & Suh, 1998; Oishi et al., 2005; Schwartz, 1992). Thus, the same level of fulfilment of a need may reflect different levels of well-being because fulfilment of a less important need has a weaker effect on well-being (Brunstein, 1993; Diener & Fujita, 1995; Michalos, 1985). A more sensible approach would therefore require different lists of needs for different individuals. Such an approach is not conducive to overall measurement of well-being for a research sample (Tiberius, 2004).

The second approach defines well-being in terms of the formulations of human development, existential challenges of life and positive functioning, otherwise known as psychological well-being. Extensive literature generated in the 1950's and 1960's addressed variations in definitions of optimal resolution of basic life challenges and positive functioning (see Ryff, 1985, for reviews). Psychologists interested in the full growth and development of the individual have articulated well-being constructs such as self-actualisation (Maslow, 1968), full functioning (Rogers, 1961), maturity (Allport, 1961), and individuation (Jung, 1933). Jahoda's (1958) criteria of positive mental health drew on many of these conceptualisations to offer a description of what it means to be psychologically healthy. These prior definitions of well-being, however, had little impact on empirical studies of well-being. Looking for the key points of convergence among the many definitions, Ryff (1989) suggested a definition of psychological well-being that distilled six psychological dimensions of challenged thriving. Each dimension of psychological well-being articulates different challenges individuals encounter as they strive to function positively (Ryff, 1989; Ryff & Keyes, 1995). That is, people attempt to feel good about themselves even while aware of their own limitations (self-acceptance). They also seek to develop and maintain warm and trusting interpersonal relationships (positive relations with others) and to shape their environment so as to meet personal needs and desires (environmental mastery). In sustaining individuality within a larger social context, people also seek a sense of self-determination and personal authority (autonomy). A vital endeavour is to find meaning in one's efforts and challenges (purpose in life). Lastly, making the most of one's talents and capacities (personal growth) is central to the definition of psychological well-being. While this definition of well-being is seemingly comprehensive, various writers have stated that it does not transcribe well to the occupational context (e.g., Bradbury & Welsh, 2004; Halliday & Gale, 2006; Whittle & Hughes, 2007).

The third approach to defining well-being relies on an individual's happiness (hedonism) and life satisfaction as distinguishing factors in the make-up of what is coined subjective well-being. Subjective well-being emerged in the late 1950's in the search for useful indicators of

quality of life to monitor social change and improve social policy (Land, 1975). As milestones in this literature, books by Andrews and Withey (1976) and Campbell, Converse, and Rodgers (1976) clarified that although people live in objectively defined environments, it is their subjectively defined worlds that they respond to, thus giving prominence to subjective well-being as a relevant index of people's life quality. Other influential volumes at the time (e.g., Bradburn, 1969; Cantril, 1965; Gurin, Veroff & Feld, 1960) emphasised life satisfaction and happiness as components of life quality. Thus, subjective well-being can be simply defined as people's evaluations of their lives and includes three components, namely a cognitive component, life satisfaction, and two affective (or happiness) components, the presence of positive affect (e.g., joy) and negative affect (e.g., distress). Life satisfaction can be defined as a cognitive judgment of one's life on the basis of his or her own set of criteria (Pavot & Diener, 1993) and is a judgmental, long-term assessment of one's life, whereas happiness is a reflection of pleasant and unpleasant affects in one's immediate experience. It is the positive and negative affect of an individual regarding his or her job that has interested occupational psychologists, and it is the affective components of subjective well-being that were taken as the definition of well-being in the present research. Thus, job-related affective well-being was the outcome measure in the proposed model of job strain.

2.4.2 Well-being in the Workplace

Health and well-being in the workplace have become common topics in the mainstream media (e.g., Coleman, 1997), in magazines (e.g., King, 1995; Neville, 1998) and, increasingly, in scholarly research journals (e.g., Briner, 1994; Cooper & Cartwright, 1994; Smith, Kaminstein & Makadok, 1995; Warr, 1990). Indeed, for a variety of reasons, the issue of workplace well-being should occupy a much more prominent niche in mainstream organisational research.

For one thing, an individual's experiences at work, be they physical, emotional, mental, or social in nature, affect the individual's well-being while he or she is in the workplace. In addition, these experiences also "spill over" into non-work domains. Workers spend about one-third of their waking hours at work, and don't necessarily leave the job behind when they leave the work site (Conrad, 1988). Indeed, the overlap between non-work and work has become a popular research area, with the recognition that a person's work and personal lives are not separate entities but, instead, interrelated and intertwined domains having reciprocal effects on each other (Caudron, 1997; Zedeck & Mosier, 1990). For example, work-related strain, combined with the stress of everyday life, can lead to detrimental outcomes, such as decreased

job and life satisfaction and other physical and emotional outcomes, as seen in the above literature on stress, anxiety and depression.

Second, workers' well-being should also be more important because of the growing awareness that other elements in the workplace pose risks for workers. For example, workplace characteristics ranging from health and safety practices by the organisation (Patterson, 1997), to work design issues (Hoke, 1997), can have major consequences for workers. Other potential threats for the taxi industry include increases in workplace aggression (e.g., Neuman & Baron, 1997; O'Leary-Kelly, Griffin & Glew, 1996), revenge by passengers and other drivers (e.g., Bies, Tripp & Kramer, 1997), as well as other forms of dysfunctional behaviour (Griffin, O'Leary-Kelly & Collins, 1998). Even the nature of the working relationship between workers and their bosses has been implicated in well-being and job satisfaction outcomes (Blanchard, 1993; Cooper & Cartwright, 1994; Hornstein, 1996), as have Type A behavioural tendencies as exhibited by supervisors (Ganster, Schaubroeck, Sime & Mayes, 1990).

Finally, well-being in the workplace is also important because of its consequences for workers. Researchers and managers have generally recognised that well-being, as with stress, depression and anxiety, can potentially affect both workers and organisations in negative ways. For example, workers experiencing job dissatisfaction and poor job-related affective well-being may be less productive, make lower quality decisions, be more prone to be absent from work (Boyd, 1997), make consistently diminishing overall contributions to the organisation (Price & Hooijberg, 1992), and they may quit. For the individual, emotional costs may also arise (Bourbeau, Brisson & Allaire, 1996; Cartwright & Cooper, 1993). The true breadth of consequences, not to mention their costs, to workers, organisations, and society in general are now becoming apparent. The media (e.g., Coleman, 1997), for example, have reported that job dissatisfaction and low job-related affective well-being are more common than most people believe, costing Australia at least as much as cancer or heart disease (when considered occupationally related).

Danna and Griffin (1999), in their review of health and well-being literature in the workplace, indicated that work setting (e.g., health and safety hazards), personality traits (e.g., type A tendencies, locus of control) and occupational strain indices (e.g., factors intrinsic to the job, relationships at work, organisational structure and climate) were all integral to the overall job satisfaction ratings and job-related affective well-being levels of workers in general. This research was supported by Sparks, Faragher, and Cooper (2001), who reported that the overall intrinsic job factors of job insecurity, working hours, work control and managerial style were important when measuring worker job satisfaction. These factors are also pertinent to the levels

of stress, depression and anxiety experienced by workers. It appears that there are multiple antecedents to overall job satisfaction and job-related affective well-being levels, and these antecedents are pertinent to the taxi industry.

In Australia, well-being, as measured by job satisfaction, varies with each occupation and job circumstances. However, Blanchflower and Oswald (2005), in their discussion paper, reported that, after surveying approximately 55,000 randomly sampled individuals from 35 nations, Australians had some of the lowest levels of job satisfaction in the world. Moreover, among a sub-sample of English-speaking nations, where a common language should help subjective measures to be reliable, Australians performed poorly in the overall level of job satisfaction. In addition, job satisfaction was reported by only 20% of a sample of professional drivers from around Australia. This is similar to that reported by Rose in 2003, who found that only 23% of UK bus and coach drivers were satisfied with their job. Some of the factors that contributed to this poor result included work pressure, role conflict, control on the job, poor safety standards and long work hours (Rose, 2003). While there are no statistics available for taxi drivers specifically, it seems reasonable to suggest that the level of job satisfaction reported by taxi drivers would be moderate to low when considering common job factors with bus and coach drivers.

It is clear from the research to date that numerous job-related and individual antecedents influence the well-being of workers, and that low job satisfaction and job-related well-being levels have consequences for both workers and the organisations they work for. It is important, however, to identify specific job factors that affect well-being in specific occupations. The identification of specific job factors would enable better interventions to be developed to improve the workplace environment in order to have more satisfied employees.

2.4.3 Research on Employee Well-being in the Transport Industry

Research on the well-being of professional drivers, particularly bus and truck drivers, has been extensive over the last twenty years. However, the meaning of well-being has been taken to mean physical health, psychological health or behavioural outcomes of job strain. For example, Tse, Flin, and Mearns (2006), in their review of fifty years of research on bus drivers, examined the physical (cardiovascular disease, gastrointestinal disorders, musculoskeletal problems, fatigue), psychological (depression, anxiety, post-traumatic disorder) and behavioural (substance abuse) consequences of job strain as their measures of overall driver well-being. Research specifically targeting job satisfaction and the job-related affective well-being of professional drivers, however, is relatively sparse. In fact, it is restricted to just a few studies.

In the Netherlands, a group of researchers has examined the role of job strain on job satisfaction and job turnover outcomes in samples of truck drivers. The first study, by De Croon, Blonk, de Zwart, Frings-Dresen, and Broersen (2000), examined the effects of job control, quantitative workload, and two occupation-specific job demands (physical demands and supervisor demands) on levels of fatigue and job dissatisfaction in a sample of 1,181 Dutch lorry drivers. They reported that high job demands, high quantitative workload and low job control all explained a significant amount of the variance in driver job dissatisfaction levels. The researchers concluded that the occupation-specific job demand-control model gave better insight into the relation between the psychosocial work environment and driver well-being. The second study, by De Croon, Sluiter, Blonk, Broersen, and Frings-Dresen (2004), examined the effects of job demands, job control and psychological strain (need for recovery after work and fatigue) on the job satisfaction level and job turnover rate of a sample of 820 Dutch truck drivers. As with the first study, high job demands and low job control explained a significant amount of the variance in job satisfaction levels, and they predicted both intraoccupational and interoccupational job turnover rates.

It is clear that job demands and job control both have an impact on the job satisfaction levels of truck drivers. In terms of the job-related affective well-being of professional drivers, there is an Australian study that investigates the effects of coping styles and other job factors on the well-being of coach drivers. Machin and Hoare (2008) sampled 159 long-distance coach drivers and investigated the role of driver coping styles in predicting the drivers' need for recovery, job-related affective well-being and physical symptoms. Machin and Hoare found that increased use of maladaptive coping styles (i.e., confrontive coping and emotion-focused coping) predicted a longer recovery time, negative job-related affective well-being and an increase in physical ill health symptoms in these drivers. This study appears to confirm that coping styles, particularly maladaptive coping styles, have an impact on the job-related well-being of professional drivers.

Research on the well-being of taxi drivers, in terms of job satisfaction or job-related affective well-being, has sadly taken a back seat to issues of driver safety and safety attitudes. In fact, there is only one study worldwide, and it is by the Australian researchers Machin and DeSouza (2004). Their study will be more closely examined in the next chapter, but essentially these researchers examined the effects of environmental, organisational and individual factors on the job-related well-being of a sample of Brisbane taxi drivers. While the results of their study are informative, clearly more research is needed in order to clarify which job-related factors have an impact on the job-related well-being levels of taxi drivers, both in Australia and overseas.

2.5 Chapter Summary

This chapter introduced the concepts of occupational stress, depression, anxiety and well-being from a general workplace perspective, as well as research on each of the concepts conducted in the transport industry. It is clear that occupational stress, depression and anxiety-related illnesses are a major concern for employers, not only from a staffing perspective, but from an overall organisational perspective. Employees who are stressed, depressed or anxious do not function at optimal levels, thus reducing the level and volume of work produced, and this effect flows through to the overall performance of the organisation. Research has identified workers in the transport industry as highly stressed, and they have above average levels of depression and anxiety-related illnesses. Subsequently, well-being is affected by these deficits. Research on these issues in the taxi industry is not well established, and more research is needed to clarify both the level of ill-health and the effects these illnesses have on daily work practices.

3.0 THE PSYCHOLOGICAL HEALTH AND WELL-BEING OF TAXI DRIVERS

Chapter one highlighted that the taxi industry, which is considered an essential service in today's society, has been the subject of little published research, and research on the psychological health status and job-related well-being of taxi drivers has only been examined by two studies. These two studies will be reviewed and the factors from these studies that predict the psychological health status and well-being of taxi drivers will be identified. Additional factors that have been identified in the occupational stress literature in general, and in the wider transport industry in particular, will be identified and discussed. Karasek's (1979) theory on occupational stress will then be examined as a possible model to predict the psychological health status and well-being of taxi drivers. Evidence that Karasek's model is not sufficiently comprehensive for specific work situations will then be discussed, and a new predictive model will be proposed. This proposed model will incorporate factors identified in the literature and factors identified in Karasek's model as important with respect to predicting the psychological health and well-being of taxi drivers. Definitions of the predictor variables included in the proposed model will then be introduced.

3.1 Psychological Health and Well-being Research on Taxi Drivers

As mentioned above, there have only been two studies that have investigated the psychological health and well-being of taxi drivers, and both studies are relatively recent.

The first study that examined the health effects of taxi driving was by Facey in 2003. This Canadian study investigated the relationship between work and health among ethnic minority taxi drivers in the Toronto metropolitan area. Approximately 80% of taxi drivers in Toronto were ethnic minority drivers. Data for the study included in-depth semi-structured interviews with 10 drivers and 5 industry informants, participant observation, and document analysis. Participants were recruited using snowball referral techniques, direct contact, and information flyers. Participants were all male, aged 24 to 56 years, of East Indian, Afro-Caribbean and African descent. Observations occurred at taxi ranks in downtown Toronto, and at several meetings and workshops. Interviews were 45 minutes to 2 hours long and were conducted in public places. Interviews were audio-taped, transcribed, coded, and analysed thematically. The overall research was guided by the principles of grounded theory. The researcher commented that trustworthiness was ensured by adopting an 'intense methodological

awareness'; i.e., a systematic and self-conscious approach to study design, data collection and interpretation.

The data in the Canadian study suggested that factors such as the social and organisational characteristics of taxi work, racism/discrimination, and their unfavourable socioeconomic position constituted threats to the health of ethnic minority drivers. The constant pressure to find a fare, the pressure of long shifts, the vagaries of customer demand, the drivers' economic needs and the inevitability of accepting risky passengers were all factors that were reported to lead to increased stress, depression and feelings of powerlessness in the drivers. Facey (2003) also found that drivers became fatigued and engaged in risky driving behaviours in order to mitigate these job characteristics. Racism, in particular racial discrimination, was found to be a common threat against these drivers. Taxi owners were found to exploit the drivers by increasing lease fees and charges, and passengers chose not to take a taxi that was driven by a 'foreign driver'. The drivers' perceptions of the immutability of racial discrimination appeared to engender increased stress levels, anxiety, and feelings of helplessness, hopelessness, and a lack of control. Finally, all of the interviewed ethnic minority drivers were unwilling participants in the taxi business (as a result of lack of Canadian job experience, lack of financial resources, language barriers, and credentialism) because of their socioeconomic position. This situation appeared to increase their stress levels, they reported being anxious because they may not earn enough to support their families, they reportedly were depressed because they could do nothing about the type of job they accepted, and they were angry at not being sufficiently recognised as qualified professionals.

The findings from this study support the view that taxi driving as a profession is demanding, both from an organisational and socioeconomic perspective. The ethnic minority drivers also had to deal with racial discrimination in the form of loss of fares and violence from passengers. These factors together created stress, anxiety, depression and a lack of control among the drivers. Since there has been no other study that examines these factors and their effects on psychological health of taxi drivers, more research is needed to confirm these findings in ethnic minority taxi driver populations around the world.

The second study, by Machin and De Souza in 2004, aimed to take an integrative approach to investigating the relative and combined influence of work environment, individual, and organisational factors on taxi drivers' physical health, affective well-being, and unsafe driving behaviour. Specifically, the researchers investigated whether hazards in the work environment, drivers' perceptions of management's commitment to health and safety, risk-taking perceptions and driver aggression, were together able to predict physical symptoms, job-related

affective well-being, and unsafe behaviour of taxi drivers, with the aim of developing an integrated model of taxi driver health outcomes and safety behaviour. This Australian research was somewhat exploratory in that there was empirical support for including each variable in the model, and yet all of the variables had not yet been examined together in any one model.

A total of 91 taxi drivers from the Black and White and Yellow taxi companies (the only two companies in Brisbane) were recruited from taxi ranks in the Brisbane metropolitan area using a convenience sample technique. Each driver completed a safety survey in the presence of one of the researchers. The survey included demographic and work-related questions (hours of work, age, gender, etc.), questions relating to management's commitment to workplace health and safety (questions taken from a survey tool developed by the Health and Safety Executive, 1997), aggression questions using the Aggression Questionnaire by Buss and Perry (1992), perceptions of risk-taking (questions taken from a scale developed by Dalziel and Job, 1997a), questions on workplace hazards specific to the job of taxi driving (questions taken from a survey developed by Haines, 1997). The outcome variables were unsafe behaviour (questions taken from Dalziel and Job, 1997a), affective well-being (using the Job-Related Affective Well-being Scale developed by Van Katwyk, Fox, Spector, and Kelloway, 2000), and physical symptoms (using the Physical Symptoms Inventory developed by Spector and Jex, 1998). The majority of the participants were male (94.5%), aged 18 and upwards, and approximately 28% of participants were from non-English speaking backgrounds (i.e., ethnic minority drivers).

The data from the survey were examined using multiple regression and path analysis to model the relationships between the predictor variables and each outcome variable separately. The results of regressing affective well-being on the four predictors showed that 27.6% of the variance in affective well-being was accounted for, with aggression, hazards, and management's commitment to health and safety all having significant path coefficients. Risk-taking was not a significant predictor of well-being in this study, but was a predictor of physical health and safety behaviour. The results of regressing physical and somatic symptoms on the predictors showed that 16.0% of the variance in the amount of physical symptoms of ill-health was accounted for, with hazards and risk-taking having significant path coefficients.

Although the sample size was small and the researchers used a cross-sectional design which meant that causality could not be implied, the regression and path analyses did highlight the combined ability of organisational, individual and work environmental factors to predict a sizable proportion of the variance in taxi driver safety behaviour, physical symptoms of ill-health and job-related affective well-being. However, other important variables may have been omitted from the model, and the relationships between the predictor variables and the outcome variables

have not been validated in an independent sample, so the results must be interpreted with caution. Whether the model was valid for ethnic majority and ethnic minority drivers separately was also not explored, even though ethnic minority drivers made up almost one third of the driver sample. Overall, this study by Machin and De Souza (2004) extended the current trend for integrative research into predictors of health and safety for an occupation that requires a greater range of perspectives and innovative strategies for improving taxi drivers' health and safety, and subsequently the public's safety.

3.2 Other Factors that may Impact on the Psychological Health and Well-being of Taxi Drivers

From the previous two studies, it appears that driver aggression, risk-taking and management's commitment to workplace health and safety are all important factors when considering the physical health and affective well-being of taxi drivers. The additional factors of economic exploitation, socioeconomic status and racial discrimination are faced by ethnic minority taxi drivers, and these factors affect their psychological health status and degree of occupational control. Therefore, all of these factors may also be important predictors of the psychological health of taxi drivers. Research in the wider literature, and research in the wider transport industry, on occupational stress and well-being suggests that three additional factors not included in these two studies also influence the level of stress, depression and anxiety, and the level of well-being, of workers in this industry. The first factor is the type of coping strategy employed in stressful driving situations. The second and third factors of psychological job demands and job control, respectively, are integral to the job demand-control model developed by Karasek in 1979. These three factors will now be reviewed and research supporting their importance for predicting levels of occupational stress and well-being will be explored.

3.2.1 Research on Coping Strategies in the Transport Industry

Coping with the pressures of driving professionally has been a constant area of research over the last three decades. Research in this area can be divided into two streams. In the 1980's and 1990's, most research concentrated on the behavioural aspects of coping. Studies investigated the strategies used to cope with driver fatigue and the physical demands of the profession. For example, a seminal study by Thompson and Smith (1986) interviewed 350 long distance truck drivers in the UK to ascertain their reactions to stress, particularly fatigue. They reported that the drivers generally coped by using stimulants such as caffeine and illegal stimulants to prolong their driving times. They also coped by driving more aggressively and

taking more risks on the road. Other truck driver studies have confirmed these results (e.g., Green & Jones, 1987; Heinke & Yates, 1986; Reginald & Tate, 1994). Coach drivers have also been extensively studied in the area of stimulant usage. A major study by Harriott and Damien (1995) investigated the coping behaviours of 1,023 long distance coach drivers in the Netherlands in relation to fatigue and physical demands. They reported that stimulant use was increased, risky driving styles were employed more often and that pain killing injections were used to minimise the physical pain of driving in a set position for long periods of time.

Other studies have found similar results. For example, Tyme and Folks (1997) interviewed 569 coach drivers in the USA regarding their use of stimulants to cope with stress while driving. Most of the drivers described a regular routine of taking legal and illegal stimulants to combat fatigue, traffic jams and issues with passengers. A study by Singh and Singh (1998) on a sample of 467 Indian coach drivers found that drivers coped with stress and fatigue by taking more risks on the road, by smoking more often while driving and by drinking alcohol during regulated stop periods. These behaviours were also employed to combat the physical demands of the profession. The only published study to investigate the behavioural coping styles of taxi drivers in relation to stress and physical demands was conducted by Harrison and Demes in New Zealand in 1995. These researchers interviewed 239 urban taxi drivers concerning their usual coping responses to fatigue and found that most drivers took stimulants, ate more often, listened to loud music and they took more risks on the road than usual. In response to physical demands, the taxi drivers, like some coach drivers, reported ingesting pain killers to minimise discomfort, and they drank alcohol on the job to cope with musculoskeletal pain.

Studies examining the behavioural measures used to cope with stress while driving have elicited some important results. However, the research did not explore the vital cognitive aspects of the coping process. Researchers in the 1990's and 2000's have endeavoured to address this deficit by concentrating on the cognitive strategies used by professional drivers in an attempt to reduce stress while driving. Virtually all the research undertaken during this period has relied on two measures of coping: the Ways of Coping Questionnaire (WCQ)(Lazarus et al., 1988) and the Driver Coping Questionnaire (DCQ)(Matthews et al., 1996). Briefly, the Ways of Coping Questionnaire was developed by the stress and coping research group of Lazarus in 1988 and is based on the transactional model that suggests coping has two main functions: problem-focused coping and emotion-focused regulation. The WCQ has eight scales: Confrontive coping; Distancing; Self-controlling; Seeking social support; Accepting responsibility; Escape-avoidance; Planful problem-solving; and Positive reappraisal. The WCQ was developed to apply

to any situation that required a coping strategy to be utilised in a situation of stress. Transport industry researchers in the early 1990's utilised this questionnaire to examine the coping patterns of professional drivers. One example of such research is a seminal study by Underling and Green (1991), who assessed the coping strategies, and their effects on physical health, in a sample of 634 UK truck drivers. They found that planful problem-solving and positive reappraisal strategies were used by the drivers when the stress situation was controllable or boring, and physical health was not affected to any significant degree. Emotion-focused coping strategies, in particular confrontive coping, distancing and escape-avoidance, were used when the situation was not controllable or was dangerous. The researchers reported that these emotion-focused strategies were significantly correlated with negative aspects of the drivers' physical health, including musculoskeletal pain, heart disorders and gastrointestinal disorders. These results were replicated in a number of other studies involving truck drivers (e.g., Aspen & Mortimer, 1992; Stern & Vierling, 1994; Turner & Heath, 1995).

Urban bus drivers displayed the same coping tendencies as truck drivers. For example, Sayeth and Swan (1993) examined the coping strategies used by a sample of 566 UK urban bus drivers in a number of different driving scenarios. They reported that problem-focused coping and reappraisal strategies were utilised when the scenario was controllable or predictable, and these strategies were positively associated with good physical health and positive well-being. Emotion-focused cognitive coping styles, in particular confrontive coping and escape-avoidance, were utilised when the situation was uncontrollable or extremely stressful, or involved passenger conflict. These coping strategies affected the drivers' physical health outcomes and their job-related well-being. These findings have also been found in samples of long distance coach drivers (e.g., Miner & Hynes, 1996; Payne, Bynes, Green & Heath, 1991), fleet drivers (e.g., Abel, Marx & Yates, 1994; Dean, Bain, King & Redden, 1995) and train drivers (e.g., Forsyth, Winter & Tern, 1996; Heath, Mandrell & Long, 1993; Uttern & Deasen, 1994).

In 1996, Matthews and his colleagues refined the WCQ and developed the Driver Coping Questionnaire (DCQ). The DCQ, based on the transactional model of stress and coping, assesses cognitive reactions specifically related to driving and asks respondents how they try to deal with stress in these situations. The DCQ has five scales: Problem-focused coping; Reappraisal; Confrontive coping; Avoidance; and Emotion-focused coping. Adaptive (i.e., problem-focused coping and reappraisal) and maladaptive coping scores (i.e., confrontive coping, avoidance and emotion-focused coping) can also be calculated for research purposes.

Most research in the transport industry from the mid-1990's onwards has utilised the DCQ to examine the coping strategies of professional drivers. For example, Lingstrom (1997)

studied the coping styles of 763 Dutch long-distance coach drivers and found that 67% of drivers utilised adaptive coping strategies when the stressful situation was controllable or routine, and 55% used more maladaptive strategies when the situation was uncontrollable or particularly stressful. The use of these maladaptive strategies had an impact on the drivers' physical health over the long term. These results, particularly the effects on physical health, have been replicated with samples of long-distance coach drivers in the USA, Canada, Europe and the UK (e.g., Faulkner, 2001; Hadlee, 2000; Jones, Jones & Damon, 2004; Long & Vines, 2005; Thackett & Yates, 2002).

The coping styles of urban bus drivers have also been examined around the world in recent years. For example, Tyne, Malcolm, and Sater (2002) used the DCQ to examine the coping styles of 134 bus drivers in the USA and found that, like long-distance coach drivers, adaptive coping styles were prominent in situations where stress was controllable and more routine, whereas maladaptive strategies were used when the situation was particularly stressful, involved aggressive passenger behaviour or when the situation was uncontrollable. There was a significant negative correlation between the use of maladaptive coping strategies and physical health and driver job satisfaction in this study. In Greece in 2006, Kontogiannis examined the relationship between bus driver coping strategies, traffic accidents and physical health and found that the use of confrontive coping and emotion-focused coping strategies predicted an increase in the number of traffic accidents and the reduced physical health of drivers. These results, particularly the use of confrontive coping and emotion-focused coping strategies, have been replicated in other studies in the USA (e.g., Boin, Mines & Fiens, 2005), UK (e.g., Faulkner & Heath, 2003; Games & Gotham, 2002), Scandinavia (e.g., Lingstrom & Tomlinson, 2002; Yung & Bjorn, 2003) and Europe (e.g., Hanson, Manes & Jones, 2002; King, Ling & Yates, 2005; Manson, Heath & Feather, 2004). In contrast, several studies of urban bus drivers in India have found that, when driving situations become particularly stressful, drivers utilise avoidant coping and emotion-focused coping strategies, rather than confrontive coping, to cope with the event, and that these strategies had a significant negative association with physical health and job satisfaction (e.g., Singh & Damon, 2003; Singh & Gubta, 2002; Talik, Singh & Yates, 2006; Yates, Singh & Talik, 2004). These results may be significant for the Brisbane taxi driver industry, which has a large percentage of Indian drivers and drivers from middle-eastern countries.

In Australia, research on the coping styles of professional drivers, using the DCQ, has been very limited and has concentrated on coach and bus drivers. Machin and Hoare (2008) sampled 159 bus drivers and investigated the role of driver coping styles in predicting the

drivers' need for recovery, job-related well-being and physical symptoms. These researchers found that increased use of maladaptive coping styles (i.e., confrontive coping and emotion-focused coping), after controlling for workload, predicted a longer recovery time, a decrease in job-related well-being and an increase in physical ill health symptoms in these drivers.

From the above discussion, it appears that cognitive coping strategies are important when truck, coach and urban bus drivers are dealing with stressful driving situations. The type of strategy used has been shown to affect drivers' physical health and level of job-related well-being. Research has indicated that adaptive coping styles (i.e., task-focused coping, reappraisal) were utilised when the stressful situation was more routine and easily controlled. Maladaptive coping styles (i.e., avoidance, confrontive coping, emotion-focused coping) were used more often when the situation involved conflict with passengers or the situation was not easily controlled by the driver, and it was these coping strategies that were linked to physical health problems and a low level of job-related well-being in the drivers. Taxi drivers face most of the same stressful driving situations that other professional drivers face, so it is reasonable to suggest that both adaptive and maladaptive coping strategies will be utilised to try and deal with such situations. It is also reasonable to suggest that taxi drivers' psychological health and job-related affective well-being will be affected by the use of maladaptive coping strategies. It therefore is important to include coping strategies in any model that predicts the psychological health and job-related well-being of taxi drivers.

3.3 The Role of Job Demands and Job Control in the Occupational Stress Literature

Since the 1960's, researchers have presented different theories to explain the determinants of workplace stress, psychological illness and job-related well-being. Some theories emphasise personal characteristics (e.g., Friedman & Rosenman, 1974; Kobasa, 1979); others emphasise aspects of the work environment (e.g., Theorell et al., 1998); whilst a majority view stress, anxiety and depression as a function of the interaction between person and environment (e.g., Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Edwards, Caplan & Van Harrison, 1998; Siegrist, 1996). A clear example of the approach that emphasizes work environmental causes of psychological ill-health and diminished well-being is Karasek's (1979) job demand-control model of job strain. The job demand-control model has perhaps been the most important anchoring point for research on the situational impact of work characteristics on employee health and well-being during the past three decades (Van der Doef & Maes, 1999), and from this research it appears that the environmental factors of job demands and job control are indeed

important job characteristics to include in any model that attempts to predict the psychological health and well-being of employees.

3.3.1 Definition of Job Demands

The concept of job demands gained prominence in the work stress literature during the 1970's (Caplan et al., 1975; Karasek, 1979; Payne, 1979). Karasek defined job demands as a sub-set of all potential work stressors, especially "psychological stressors involved in accomplishing the work load, stressors related to unexpected tasks and stressors of job-related personal conflict" (p. 291). Karasek (1997b) referred to "the demands of modern workplaces such as the intensity of output per hour, time pressure, concentration, and social pressures" (p. 57). Excluded from Karasek's definitions are stressors that relate to (a) physical tasks and hazards, (b) threatened loss of a job or career prospects, and (c) the exercise of intellectual skill or decision authority. Thus, Karasek's conceptualisation is closely related to task requirements per unit of time, and his operationalisation is heavily weighted towards quantitative (over)load. Broadly similar definitions of job demands are given by Barnett and Brennan (1995), Parkes (1996), Melamed, Kushnir, and Meir (1991), Payne (1979), and Demerouti et al. (2001).

Consistent with these past definitions, demands are defined here as a subset of all potential work stressors, particularly those pertaining to the volume, pace, complexity, method and/or work context of one's work. Demands include general and specific events that occur at work, as well as the psychosocial conditions of this work, both as currently experienced and as accumulated over time. Stressors that fall outside this conceptualisation include a failure to receive desired rewards (e.g., a lack of adequate recognition, pay or promotional opportunities), as well as the physical stressors and hazards encountered as part of the job.

3.3.2 Definition of Job Control

Essentially, control refers to the extent to which an agent has the power to influence one or more events or outcomes. The term has been used in a wide variety of psychological theories and research studies, and has been conceptualised, operationalised and labelled in many ways (e.g., Averill, 1973; Bandura, 1997; Carayon, 1993; Carayon & Zijlstra, 1999; Frese, 1989; Ganster, 1989; Johnson, 1989; Skinner, 1996; Troup & Dewe, 2002). Indeed, Skinner (1996) listed over 100 control-related constructs from the psychology literature. These vary on a number of dimensions: broad versus narrow; retrospective versus prospective; stable versus unstable; objective versus subjective; personal (internal) versus situational (external); individual versus collective, and so on.

A key distinction is between conceptualisation of objective (actual) job control and subjective (perceived) job control. Within organisational contexts, objective control can take a variety of forms, such as participative management styles, autonomous work groups, and flexible work schedules (e.g., Evans & Fischer, 1992; Pearson, 1992). The presence of objective control does not, however, guarantee that the individuals involved feel "in control". Most authorities in the field (e.g., Averill, 1973; Burger, 1989; Skinner, 1996) agree that perceived control is a more powerful predictor of human responses than is objective control. Thus, as Langer (cited in Skinner, 1996, p. 551) has argued, objectively losing or gaining control will only have psychological significance if the person recognizes the loss or gain.

Skinner (1996) maintains that there exists a central or prototype control construct. She believes that personal control "involves the self as agent, the self's actions or behaviours as the means, and the effected change in the social or physical environment as the outcome" (p. 558). Similarly, Greenberger, Strasser, Cummings, and Dunham (1989), and Carayon and Zijlstra (1999), conceive of control as a psychological construct reflecting an individual's belief in his/her ability to effect change, in a desired direction, in the environment. The conceptualisations of job control as an agent-ends phenomenon is consistent with that adopted in the research in this thesis. As used here, job control refers to individuals' perceptions of their current, personal capacity to influence the physical, task and social dimensions of the work environment. Control is a subjective phenomenon, and as such may not reflect reality.

3.3.3 The Job Demand-Control Model Explained

Robert Karasek is a North American scholar with a background in industrial sociology and epidemiology. In 1979, he wrote an influential paper entitled *Job demands, job decision latitude and mental strain: Implications for job redesign* that examined the effects of job demands and control on psychosocial strain. Central to this paper was the argument "that physiological strain results not from a single aspect of the work environment, but from the joint effects of the demands of a work situation and the range of decision-making freedom (discretion) available to the worker facing those demands" (p. 287). According to Karasek, job strain results from high psychological job demands and low levels of decision latitude or job control. Work demands place the individual in a motivated state of "strain" and, if nothing can be done about this state because of a lack of job control, the unreleased strain energy has adverse effects upon the individual's health. For Karasek, physiological and psychological symptoms have their origin in the accumulation of this unused residual strain. Conversely, workers who possess high levels

of control over the demands of their jobs are able to channel their energies in active and constructive ways, thereby minimising strain.

Ideally, Karasek (1979) argued, high levels of decision latitude should accompany demanding jobs: authority should be commensurate with responsibility. In practice, this is often not the case, and, as a consequence, job strain occurs in proportion to "the excess of demands over decision latitude" (p. 288). He dichotomised the demands and decision latitude variables to identify four job types, and offered a diagram similar to Figure 3.1 to represent his core job strain model. Jobs that are characterized by high demands and low decision latitude are termed "high strain" jobs. This is known as the "strain hypothesis".

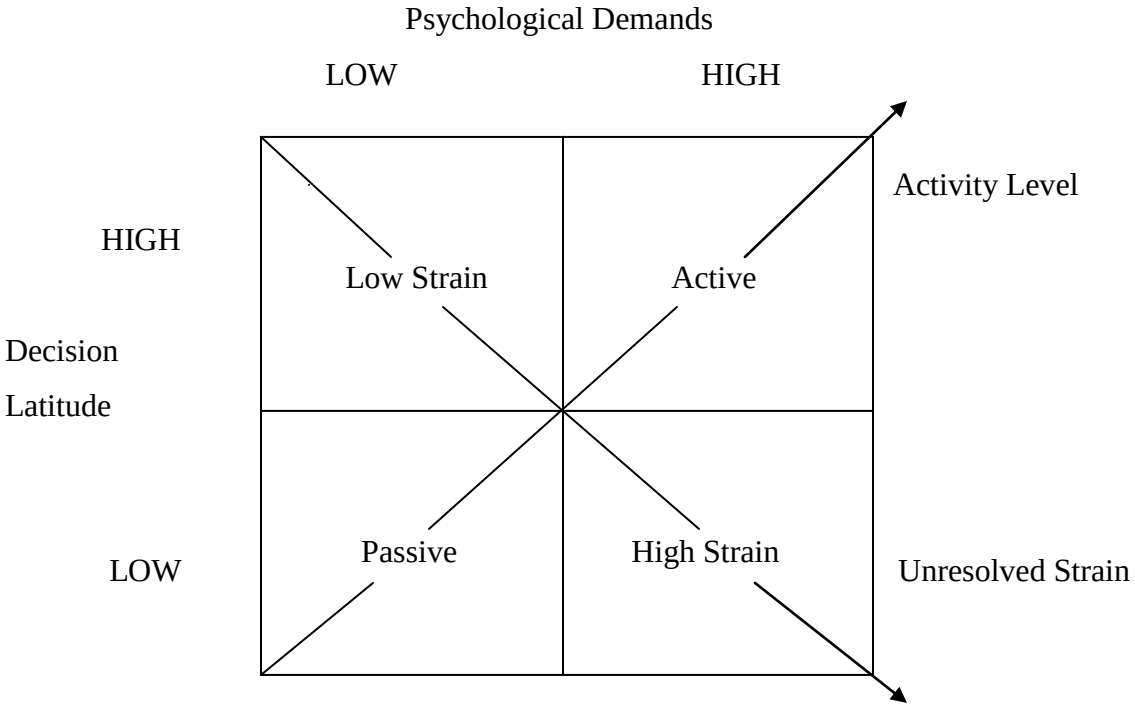

Figure 3.1 Karasek's (1979) core job strain model.

The model includes a second theoretical prediction involving the diagonal running from passive to active jobs. Positions along this diagonal are hypothesised to influence levels of activity, participation and learning rather than levels of worker health and well-being, and hence this is frequently referred to as the "active-learning" or "activity-participation hypothesis". Karasek (1979) refers to the positive outcomes of this second diagonal as involving "incremental additions to competency…[and the] development of new behaviour patterns both on and off the job", whilst negative consequences include "a decline in overall activity and a reduction in general problem-solving activity…[and] job dissatisfaction" (pp. 288, 297). Thus, so-called

"active" jobs, which have high levels of both demands and decision latitude, challenge their incumbents, and encourage these individuals to develop competencies and exercise talents that may otherwise lie dormant. In contrast, workers occupying "passive" jobs encounter few challenges and few growth opportunities, and so become progressively less involved at work and in organised leisure and community activities. Thus, passive work is not compensated with active recreational pursuits, as might be expected. In sum, Karasek predicted that low levels of job control have two sets of potential consequences: psychological strain, if demands are high; and passive withdrawal, if demands are low.

Karasek (1979) tested this model through secondary analysis of data collected from two samples of male workers. The data included self-report measures of demands, decision latitude (job control), exhaustion, depression, satisfaction and behavioural strain. The measures of job demands placed emphasis upon work pace and meeting deadlines, whilst the measures of decision latitude incorporated two components, *skill discretion* (involving skill and creativity requirements, learning opportunities and non-repetitiveness) and *decision authority* (involving participation in decision-making and freedom over work methods). Consistent with his model, Karasek reported that stress was predictable from the combined effect of a relative excess of demands over control. While emphasizing the direct stress-mitigating role of control, Karasek found "moderate evidence for an interactive effect, understood as a departure from a linear additive model" (p. 293). These findings thus support Karasek's hypothesis that the interaction between demands and control contributes to the prediction of strain levels, in addition to the independent contributions of these two job factors.

3.4 Research Supporting Karasek's (1979) Model

3.4.1 Independent Effects of Job Demands

Karasek's (1979) model proposes that demanding jobs - those with extremes of work complexity, pace, variety and load – are associated with higher levels of strain than are less demanding jobs. A large body of research evidence provides support for this proposition. The relationship has been verified in single (e.g., De Jonge, Janssen & van Breukelen, 1996; McLaney & Hurrel, 1988) and multiple-occupation samples (e.g., Barnett & Brennan, 1995; Karasek, 1979; van Vledhoven, De Jonge, Broersen, Kompier & Miejman, 2002), white-collar (e.g., Carayon, 1992: Karasek, 1990; Spector, 1987) and blue-collar samples (e.g., Bromet, Dew, Parkinson & Schulberg, 1988; Kushnir & Melamed, 1991), using objective (e.g., Karasek et al., 1988) and subjective (e.g., Barnett & Brennan, 1995; Spector, 1987) measures of demands. It has been demonstrated both in the field (e.g., Kushnir & Melamed, 1991; McLaney & Hurrell,

1988), and in the laboratory under tightly controlled, albeit time-limited, conditions (e.g., Hutt & Weidner, 1993; Searle, Bright & Bochner, 1999). Whilst most of the evidence is cross-sectional using self-report measures (e.g., Kushnir & Melamed, 1991), support has also come from longitudinal studies (e.g., Moyle & Parkes, 1999) and studies that have used experience-sampling diary techniques (e.g., Williams & Alliger, 1994).

The effects of demands has been demonstrated using a wide range of strain measures including job stress and anxiety (e.g., Fletcher & Jones, 1993; Jex & Spector, 1996; Vermeulen & Mustard, 2000), emotional exhaustion and/or burnout (e.g., Karasek, 1979; Pomaki & Anagnostopoulou, 2001; Rafferty, Friend & Landsbergis, 2001), general psychological health, including depression (e.g., Barnett & Brennan, 1995; Morrison, Payne & Wall, 2001; Moyle & Parkes, 1999), and physical illnesses (e.g., Carayon, 1992; De Croon, Van der Beek, Blonk & Frings-Dresen, 2000; Spector, 1987). Not all past research has, however, found significant main effects of demands upon strain (e.g., Amick et al., 2002; Reed et al., 1989; Schaubroek, Jones & Xie, 2001), whilst others have found reverse effects (e.g., Jones et al., 1998; Muntaner, Tien, Eaton & Garrison, 1991). Indeed, a majority of past studies used several dependent measures, with demands predicting only a subset of outcomes. Broadbent (1985), for example, reviewed evidence suggesting that work pace (a central feature of job demands) generally has a stronger effect upon stress and well-being levels than it does upon levels of depression or job satisfaction.

In summary, job demands are positively correlated with strain, although the strength of this association varies between specific strain indices, and with other variables. For now, it may be concluded that the vast majority of studies have demonstrated statistically significant demands-strain relationships.

3.4.2 Independent Effects of Job Control

Organisational research that has measured job control subjectively (that is, in a manner consistent with the definition adopted here), has demonstrated that people who report high levels of perceived control over their work also report low levels of stress and other strain outcomes. As is the case with job demands, the control-strain relationship has been established in a variety of samples, using various measures of perceived control. In addition to cross-sectional field studies, supportive evidence has been obtained from laboratory experiments (e.g., Perrewe & Ganster, 1989), epidemiological studies (e.g., Bosma et al., 1998), and longitudinal research (e.g., Smulders & Nijhuis, 1999).

The main effect of perceived job control has been demonstrated using a wide variety of strain measures, especially job stress and anxiety (e.g., Barnett & Brennan, 1995; Williams &

Alliger, 1994), job satisfaction (e.g., Karasek, 1990; Moyle, 1998), general mental health including depression (e.g., Chay, 1993; Morrison et al., 2001), absenteeism (e.g., Kivimaki et al., 2000; Stansfeld et al., 1997), and physical illnesses (e.g., Carayon, 1995; Landsbergis & Hatch, 1996).

As with job demands, not all past research has found significant main effects of perceived control (e.g., Cohen & Williamson, 1991; Fletcher & Jones, 1993). Some studies (e.g., Beehr et al., 2001) have shown that perceived control predicts job satisfaction, but not psychological strain. Other researchers (e.g., Pomaki & Anagnostopoulou, 2001) have found support for these relationships in only a minority of the dependent variables measured. The effects of job control also vary with a range of demographic variables: for example, Hurrel and Lindstrom (1992) found that control predicted somatic complaints differentially according to participants' age and country of origin.

In summary, perceived job control is negatively correlated with strain, although the strength of this association varies between specific strain indices, and with other variables. For now, it may be concluded that the vast majority of studies have demonstrated statistically significant control-strain relationships.

3.4.3 Two-way Interactive Effects of Job Demands and Job Control on Strain

As already stated, a truly distinctive aspect of Karasek's model is the proposed interactive effect of demands and control upon strain. Examination of the literature, however, strongly suggests that the hypothesis is not generally supported. Reasonably consistent support comes from just five studies (De Croon et al., 2000; De Jonge et al., 1996; Landsbergis et al., 1992; Wall et al., 1996; Xie, 1996), limited support is obtained in a further 28 studies, whilst over 45 studies report results that are consistently contrary to the hypothesis. Overall, a sizable minority of the evidence is consistent with the view that the interaction of demands and control predicts physiological, affective and behavioural indices of strain.

3.4.4 The Job Demand-Control Model in the Transport Industry

Many studies have examined the job demand-control model in industries such as the manufacturing sector and human service organisations. Research using the model in the transport sector mainly focuses on the physical outcomes of high job demands and low job control. Both urban bus and truck drivers are involved in high strain occupations. For bus and truck drivers, job demands are high - such as work pace, work rate, time pressures and role overload – and control over one's job is limited – no room for route changes, time changes or role conflict (e.g.,

Sluiter, Van der Beek & Frings-Dresen, 1999). The cost of such high strain occupations on the drivers' physical health is well-documented. Studies have reported independent main effects of job demands and job control and increased cardiovascular disease (e.g., Bigert et al., 2003; Gustavsson et al., 1996; Landsbergis et al., 2001; Wang & Lin, 2001), hypertension (e.g., Albright et al., 1992), musculoskeletal disorders (e.g., Anderson, 1992; Boshhuizen et al., 1992; Burdof & Zondervan, 1990; Funakoshi, Taoda, Tsujimura & Nishiyama, 2004; Magnusson et al., 1996; Raanaas & Anderson, 2008), gastrointestinal illnesses (e.g., Evans & Carrere, 1991; Winkleby et al., 1988), decreased immune function (e.g., Nakano et al., 1998), fatigue (e.g., De Croon et al., 2002; Ueda et al., 1992) and mortality (e.g., Michaels & Zoloth, 1990).

The cost of high job demands and low job control on truck and urban bus drivers' psychological health and well-being has not been explored so extensively. In fact, only a few studies have explored these associations. Ueda et al. (1992) examined the effects of job demands and job control on the levels of stress and depression in a sample of 312 urban bus drivers in Japan. They found that both levels of stress and depression were increased in drivers who perceived their jobs to be demanding and over which they had little day-to-day control. The interaction hypothesis, that demands would be buffered by control, was not supported in this study. Orris et al. (1998) investigated the ability of the job demand-control model to predict levels of stress, anxiety, depression and job satisfaction in a sample of 423 long-distance truck drivers. This research concluded that the main effects of high demands and low job control were associated with symptoms of psychological ill-health and with a lowered job satisfaction rating. In another study by De Croon, Van der Beek, Blonk, and Frings-Dresen (2000), job demands, job control and their interactive effects were examined in a sample of 517 Dutch lorry drivers. The research re-evaluated the job demand-control model in that it used only those items of Karasek's decision latitude measure that assessed opportunities provided by the job to exert control over job demands (e.g., 'freedom as how to work', 'determine breaks oneself'). This more specific model elicited main effects of job demands and job control when considering psychological disorders (specifically, depression and stress) and physical complaints. Although the study did report an interaction effect, the effect was not statistically significant.

Overall, it is clear that high job demands and low job control have both physical and psychological health consequences for truck and urban bus drivers. Thus, Karasek's model has been largely supported in the transport industry literature so far. Taxi drivers share most of the same working conditions as both truck and urban bus drivers, therefore it seems likely that job demands and job control are important factors to consider in the prediction of their psychological health and job-related well-being.

3.5 Theoretical Criticisms of Karasek's (1979) Model

As promising as the job-demand model sounds in relation to predicting psychological health effects and well-being levels, Karasek (1979) acknowledged that many of the detailed processes suggested by his model were yet to be determined. Indeed, he drew attention to several limitations of his research. First, the impact of social relations/collegiality at both the group and organisational levels was not considered. Second, the potential role of specific types of job demands and decision latitude was not assessed. Third, the role played by demographic and personal factors in, for example, influencing perceptions of demands, was not explored. Finally, he acknowledged that the theory was not sufficiently precise to determine the exact mathematical form taken by the interaction between job demands and job control. In addition to these limitations, several other criticisms have been directed at Karasek's model. These will be discussed in turn.

3.5.1 Failure to Acknowledge the Subjective Nature of the Stress Process

The central aim of Karasek's (1979) work was to identify objective characteristics within the work environment that cause worker strain and activity, and that can be targeted for intervention through organisational and job re-design. Laudable as this aim may be, it does not do justice to the essentially subjective nature of work stress and many other forms of strain. Contemporary transactional perspectives (e.g., Lazarus, 1999, 2000; Lazarus & Folkman, 1984) view stress as inextricably tied to individual perceptions and cognitions. Within this perspective, links between objective job factors (demands, control opportunities) and strain are mediated by subjective appraisal and coping processes. The immediate determinant of strain is thus the individual's interpretation of the work situation, not the objective characteristics of this situation. By largely ignoring these subjective mediational processes, Karasek's environmental deterministic position is out-of-step with contemporary person-environment interactional perspectives on stress and well-being.

3.5.2 Inadequate Conceptualisation of the Core Constructs

Another criticism of Karasek's (1979) theory relates to the inadequate explication of its constructs (Shadish, Cook & Campbell, 2002). Demands, control and strain are all multi- rather than uni-dimensional, and all suffer from inadequately specified boundaries (De Jonge & Kompier, 1997; Soderfeldt et al., 1996). As a consequence, operationalisations of the constructs vary widely.

The core meaning of Karasek's (1979) demands construct relates to workload, work pace, and time pressures (and the mental alertness necessitated by these), with physical demands excluded (most explicitly in early versions of the theory). The status of other stressors (e.g., those relating to role ambiguity, qualitative task requirements, and interpersonal relationships) is less clear. Without resolution of these boundary issues, there is considerable scope for discrepancies between the conceptualisation and the operationalisation of this construct.

The problem of unclear conceptualisation is more serious for the construct of control. In his early work, Karasek preferred the term *decision latitude*, defined as "the working individual's potential control over his tasks and his conduct during the working day" (1979, pp. 289-290). In his original study, Karasek (1979) combined measures of skill discretion and decision authority to form a composite decision latitude variable. However, Karasek has not used these two components of decision latitude in all of his research. For example, Karasek et al. (1981) operationalised decision latitude using measures of "personal schedule freedom" and "intellectual discretion"; his 1982 study (Alfredson et al., 1982) used items measuring monotony, social contacts, learning opportunities and control over work tempo which, collectively, was referred to as "control and growth"; more recently, he claimed that "specialization of labor is, of course, the same as low-decision-latitude jobs" (2002, p. 275). Critics have raised a number of concerns regarding the validity and dimensionality of the decision latitude construct. Many writers (e.g., Jimmieson, 2000; Jones et al., 1998; Kasl, 1989; Perrewe & Ganster, 1989; Rafferty et al., 2001; Wall et al., 1996) have argued that both the concept and its operationalisation are too broad. To measure decision latitude, Karasek used scale items that refer to "high skill level required", "required to learn new things", "creativity", and "non-repetitious work". These go beyond most definitions of control, and potentially overlap with related constructs such as job level, complexity, and variety.

The concept of job strain is also insufficiently specified. In his 1979 study, Karasek focused on depression, exhaustion, job satisfaction, life satisfaction, pill consumption and absenteeism as outcome measures, but did not present a theoretical rationale for the inclusion of these, rather than other variables. It is, therefore, difficult to determine where the boundaries of the strain construct lie.

3.5.3 Inadequate Specification of the Relationships Between Constructs

Another criticism directed at the theory is that the relationships among its predictor and outcome constructs, particularly those between demands, control and strain, are inadequately stipulated. Karasek (1979) acknowledges that it is difficult to specify the exact mathematical

relationship between these variables, and at several points (e.g., Karasek, 1989, p. 143), he asserts that the existence or otherwise of a multiplicative interactive relationship is not the primary issue. Nonetheless, his attempts to combine demands and control appear confused and contradictory. For example, his core model, as illustrated in the four-quadrant diagram, indicated that strain is maximised when demands are high and control is low. Strain is predicted to be minimal under conditions of low demands/high control, and to be intermediate when levels of demands and control are equivalent. The model thus predicts a linear, subtractive relationship between strain and the demands-control diagonal. Instead of using a simple discrepancy formula (demands minus control) to represent this relationship, Karasek (1979) used an "absolute difference model, with a constant chosen to give greater emphasis to problems of too many demands and less emphasis to the problem of too much decision latitude" (p. 293).

In contrast to the above, Karasek et al. (1988) used a multiplicative product term of equally weighted measures of demands and control to predict strain. In this case, the test performed is of an exponential relationship between strain and the demands-control diagonal. Elsewhere, Karasek (1997) suggested that the use of a multiplicative formula is "too restrictive a test for most sample sizes" (p. 347). Finally, in other papers (e.g., Karasek et al., 1987), he examined the independent predictive power of demands and control, without attempting to combine the job factors at all. In sum, the relationship between demands and control has been inadequately specified, resulting in a diverse range of operationalisations and an inconsistent set of empirical findings.

3.5.4 Failure to Account for Broader Structural Variables

Karasek's (1979) theory is also criticised for failing to incorporate a range of broader, structural variables. According to Muntaner and O'Campo (1993), Karasek's theory has its epistemological roots in the narrow and individualistic tradition of social psychology, such that it focuses only upon "the interaction between the individual worker and his/her immediate environment…[and] is unable to explain how social structures (including economic, political and cultural relations) determine psychosocial work environments" (p. 151). Several writers (e.g., Kauppinen-Toropainen et al., 1983; Muntaner & Schoenbach, 1994) have been critical of the theory for its failure to take into account the important role played by social class in determining worker health and well-being outcomes. Fenwick and Tausig (1994) reported evidence that macroeconomic factors, especially unemployment, are indirectly related (through demands and control) to job stress and job satisfaction. Similarly, Xie (1996) argued that Karasek's theory is not equally generalisable to other cultures. The point behind such criticism is that job factors and

job outcomes must be understood within their socio-cultural, economic and political contexts, yet Karasek's model lacks this broad contextualisation.

3.5.5 Over-simplified and Non-specific

The major criticism regarding Karasek's (1979) model is that it is not sufficiently comprehensive; it contains too few predictor, moderating and mediating variables, and the model is not specific enough to explain outcomes in different workplaces. The model in its original form proposes that a wide range of personal (and organisational) outcomes are attributable to just two psychosocial dimensions of the work environment. Despite the more recent addition of a third dimension, social support, the theory is still subjected to criticisms on the grounds of oversimplification (Baker, 1985). Sparks and Cooper (1999), in their seminal study, investigated the amount of situational specificity associated with seven job-related characteristics (e.g., organisational role, work control, intrinsic job factors, personal factors) in a large cross-sectional study involving 12 occupational groups, ranging from clerical positions to mining jobs. The impact of the seven characteristics on workers' health and well-being proved quite different for each of the occupational groups. The authors suggested that "to understand fully the work-health-well-being relationship, research should incorporate a greater range of variables that are specific to a particular workplace, in addition to job demands and job control in the job demand-control model" (Sparks & Cooper, 1999, p. 219). Based on their research, these authors suggested that "individual and organisational factors, in addition to the environmental factors of job demands and job control, were important factors when considering employee health and well-being" (Sparks and Cooper, 1999, p. 237). Several other investigators have also recommended incorporating a range of more concrete demanding work features into the model (Jones, Bright & Searle, 1998; Van der Doef & Maes, 1999). This may explain more variance in outcomes of the health and well-being of employees and is likely to provide practical points of departure for interventions.

3.6 Proposed Model of Factors Influencing Taxi Driver Psychological Health and Well-being

It is clear that Karasek's (1979) model has been successful in explaining the influence of the main effects of job demands and job control on the physical and psychological health of employees in a multitude of occupations. The model, however, has not been applied to the taxi industry. The research on urban bus and truck drivers, who experience most of the same working conditions as taxi drivers, suggests that the model's main hypothesis (that high demands and low

control will influence health and well-being) is sustained in these industries, and both factors explained a significant amount of the variance in levels of stress, anxiety, depression and job satisfaction. Thus, it seems likely that the two factors will be important determinants of the psychological health and well-being of taxi drivers.

The main criticism of Karasek's model is that it is too simplistic – it lacks additional factors that are relevant to specific occupations. Indeed, Sparks and Cooper (1999) and other researchers have concluded that individual and organisational factors, when applied in conjunction with the environmental factors of job demands and job control, generate a more accurate reflection of the effect these work-related factors have on the health and well-being of employees, and can explain more of the variance in the outcome measures. Machin and De Souza (2004) were the first researchers to take this integrative approach with taxi drivers when they examined the influence of individual, organisational and environmental factors on driver physical health, well-being and safety behaviour. Other integrative models by Tomas et al. (1999), and Cheyne et al. (2002), have also shown that individual differences as well as work environmental and organisational factors influence safety behaviour and health outcomes of employees. Thus, the evidence suggests that a more integrative model, rather than just the factors of job demands and job control, can better predict the psychological health and well-being of taxi drivers, and such a model is presented in Figure 3.2.

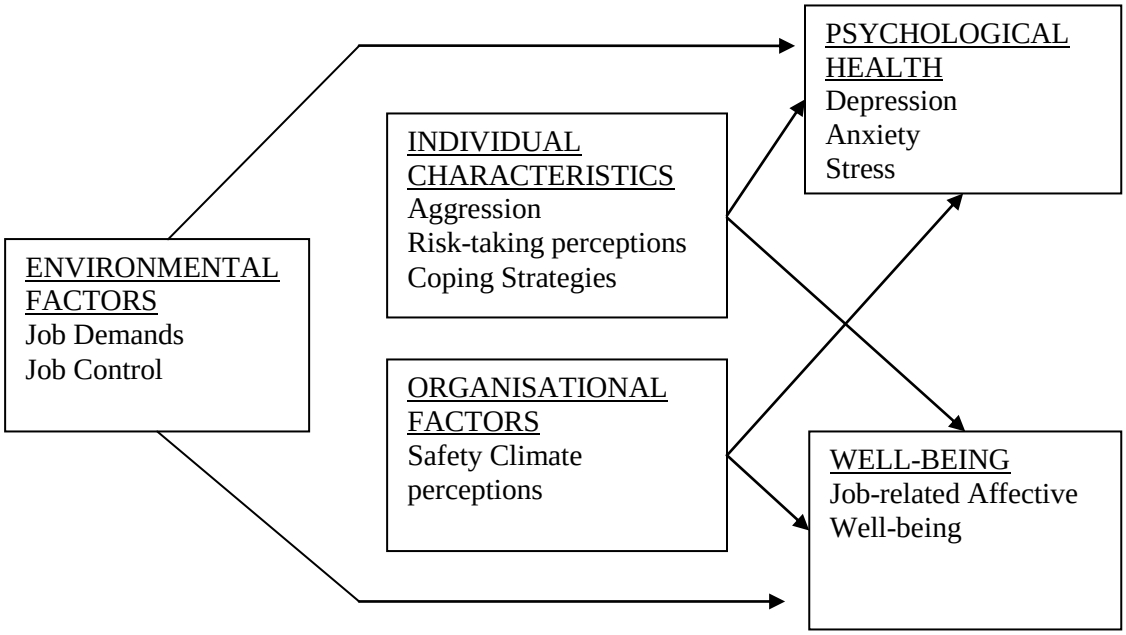

Figure 3.2 Proposed model of factors predicting taxi driver psychological health and job-related well-being

This proposed model integrates the work of Karasek (1979), and Machin and De Souza (2004), and includes an additional individual differences factor (coping strategies) and an extended organisational factor (safety climate). The individual difference factors of driver aggression and perceptions of risk-taking were included due to their success in predicting the physical health and well-being of taxi drivers in the Machin and DeSouza (2004) study. Coping strategies as an individual factor was also included based on the evidence in the transport industry literature (reviewed earlier) that this factor is influential in the prediction of the health and well-being of professional drivers. Due to this research on taxi drivers being one of the first studies to examine psychological health, the coping strategies variable was considered as a predictor variable, rather than a moderating variable, in order to be comparable with other studies in the transport industry. The overall safety climate of the taxi organisation was included as the organisational factor in order to explore which specific safety elements, in addition to management's commitment to workplace health and safety, influence the psychological health and well-being of drivers. Research by Machin (2006), on a sample of long distance coach drivers, suggested that the safety climate factors of management values, safety communication, personnel safety training and safety systems were able to significantly predict the job-related affective well-being of the drivers. This situation may be the same for taxi drivers. Overall, it is suggested that this proposed model will be able to explain more of the variance in the outcome measures of stress, depression, anxiety and well-being than Karasek's (1979) original job demand-control model.

Another criticism of Karasek's (1979) model by Xie (1996) was that it is not necessarily generalisable to other cultures. Xie sampled 1,298 Chinese workers in 9 different occupations and reported that both the job demands and job control variables had negligible effects on workers' job performance, physical health and job-related well-being. Xie suggested that the reason for these results lay in the way that the Chinese workers perceived their role and their responsibilities in their job, and this was somehow different from other cultures. It is known from the research by Machin and De Souza (2004) that approximately 28% of the Brisbane taxi drivers sampled were from ethnic minority backgrounds (i.e., they did not have English as their first language). It is therefore possible that the proposed model in Figure 3.2 may not be applicable to Brisbane taxi drivers of different ethnic minority backgrounds, based on Xie's reasoning. In order to confirm the viability of the proposed model with taxi drivers of ethnic majority (i.e., where English is the first language) as well as ethnic minority backgrounds, all analyses in study one that test the model will be performed on an ethnic majority taxi driver sample and an ethnic minority taxi driver sample separately.

The proposed model will be tested on both ethnic majority and ethnic minority taxi driver samples to confirm its cultural versatility. Ethnicity was not considered as a predictor variable (for example, a social or cultural variable) in the present research. This was due to the fact that there are mixed reviews as to whether ethnicity is a factor in predicting the health of employees. However, differences between the ethnic groups with respect to the predictor and outcome variables is of interest in this research. For example, are ethnic majority taxi drivers more or less aggressive than ethnic minority taxi drivers? Do they take more or less risks on the road? Do ethnic majority drivers display more stress symptoms than ethnic minority drivers? Analyses will be performed to investigate these potential differences.

3.7 Hypotheses Pertaining to the Proposed Model

This research is primarily concerned with identifying individual, organisational and environmental work-related factors that can successfully predict the level of psychological health and job-related affective well-being in samples of ethnic majority and ethnic minority taxi drivers. Eight hypotheses are proposed in order to investigate the aims of the current research. The eight hypotheses will be tested separately on ethnic majority and ethnic minority taxi driver samples. The following hypotheses, based on the model in Figure 3.2, were set for test in study one.

Hypotheses 1 and 2

According to Karasek (1979), jobs that are demanding and have little decision latitude can result in job stress and other psychological and physical illnesses (Abramson, Seligman & Teasdale, 1978). In accordance with the job-demand control model, it is hypothesised that psychological job demands is positively associated with stress, depression and anxiety and negatively associated with job-related affective well-being. It is also hypothesised that job control is negatively associated with stress, depression and anxiety and positively associated with job-related affective well-being.

Hypothesis 3

The trait of aggression and its subsequent influence on an individual's well-being and physical health has been well researched (e.g., Dula & Geller, 2003; Miles & Johnson, 2003). Aggressive driving thoughts and behaviours are extremely problematic in Australia, and can have a detrimental effect on the professional driving industry. In particular, aggressive driving has been associated with a poor sense of well-being and unsafe driving behaviours (Machin &

De Souza, 2004). Based on these findings, it is hypothesised that driver aggression is positively associated with stress, depression and anxiety and negatively associated with job-related affective well-being.

Hypothesis 4

Driver risk-taking behaviour can take many forms, ranging from an illegal U-turn to a running a red light (Iversen & Rundmo, 2002). Machin and De Souza (2004) found that taxi drivers who perceived such driving actions as low in risk, and who took risks on the road, experienced physical ill-health as a result. Other studies have also demonstrated this relationship (e.g., Iversen, 2004). Based on these findings, it is hypothesised that a perception of low risk for various driving situations is positively associated with driver stress, depression and anxiety and negatively associated with job-related affective well-being.

Hypothesis 5

Taxi driving is an occupation characterised by both high and conflicting demands. For example, the demand for professional and courteous customer service often conflicts with the need to commit to as many fares as possible throughout the working day. Bus and coach drivers also are pressured by these conflicting demands. However, the way that taxi drivers cope with the demands of their job may exert a strong influence on their psychological health and well-being. For taxi drivers, therefore, it is hypothesised that the use of maladaptive coping styles on the job (i.e., emotion-focused coping, confrontive coping and avoidance), after controlling for adaptive coping styles (i.e., task-focused coping and reappraisal) is positively associated with driver stress, anxiety and depression and negatively associated with job-related affective well-being.

Hypothesis 6

Driver safety is of paramount importance to professional drivers. Research has shown that management commitment to health and safety is a strong predictor of driver well-being and of safety behaviour. Other research (e.g., Machin, 2006) has demonstrated that factors such as safety communication, safety training and safety systems also influence driver well-being and safety behaviour. Oliver, Cheyne, Tomas, and Cox (2002) found these safety climate factors to be positive predictors of bus driver well-being and physical health. It is therefore hypothesised that, for taxi drivers, negative perceptions of the current safety climate, including management's

commitment to health and safety and hazard vigilance, are positively associated with driver stress, depression and anxiety, and negatively associated with job-related affective well-being.

Hypotheses 7 and 8

It is expected that the combination of the individual factors of driver aggression, risk-taking and maladaptive coping strategies, the organisational factor of safety climate and the job demands and job control factors will all significantly predict the level of psychological health (as measured by driver stress, depression and anxiety) and job-related affective well-being of taxi drivers. Specifically, it is hypothesised that, after controlling for the factors of job demands and job control, the individual factors of driver aggression, perceptions of risk-taking and maladaptive coping strategies, and the organisational factor of perceptions of the safety climate, make statistically significant and unique contributions to the prediction of driver stress, depression and anxiety levels. It is also hypothesised that, after controlling for the factors of job demands and job control, the individual factors of driver aggression, perceptions of risk-taking and maladaptive coping strategies, and the organisational factor of perceptions of the safety climate, make statistically significant and unique contributions to the prediction of the job-related affective well-being of drivers.

The truly distinctive aspect of Karasek's (1979) model is the proposed interactive effect of demands and control upon strain. That is, job control buffers the effect of high job demands on strain. This interaction effect is tested in this research. However, given the mixed outcomes in the literature with respect to the significance of the interaction of job demands and control, no specific hypothesis was formulated for this effect in the present study.

3.8 Definition of Factors in the Proposed Model

Earlier in this chapter, the definition of psychological job demands and job control were given in order to explore the meaning of Karasek's (1979) model. The definition of the other predictive factors in the proposed model will now be presented.

3.8.1 Driver Aggression

From reports in the media, aggressive driving is a significant problem on our roadways. However, reports of aggression in the context of driving have been confused, with researchers and laypersons alike using the terms "road rage" and "aggressive driving" sometimes synonymously and sometimes disparately. With respect to research in the field, three aspects of driving behaviour have been labelled as aggressive in the literature: (a) intentional acts of bodily

and/or psychological aggression toward other drivers, passengers and/or pedestrians (acts may be physical, gestural and/or verbal in nature); (b) negative emotions felt while driving (including anger and frustration); and (c) risk-taking behaviours (dangerous behaviours performed without intent to harm self or others) (Dula & Geller, 2003).

While rage is often present in the most extreme acts of aggression, negative emotions and acts of aggression vary in intensity. When speaking of driver aggression in particular, it would be pertinent to eliminate all elements of the spectrum except those where there is a clear intention to harm. Behaviours considered as indicative of road rage in the Sarkar, Martineau, Emami, Khatib, and Wallace (2000) road rage category include many that are clearly aggressive in intent. More on target, Lajunen, Parker, and Stradling (1998) said driver aggression "…can be conceptualized as any form of behaviour that is intended to injure or harm other road users physically or psychologically" (p. 108). Similarly, Ellison-Potter, Bell, and Deffenbacher (2001) stated that aggressive driving "…may be defined as any driving behaviour that intentionally…endangers others psychologically, physically, or both" (p. 432). These two definitions hone in on a focus that is crucial if scientific investigations of aggressive driving are to be continued. It is also important to make a distinction that driver aggression can only occur when one is driving. While driving situations may precipitate negative out-of-vehicle encounters, once the driver leaves the wheel, such events as considered as assault or road rage. From a research standpoint, a definition of aggressive driving that includes intention to harm is essential, and the following is posited for this research: Aggressive driving is any behaviour emitted by a driver while driving that is intended to cause psychological harm to any driver and/or passenger in a car (Dula & Geller, 2003). Physical harm will not be investigated.

3.8.2 Driver Risk-taking

In order to define risk-taking behaviour, it is pertinent to define risk initially. There is no commonly accepted definition of the term 'risk', either in science or in lay perception (Renn, 1998). Marvin Zuckerman, in his book "Sensation Seeking", distinguishes two kinds of risk: (1) physical risk – the chance of sustaining injury or being killed; and (2) social risk – the "estimated likelihood of being embarrassed, shamed or of experiencing guilt or loss of valued affection or respect of others" (p. 62). Thus, risk is both a material phenomenon and a socially constructed one. Risk-taking behaviour can be defined as the voluntary participation in behaviours that contain, or at least seem to contain, a significant degree of risk. Certain behaviours are assessed to involve a high degree of actual physical and social risk, as measured by the probability of death, injury, financial loss and so on (Llewellyn, 2003). David Carson (1988) points to a

definition of risk-taking behaviour in stating that "risks should be taken to achieve specific goals in the light of possible harms occurring" and "taking risks involves deciding that the potential benefits of a proposed act outweigh the potential drawbacks" (p. 248). So, risk-taking is choosing whether or not to act to achieve beneficial results in an awareness of potential harms. This definition forms the basis of a framework for risk assessment and is the definition adopted in this research. It identifies the importance of defining the nature and degree of outcomes. It also introduces the notion of likelihood with its image of weighing the achievement of beneficial results against an awareness that harms may result.

3.8.3 Driver Coping Strategies

The definition of coping varies according to the theory from which it evolved. There have been a number of theories which have arisen to explain the concept of coping, three of which have had a significant influence on the development of the term coping. The psychoanalytic ego psychology model sees the use of defence mechanisms as coping and so defined coping "as realistic thoughts and acts that solve problems and thereby reduce stress" (Lazarus & Folkman, 1991, p.190). In contrast, the trait theory of coping perceives coping as a trait, an inherent disposition in the individual that defines the way they respond, cognitively and behaviourally, across all situations (Stone, Kennedy-Moore, Newman, Greenberg & Neale, 1992). The transactional model of coping refers to coping as "the person's cognitive and behavioural efforts to manage (reduce, minimize, master, or tolerate) the internal and external demands of the person-environment transaction that is appraised as taxing, or exceeding the person's resources" (Folkman, Lazarus, Gruen & De Longis, 1986, p.572). The transactional model's definition of coping is process-oriented as it encompasses the cognitive and behavioural aspects of the individual. It is also contextual in that it dictates that the person-environment relationship is bi-directional, and lastly, this definition does not make prior assumptions about whether the individual's form of coping will be good and successful, or bad and unsuccessful, just that they make the effort to cope with the situation. Thus, the transactional model definition of coping is preferred in this research because neither the trait model nor the psychoanalytic model's definition of coping is contextual and the psychoanalytic model does assume that coping leads to the situation being solved.

3.8.4 Safety Climate

Schneider (1975) first defined organisational climate as "molar perceptions people have of their work settings" (p. 473). People are bound to develop the molar perceptions, added

Schneider, because individuals attempt to apprehend order in their environment to be used as a framework for adaptive behaviour. While Schneider did not distinguish organisational climate from culture, he argued that distinctions should be made between "perceptions of organisational practices and procedures" and "reactions to those same practices and procedures" (p. 464), the former being climate. Jones and James (1979) affirmed this, describing climate as "a set of perceptually based, psychological attributes" (p. 205) that are descriptive and cognitive rather than affective and evaluative in nature. Jones and James also stated that climate is "multidimensional, with a central core of dimensions that apply across a variety of situations" (p. 205).

Many researchers in the safety field have distinguished between the terms safety culture and safety climate, many of them advocating the retention of both terms (Cox & Flin, 1998; Glendon & Stanton, 2000; Glick, 1985; Guldenmund, 2000; Hale, 2000; Moran & Volkwein, 1992; Schein, 1992). Reichers and Schneider (1990), who reviewed the evolution of the two concepts, concluded that "culture exists at a higher level of abstraction than climate, and climate is a manifestation of culture" (p. 29). Culture has signified the broad multi-faceted concept that incorporates shared attitudes, values, beliefs, assumptions and practices, whereas safety climate is conceived of as a limited set of dimensions indicating an organisation's culture. Thus, culture is commonly associated with terms such as "deep" (Hale, 2000, p. 5), "stable" (Schein, 1992, p. 5), "qualitative" (Guldenmund, 2000, p. 220), and "trait" (Cheyne, Cox, Oliver & Tomas, 1998, p. 256), whereas climate with "superficial" (Glendon & Stanton, 2000, p. 198), "snapshot" (Flin, Mearns, O'Connor & Bryden, 2000, p. 178), "quantitative" (Guldenmund, 2000, p. 220), and "state" (Cheyne et al., 1998, p. 256).

Zohar (1980) was the first to use the term safety climate, and defined it as "a particular type of organisational climate, which reflects employees' perceptions and attitudes about the relative importance of safe conduct in their occupational behaviour. It can vary from highly positive to a neutral level, and its average level reflects the safety climate in a given company" (p. 34). He later modified this definition, and stated that "group level safety climate refers to shared perceptions among employee members with regard to supervisory practices" (Zohar, 2000). From the time Zohar first highlighted the term safety climate, the literature has not presented a generally accepted definition. However, many definitions do have commonalities. These include: (1) safety climate is a psychological phenomenon, which is usually defined as the perceptions of the state of safety at a particular time; (2) safety climate is closely concerned with intangible issues such as situational and environmental factors; and (3) safety climate is a temporal phenomenon, a "snapshot" of safety culture, relatively unstable and subject to change

(Seo, Torabi, Blair & Ellis, 2004). Based on these common themes among safety climate definitions, a general definition can be derived for the purposes of this research: Safety climate is the temporal state measure of safety culture, subject to commonalities among individual perceptions of the organization. It is therefore situationally based, refers to the perceived state of safety within an organisation at a particular place at a particular time, is relatively unstable, and subject to change depending on the features of the current environment or prevailing conditions (Seo et al., 2004).

3.9 Chapter Summary

Research that examines the psychological health and job-related well-being of drivers in the taxi industry is scarce. Only two studies have investigated job-related factors that may impact on this area of driver health. The first study, by Facey (2003), reported that the factors of racial discrimination, economic exploitation and socioeconomic disadvantage all appeared to affect the psychological health of a sample of ethnic minority taxi drivers in Toronto. This result is important, as just under one-third of taxi drivers in the Brisbane metropolitan area have an ethnic minority background. The second study, by Machin and De Souza (2004), was the first to integrate the environmental factor of hazards, the organisational factor of safety climate and the individual factors of driver aggression and risk-taking, into a model that predicted the physical health, safety behaviour and job-related affective well-being of a sample of 91 taxi drivers in Brisbane. However, the wider occupational stress literature and research on the transport industry suggests that other factors, such as driver coping styles, and Karasek's (1979) job demand-control model, also have important contributions to make as predictors of psychological health and well-being. A new model was presented, which integrated the work of Machin and De Souza (2004) and Karasek (1979), in order to explain a more significant amount of the variance in the psychological health and job-related well-being of taxi drivers. Hypotheses were then presented in order to test the proposed model. These hypotheses are to be tested separately on ethnic majority and ethnic minority samples. Definitions of the predictor variables in the proposed model were then given.

4.0 METHOD

Overview of the Research Design

The present program of research aimed to investigate work-related factors that predict the psychological health and affective well-being of urban taxi drivers. In order to undertake this investigation, a process of theory development was employed. To commence the present program of research, a literature review was conducted to ground the research objectives theoretically. The research design consisted of two studies (a questionnaire and two focus group interviews) conducted with taxi drivers in the Brisbane metropolitan area. Brief pilot interviews were used to confirm the nature of questionnaire delivery – online or by reply paid post. The questionnaire was then formulated and a pilot study of the questionnaire was performed to correct any problems. The data set obtained from the questionnaire was analysed to test the theoretical model of factors impacting on taxi driver psychological health and well-being. Semi-structured focus group interviews were then used in study two to validate the results of study one, as well as to explore and to expand on the results obtained from the questionnaire.

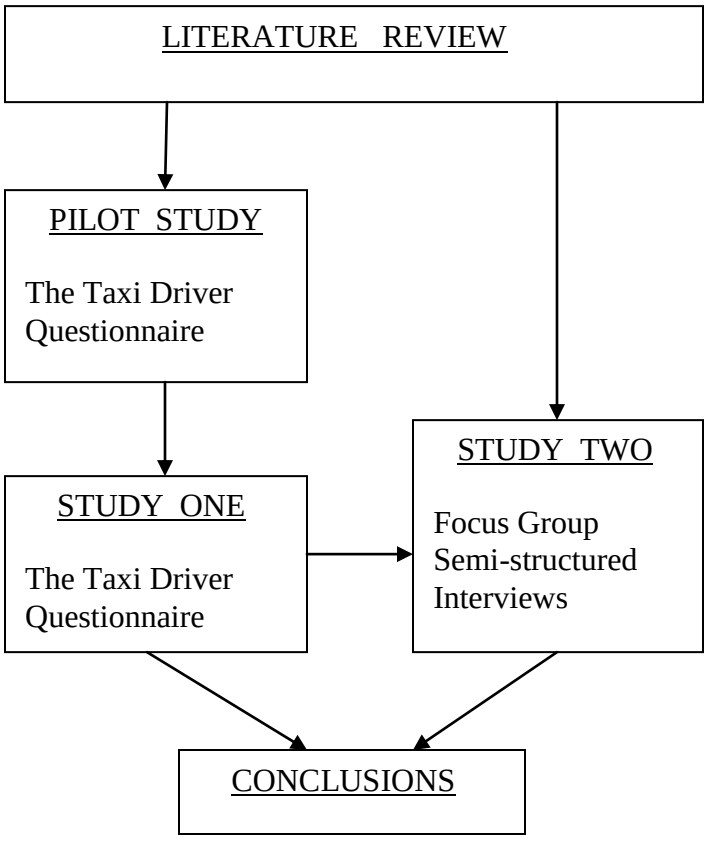

Figure 4.1 Overall Research Design

4.1 METHOD FOR STUDY ONE: The Self-Report Questionnaire

4.1.1 Participants

The target population for this study were taxi drivers who were working, either directly or indirectly, for the Black and White Taxi and Yellow Taxi companies. These taxi companies were the only two companies operating in the Brisbane city, airport and metropolitan areas. The target population included drivers who leased a vehicle from the taxi companies, drivers who leased a vehicle from an individual owner/owners, and owner-drivers. A convenience sample approach was used to obtain the sample of drivers. A total of 469 drivers from the Black and White organisation were approached to complete the questionnaire, and 485 drivers from the Yellow taxi organisation were approached, giving a total of 954 drivers. Thirteen drivers who were approached were not interested in the research, leaving a total of 941 who agreed to complete the questionnaire. A total of 402 responses were received, although not all of these were usable. Five of the 402 responses were found to be not usable because all of the questions were answered with the same circled response, indicating response bias. Fourteen other responses showed incomplete answers to various questions in the questionnaire. Thus, the number of usable returns was 383, including 270 ethnic majority drivers and 113 ethnic minority drivers. The usable questionnaire response rate of 40.7% was considered acceptable for this type of research (Tabachnick & Fidell, 2007).

Responses to the demographic and employment questions on the questionnaire instrument were used to build a respondent profile. For a complete summary, see chapter five. The vast majority of drivers were male (90.9%). There were no female ethnic minority drivers in the sample. Approximately 70.4% of the total sample were ethnic majority drivers (i.e., drivers whose first language is English), with ethnic minority drivers (i.e., drivers whose first language is not English) making up the remaining 29.6%. Most of the ethnic majority drivers were aged between 26-49 years (69.1%), and this applied to ethnic minority drivers also (69.9%). Most ethnic majority drivers were Australian (75.1%), with 15.1% being from New Zealand, while the majority of ethnic minority drivers were from India (66.4%) and Pakistan (20.4%). Most ethnic majority and minority drivers had worked for a period of between 6-10 years (63.4% and 48.7%, respectively), while 20.0% of drivers had worked for over ten years in the industry. Most of the ethnic majority drivers worked for a taxi base (63.4%), while 20.4% worked for an individual owner and 16.2% were owner-drivers. The demographics for the ethnic minority drivers were different, with 43.4% working for a taxi base and 50.4% working for an individual owner. Roughly one-third of ethnic majority drivers worked on a set fee basis and two-thirds on a

percentage basis, and this split was the same for ethnic minority drivers. Approximately 1.9% of ethnic majority drivers worked between 0-12 hours per week, with 56.2% working over 60 hours. The figures were similar for ethnic minority drivers, with 4.4% working 0-12 hours, and 69.0% working over 60 hours per week.

4.1.2 Measures

A 143-item questionnaire was developed for this research. The paper-based questionnaire items were from the following:

- The Job Content Questionnaire (JCQ-Core) (Karasek, 1985)
- Perception of Risk-taking Scale (Dalziel & Job, 1997b)
- Self-Report Driver Aggression Questionnaire (SRDAQ) (Hennessy & Wiesenthal, 1999)
- Driver Coping Questionnaire (DCQ) (Matthews, Desmond, Joyner, Carcary & Gilliland, 1996)
- Safety Climate Questionnaire-Modified for Drivers (SCQ-MD) (Wills, Biggs & Watson, 2005)
- Depression Anxiety Stress Scales-21 (DASS-21) (Lovibond & Lovibond, 1995)
- Job-Related Affective Well-being Scale-Short Form (JAWS-SF) (Van Katwyk, Fox, Spector & Kelloway, 2000)

The final page contained demographic questions and a simple statement thanking the respondents for their time and participation. The self-administered questionnaire took approximately 15-20 minutes to complete. The complete questionnaire can be seen in Appendix D.

4.1.2.1 Predictor Variables

The predictor variable measures used in Study 1 were:

Job Demands and Job Control

The job demands and job control variables were measured by the Job Content Questionnaire (JCQ-Core), an empirically validated instrument developed by Karasek (1985) which contains 27 items. The questionnaire assesses the ‘content’ of a respondent’s work tasks in a general manner which is applicable to most jobs in Australia. The JCQ-Core contains four sub-scales: the 8-item job decision latitude/job control scale (e.g., “My job allows me to make a lot of decisions on my own”); the 6-item job psychological demands scale (e.g., “My job requires

working very fast"); the 7-item physical demands scale (e.g., "My job is physically demanding"); and the job insecurity scale (e.g., "I feel secure in my job "). In this research, the job decision latitude and job psychological demands sub-scales were used, totalling 14 items. Participants were asked respond to each of the 14 items using a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Scores for the decision latitude/job control scale range from 8 to 32, with higher scores indicating greater job control at work. The scores for the psychological demands scale range from 6 to 24, with higher scores indicating greater psychological job demands. A study in Belgium by Pelfrene et al. (2003) reported Cronbach's alpha values for each subscale: decision latitude, .82; psychological demands, .72; physical demands, .87; and job insecurity, .68. These values are similar in almost all studies using the JCQ-Core questionnaire (Karasek et al., 1998). In this study, Cronbach's alpha for the psychological demands sub-scale had a coefficient of .73 and a standardised alpha of .71. The Cronbach's alpha for the job control sub-scale had a coefficient of .83 and a standardised alpha of .81. The JCQ-Core questionnaire is unique in that it integrates both individual and occupation-based conceptions of job characteristics. Karasek et al. (1998) found that the questionnaire provided valid and reliable results in over 200 studies in 10 countries, including Australia.

Risk-taking

This section of the questionnaire contained questions specific to the job of taxi driving, using the questions from the taxi driver risk-taking scale developed by Dalziel and Job (1997b). Dalziel and Job investigated the safety behaviours of a group of 198 New South Wales-based taxi drivers, including risk-taking. The authors developed six questions about risk-taking while driving, based on interviews with 102 taxi drivers over a six week period. This 6-item scale demonstrated good reliability and validity, and has been used and validated by other researchers in the transport sector in Australia (e.g., Machin & De Souza, 2004). The six items do not ask respondents whether they have performed any of the behaviours listed. The focus is on drivers' perceptions of risk rather than driving behaviour. Respondents were asked to indicate how dangerous they think each item is (e.g., 'Running a red light', 'Do an illegal U-turn') using a five-point Likert scale ranging from 1 (not dangerous) to 5 (very dangerous). For analysis purposes, item scores were reverse-scored, so that higher item scores indicated a perception of lower risk for that item. Total scores ranged from 6 to 30, with higher scores indicating a perception of lower risk. In this study, an exploratory factor analysis was performed on this scale. One factor was extracted and the factor loadings for the 6 items ranged from .47 to .64. A full list of factor loadings can be seen in Appendix E1. The perception of risk-taking scale was

also analysed for reliability. The Cronbach's alpha for this scale produced a coefficient of .75 and a standardised alpha of .71.

Aggression

Driver aggression was measured using the Self-Report Driver Aggression Questionnaire (SRDAQ). The SRDAQ, developed by Hennessy and Wiesenthal (1999), consists of five items designed to tap general self-reported aggressive driving behaviour patterns. Respondents were asked to rate the likelihood of generally engaging in five aggressive driving behaviours (e.g., horn honking out of frustration, swearing/yelling at drivers). Participants responded using a six-point Likert scale ranging from 0 (not at all) to 5 (nearly all the time). Items were recoded for analysis purposes. Thus, 0 was recoded as 1, 1 recoded as 2, 2 recoded as 3, 3 recoded as 4, 4 recoded as 5, and 5 recoded as 6. Once recoded, a total score for the questions was calculated for each respondent, ranging from 5 to 30, with higher scores indicating more aggressive driving behaviour. The SRDAQ was chosen over other aggression instruments, such as the Short-Form Buss-Perry Aggression Questionnaire (Buss & Perry, 1992), because it specifically targeted aggressive acts while driving, rather than general acts of aggression. In addition, Hennessy and Wiesenthal (1999) found that self-reported driver aggression scores correlated highly with actual acts of aggression occurring in both high (r = .675) and low (r = .643) traffic congestion conditions. Other studies using the SRDAQ have reported good reliability and validity results (e.g, Diamond & Magaletta, 2006) within the transport sector. An exploratory factor analysis was performed on this questionnaire. One factor was extracted and the factor loadings for the 5 items ranged from .53 to .71. A full list of factor loadings can be seen in Appendix E2. The SRDAQ was also analysed for reliability. The Cronbach's alpha for this scale produced a coefficient of .85 and a standardised alpha of .83.

Coping Strategies

Driver coping strategies were measured using the Driver Coping Questionnaire (DCQ). The Driver Coping Questionnaire (Matthews, Desmond, Joyner, Carcary & Gilliland, 1996) is a 35-item scale that assesses cognitive reactions to driving and asks respondents how they try to deal with stressful situations while driving. It measures five dimensions of coping derived from the transactional model of stress: the 7-item confrontive coping sub-scale (e.g.,"Drove assertively or aggressively"); the 7-item task-focused coping sub-scale (e.g.,"Made an extra effort to drive safely"); the 7-item emotion-focused coping sub-scale (e.g.,"Worried about what I was going to do next"); the 7-item reappraisal sub-scale (e.g.,"Tried to gain something

worthwhile from the drive"); and the 7-item avoidance sub-scale (e.g.,"Went on as if nothing had happened"). The sub-scales are combined into two broader scales: the adaptive coping scale, consisting of task-focused coping and reappraisal coping; and the maladaptive coping scale, consisting of emotion-focused coping, confrontive coping and avoidance coping. Respondents were instructed to think of occasions during the last year when driving was difficult, stressful, or upsetting, and to use their experiences to indicate how much they usually engage in each of the coping strategies on a five-point Likert scale ranging from 1 (not at all) to 5 (almost always). Total scores for each sub-scale were calculated, ranging from 7 to 35. Total scores for the adaptive coping scale and maladaptive coping scale were also calculated, ranging from 14 to 70 and 21 to 105, respectively. The DCQ was chosen over other coping questionnaires, such as the COPE Scale (Carver, Scheier & Weintraub, 1989) and the Ways of Coping Questionnaire (Folkman & Lazarus, 1988), because it had been developed specifically for measuring drivers' ways of coping during moments of difficulty or stress. The DCQ has exhibited good reliability and validity over a number of studies (e.g., Machin & Hoare, 2008; Watson, Willson & Sinha, 1998) in a number of countries (e.g., Japan, Greece, Germany and Denmark). In this study, all 5 sub-scales and the two broader scales were analysed for reliability. The Cronbach's alpha for the reappraisal coping sub-scale produced a coefficient of .79 and a standardised alpha of .75. The Cronbach's alpha for the task-focused coping sub-scale produced a coefficient of .89 and a standardised alpha of .87. The Cronbach's alpha for the confrontive coping sub-scale produced a coefficient of .88 and a standardised alpha of .86. The Cronbach's alpha for the emotion-focused coping sub-scale produced a coefficient of .81 and a standardised alpha of .79. The Cronbach's alpha for the avoidance sub-scale produced a coefficient of .90 and a standardised alpha of .87. The Cronbach's alpha for the adaptive coping scale was .76 with a standardised alpha of .73. The Cronbach's alpha for the maladaptive coping scale was .81 with a standardised alpha of .78.

Safety Climate

Perceptions by the drivers of the safety climate were measured using the Safety Climate Questionnaire – Modified for Drivers (SCQ-MD). The SCQ-MD is an experimentally validated questionnaire developed by Wills, Biggs and Watson (2005). The SCQ-MD consists of 35 items, and is a modified version of the 32-item Safety Climate Questionnaire (SCQ) developed by Glendon and Litherland (2001). The SCQ-MD assesses generic indicators of the driving industry's safety climate via the use of six sub-scales: the 7-item communication and procedures sub-scale (e.g.,"Employees are consulted when changes to driver safety procedures are suggested"); the 5-item work pressure sub-scale (e.g.,"Time schedules for completing jobs are

realistic"); the 6-item management commitment sub-scale (e.g.,"Management are committed to motor vehicle safety"); the 6-item relationships sub-scale (e.g.,"Employees are encouraged to look out for each other"); the 5-item driver training sub-scale (e.g.,"Potential risks and consequences are identified in driver training"); and the 6-item safety rules sub-scale (e.g.,"Safety rules relating to the use of motor vehicles are always practical"). Participants were asked to respond to each item using a five-point Likert scale ranging from 1 (never) to 5 (always). Item scores on all sub-scales were reverse-scored, so that higher scores indicated more negative perceptions of safety. Total scores for each subscale were calculated, such that a higher score indicated more negative perceptions. A total overall score was also calculated, ranging from 35 to 175, with higher scores indicating more negative perceptions of safety. The SCQ-MD was chosen over other surveys, such as the original Safety Climate Questionnaire (Glendon & Litherland, 2001), because it specifically applies to drivers in the transport industry. The SCQ-MD has been used in a number of studies in Australia (e.g., Machin & Hoare, 2008; Wills, Biggs & Watson, 2005; Wills, Watson & Biggs, 2004, 2006) and has demonstrated good reliability and validity results. In this study, all 5 sub-scales and the total scale were analysed for reliability. The Cronbach's alpha for the communication sub-scale produced a coefficient of .79 and a standardised alpha of .75. The Cronbach's alpha for the work pressure sub-scale produced a coefficient of .88 and a standardised alpha of .85. The Cronbach's alpha for the management commitment sub-scale produced a coefficient of .88 and a standardised alpha of .85. The Cronbach's alpha for the relationships sub-scale produced a coefficient of .80 and a standardised alpha of .79. The Cronbach's alpha for the driver training sub-scale produced a coefficient of .89 and a standardised alpha of .87. The Cronbach's alpha for the safety rules sub-scale was .76 with a standardised alpha of .73. The Cronbach's alpha for the total scale was .82 with a standardised alpha of .79.

4.1.2.2 Measures of Psychological Health and well-being

The dependent measures in study 1 were:

Stress, Depression and Anxiety

Driver stress, depression and anxiety were measured using the Depression Anxiety Stress Scales-21 (DASS-21). The original Depression Anxiety Stress Scale (DASS) was developed by Lovibond and Lovibond in 1995, and contained 42 items. The DASS-21 is a 21-item shortened version of the original 42-item scale. These 21 items measure the three related negative emotional states of depression, anxiety and stress. Each of these three states is measured by seven items: the depression scale (e.g.,"I was unable to become enthusiastic about anything");

the anxiety scale (e.g.,"I felt scared without any good reason"); and the stress scale (e.g.,"I found it difficult to relax"). Respondents were asked to use a four-point severity/frequency Likert scale, ranging from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time), to rate the extent to which they have experienced each item/state over the past week. Each item was recoded for analysis purposes, such that 0 was recoded as 1, 1 was recoded as 2, 2 was recoded as 3, and 3 was recoded as 4. A total score was calculated for each scale, ranging from 7 to 28. A total score, representing overall psychological health, was also calculated, with scores ranging from 21 to 84. The DASS-21 has cut-off scores for each scale, indicating mild, moderate or severe forms of each of the states of depression, anxiety and stress. The psychometric properties of the DASS-21, including construct validity, criterion validity and reliability, have been upheld in studies using both clinical and non-clinical populations (e.g., Antony, Bieling, Cox, Enns & Swinson, 1998; Brown, Chorpita, Korotitsch & Barlow, 1997; Clara, Cox & Enns, 2001; Nieuwenhuijsen, DeBoer, Verbeek, Blonk & VanDijk, 2003) in a number of countries (e.g., USA, Canada, Sweden, Germany, Australia). A number of studies have shown high concurrent validity between the DASS-21 and other measures of depression, anxiety and stress, such as the Beck Depression Inventory, the Hamilton Depression Scale, the Beck Anxiety Inventory and the State-Trait Anxiety Inventory (Antony, Bieling, Cox, Enns & Swinson, 1998; Lovibond & Lovibond, 1995; Martin & Dahlen, 2005). The DASS-21 was chosen over other questionnaires because it is short, easy to understand and offers cut-off scores for mild, moderate and severe indications of each variable. In this study, all 3 sub-scales and the total scale were analysed for reliability. The Cronbach's alpha for the stress sub-scale produced a coefficient of .79 and a standardised alpha of .75. The Cronbach's alpha for the depression sub-scale produced a coefficient of .88 and a standardised alpha of .85. The Cronbach's alpha for the anxiety sub-scale produced a coefficient of .90 and a standardised alpha of .88. The Cronbach's alpha for the total psychological health scale was .84 with a standardised alpha of .81.

Job-related Affective Well-being

Driver well-being was measured using the Job-related Affective Well-being Scale-Short Form (JAWS-SF). The JAWS-SF was developed by Van Katwyk, Fox, Spector and Kelloway in 2000, and consists of 20 items designed to assess people's emotional reactions to their job. Each item is an emotion, and respondents were asked how often they have experienced each positive or negative emotion at work over the last 30 days. There are 10 statements relating to positive emotion or positive affect (e.g.,"My job made me feel content") and 10 statements relating to negative emotion or negative affect (e.g.,"My job made me feel angry"). The 20 items can also

be placed into four subscales that fall along two dimensions: pleasurableness (i.e., pleasure-displeasure) and arousal (high or low). These four subscales are high pleasurable-high arousal (HPHA) (e.g.,"My job made me feel ecstatic"); high pleasurable-low arousal (HPLA) (e.g.,"My job made me feel content"); low pleasurable-high arousal (LPHA) (e.g.,"My job made me feel disgusted"); and low pleasurable-low arousal (LPLA) (e.g.,"My job made me feel bored"). Respondents were asked to indicate on a five-point Likert scale ranging from 1 (never) to 5 (always) their response to 20 statements beginning with "My job made me feel…..". There are three possible ways of scoring the JAWS-SF. These include obtaining an overall score comprising all 20 items with the 10 negative emotion items reverse scored; separate scores of the 10 positive items and 10 negative items without reverse scoring; or scores for the four sub-scales. For the purpose of this study, the total emotion score was calculated, thus the 10 items representing negative emotions were reverse scored. Total scores could range from 20 to 100, with higher scores indicating that the job elicited more positive emotions. The JAWS-SF has demonstrated good construct validity, criterion validity and reliability over a number of studies in a number of countries. The JAWS-SF was chosen over other measures of affect because it measures pure affect, as opposed to the belief-oriented or attitude-based scales generally used in job satisfaction research. The JAWS-SF also measures context-specific affect, in this case specific affective states experienced in response to the job. This is in contrast to scales such as the PANAS (Watson, Clark & Tellegen, 1988) that were developed to assess context-free emotions. Another advantage of the JAWS-SF is its ability not only to measure a wide range of affective states, but also to distinguish patterns of related affective experience, such as negatively or positively valenced responses at high or low levels of arousal. In this study, the total JAWS-SF scale, comprising all 20 items, was analysed for reliability. The Cronbach's alpha for the total scale was .82 with a standardised alpha of .80.

4.1.2.3 Demographic Questions

The demographic questions on the questionnaire sought information about driver age, gender, length of time in current position, number of hours worked per week, type of employment (i.e., full-time, part-time, casual), type of driver (i.e., owner-driver vs contract driver) and cultural background (i.e., country of origin and whether English was/was not a first language).

4.1.3 Procedure

4.1.3.1 Pilot Study

A pilot study of the questionnaire and its administration procedures was undertaken in order to determine any problems, such as the language used, the layout of the questions, ability to understand the Likert scales used to answer the questions and the initial explanation of the study. A total of 20 volunteer taxi drivers participated. Each of the 20 "preliminary participants" responded to the questionnaire without any need for follow-up reminders, resulting in the survey itself and the mail-based return procedures being piloted. The return rate for the pilot study was 100 per cent. Comments made by the participants about the clarity of the questionnaire indicated that no problems were identified with the language used, the layout of the questions, the Likert scales, or the initial explanation of the study.

4.1.3.2 Administration of the Questionnaires

Before sampling began, an advertisement was placed in the Black & White and Yellow Taxi monthly magazines, in the months of June and July 2008, to explain the research to the drivers and the fact that the researcher would start approaching them at taxi ranks in the months of July and August. Although the research is not linked to the taxi companies, the ads were placed in the hope that interest in the study would be cultivated at this early stage.

Before the questionnaires were administered, the area in which the taxi drivers would be approached was defined. Thus, it was decided that the sampling area would be bounded by Petrie to the north of the city, Kenmore to the west, Logan to the south and Alexandra Hills to the east of the city. Within these boundaries, major and minor shopping centres were identified (e.g., Westfield Chermside, Strathpine, Carindale, Centro Toombul, Taigum, Logan Central), as were major hotels and areas of entertainment (e.g., the Brisbane entertainment centre, Suncorp stadium, the Brisbane exhibition centre) and major rail and coach terminals (e.g., Central, Roma Street, Southbank). All of these centres had a specified taxi rank for taxi services. In addition, major ranks in the Brisbane city, Fortitude Valley and Southbank areas were identified. At this stage, the time period for sampling was determined to be between the hours of 7am and 10pm both during the week and at weekends. This time period allowed for a representative sample of day shift and night shift drivers to be obtained.

Taxi drivers were approached by the researcher at the end of the ranks, and the researcher worked up to the front of the queue of taxis. The researcher introduced herself to the driver and a brief explanation of the research was provided. Drivers were also provided with a covering letter which explained the research in more depth. The researcher spent between 5 and 10

minutes with each driver, answering any questions they had about the research, including handling of the results and the application of the results in the "real world". Drivers were advised that participation was voluntary, they could withdraw at any time if they wished to do so and that anonymity and confidentiality would be maintained throughout the research. They were also advised that the Black & White and Yellow taxi companies were not sponsoring the research in any way, and that the research was being independently completed through the Australian Catholic University. Participants were instructed to complete the questionnaires and return them in the addressed, prepaid envelope that had been included in each individual questionnaire package. The address on the prepaid envelope was that of the researcher, so that the participants could be assured that no one else would have the opportunity to read their responses. This procedure was implemented to encourage a high response rate and to ensure anonymity and confidentiality. Some drivers completed the questionnaire while the researcher was talking to other drivers in the rank. These drivers packaged their questionnaire into the envelope provided and inserted it through a slot in the lid of the collection box provided by the researcher. In all, 12 drivers completed the questionnaire on the spot, with the majority preferring to complete the questionnaire at a later stage. A total of 13 drivers chose not to complete the questionnaire and while most of these drivers gave no reason for non-participation, some expressed concern for providing information regarding the number of hours worked. Others indicated cynicism regarding improvements in the mental health and well-being of drivers because the taxi companies weren't interested in helping them in this area of work life.

A little over one-third, or 34%, of useable responses were returned within the first two weeks. A reminder notice was placed in the Black & White and Yellow taxi magazines three weeks after the initial sampling period had ended, which resulted in a 6% further response rate, bringing the total to 40%. The taxi companies agreed to allow the dispatchers for each company to talk to drivers on the radio and remind them to complete and return the questionnaire in the prepaid envelope. This was done once a week for a four week period following the initial reminder notice in the magazines. These reminder calls thanked drivers who had already responded, and reiterated the goals and aims of the research, and the importance of having as many respondents as possible participate in the research. These calls resulted in a further 2.7% return in responses, bringing the final overall response rate to 42.7%, with a subsequent usable response rate of 40.7%. The usable response rate was considered satisfactory in view of the fact that most taxi drivers were cynical of any changes that the research may bring to the taxi driving profession.

4.1.4 Analytic Techniques used to Examine the Questionnaire Data

The main analytic techniques used in the present research, correlation, multiple regression and multivariate analysis of variance (MANOVA), rely on null hypothesis testing in which significance criteria are applied. The standard alpha level of .05 was adopted throughout this research (Azar, 1999). However, many researchers have argued that excessive weight is given to the statistical significance of a study's results in determining whether they are reported and/or discussed in the literature. In addition, although a controversial practice, results which border on significance (p<.10) are sometimes discussed as theoretically interesting, as they indicate a trend toward significance which may be useful to pursue in future research. It is noted that this approach was taken in the present research.

4.1.4.1 Multiple Regression

This research was focused on predictive power of the hypotheses laid out in Chapter three. The statistical technique of choice for prediction when there are several interval scale independent variables and a range of separate interval scale dependent variables is multiple regression (Tabachnick & Fidell, 2007).

A number of practical matters were considered to maximise the validity of regression analysis. Firstly, data sets were screened before use for accuracy of input and missing data. Distributions of regression variables should be approximately normal. Normality was assessed by skewness and kurtosis. Recommendations indicated that when skewness is greater than +/-3 and or kurtosis was greater than +/-7, the distribution is sufficiently non-normal to warrant some sort of transformation (Tabachnick & Fidell, 2007; West, Finch & Curran, 1995). The ratio of cases to independent variables should exceed recommended cut-offs. Recommendations are $N >= 50 + 8m$ for multiple regression and $N >= 104 + m$ for testing individual predictors, where m is the number of independent variables (Tabachnick & Fidell, 2007). Other recommendations indicate that there should be five to 20 times the number of cases as there is independent variables being tested, depending upon the size of the effect being researched and the type of multiple regression being employed (Hair, Anderson, Tatham & Black, 1995). This research meets this recommendation. Outliers are extreme cases which have a disproportionate impact on the regression solution. Univariate outliers are cases with an extreme value on one variable. Multivariate outliers are cases with an unusual combination of scores on two or more variables. Ten univariate outliers were detected in the current research using the Casewise Diagnostic facility in SPSS Regression. This facility was set to detect univariate outliers with absolute standard residuals greater than three standard deviations, which is the commonly accepted cut-

off (Tabachnick & Fidell, 2007). The ten univariate outliers found using this criterion were reviewed using scatterplots to assess whether any practical reasons for their removal could be found. The scatterplots revealed that no practical reason for the removal of these outliers existed, therefore no univariate outliers were removed from the analyses. To detect multivariate outliers, Mahalanobis distances were calculated at $p < .001$ within SPSS Regression. Mahalanobis distance is the distance of a case from the centroid of the remaining cases where the centroid is the point created by the means of all the variables. Mahalanobis distances are evaluated using the Chi Square statistic with degrees of freedom equal to the number of variables (Tabachnick & Fidell, 2007). In this research, five outliers with Mahalonobis distances that had a marginal Chi Square value were identified and inspected to determine if any practical reason could be found to back up the statistical conclusion that the case was an outlier. No practical reason could be found to delete these five multivariate outliers, therefore they were retained in the analyses. Regression assumes linearity and homogeneity of variance. These were evaluated by plotting the regression standardised predicted value (i.e., the predicted value transformed to a scale with a mean of 0 and a standard deviation of 1) and the standardised residual (i.e., the residual value transformed to a scale with a mean of 0 and a standard deviation of 1). If the plot showed no obvious pattern, it was assumed that the assumptions of linearity and homogeneity had been met. This was performed for all regression analyses in the research.

Multicollinearity and singularity occur when regression variables are highly correlated. This is particularly problematic when interaction effects are being investigated using regression. To minimise the potential impact of multicollinearity, first order variables used in the multiple regression analyses employed in this research were centred when intercorrelations of variables were significant. A centred variable is one put in deviation score format so that its mean is zero (Aitken & West, 1991). A rule of thumb was to combine or exclude one of any two variables with Pearson correlation coefficients greater than .70 (Tabachnick & Fidell, 2007). There were no first order variables with correlation coefficients greater than .70 in the present research.

4.1.4.2 Multivariate Analysis of Variance (MANOVA)

One of the aims of the research required an investigation of the extent to which ethnic majority and ethnic minority taxi driver groups differed in their perceptions of job demands, job control, driver aggression, risk-taking, coping strategies, perceptions of the safety climate, and any difference in levels of depression, anxiety, stress and well-being. Multivariate analysis of variance (MANOVA) was a suitable technique for such investigations. MANOVA is primarily used to test the statistical significance of differences between the means of two or more groups

on two or more dependent variables considered simultaneously (Polit & Hungler, 1993). Researchers often describe subsets of cases or respondents for comparative purposes. As the use of MANOVA is well established, a very brief overview of the technique and the major factors involved in interpreting the results of such an analysis is now provided.

There is a distinct advantage to using MANOVA as it allows the researcher to examine simultaneously several dependent measures that are orthogonally related. Suitable in field settings or survey research where the independent measures are categorical, MANOVA can provide insights into not only the nature and predictive power of the independent measures but also the inter-relationships and differences seen in a set of dependent measures. An intrinsically multivariate research question involves a set of dependent measures in which the principal concern is how they differ as a whole across the groups. Differences on individual dependent measures are of less interest than their collective effect. The null hypothesis that is tested is the equality of vectors of means on multiple dependent variables across groups (Babbie, 2000; Hair, Anderson, Tatham & Black, 1995).

Like other analytical techniques, the researcher should assess all aspects of the research question carefully and ensure that MANOVA is applied in the correct manner. Issues to consider regarding the appropriateness and validity of this technique include how the dependent measures are determined, and ensuring the basic assumptions of the technique are not violated. Dependent measures should be selected and grouped according to a sound conceptual or theoretical basis. In the present research, dependent measures were grouped according to their theoretical function in the model as either environmental factors (job demand, job control) individual factors (aggression, risk-taking, coping strategies) or organisational factors (safety climate). Also, before presenting results of a MANOVA analysis, important considerations include the adequacy of the sample sizes in each cell (group) of the analysis and the assessment of normality, linearity and multicollinearity among the dependent variables.

Interpreting the results of a MANOVA involves examining several criteria. In the group differences areas reported in this study, main effects, or overall model fit was assessed with Wilks' lambda, which considers whether groups are different without being concerned with whether they differ on at least one linear combination of the dependent variables. Secondly, inspection of effect size (η^2), a standardised measure of group differences, provided an indication of the amount of variance explained in the dependent variable (Babbie, 2000; Hair, Anderson, Tatham & Black, 1995). It is important to note that these tests have quite low levels of power due to the number of possible combinations. These analyses identified which comparisons among groups had significant differences.

All results obtained by the use of correlation, multiple regression and MANOVA techniques were examined and questions were formulated for the second phase of the research, focus group semi-structured interviews. This phase of the research will now be discussed.

4.2 METHOD FOR STUDY TWO: Focus Group Semi-Structured Interviews

Introduction

Study one was designed to collect information about several individual work-related factors (i.e., aggression, risk-taking, coping strategies), environmental factors (job demands and job control) and an organisational factor (i.e., safety climate) and the ability of these factors to predict the psychological health (namely, depression, anxiety and stress) and job-related affective well-being of a samples of ethnic majority and ethnic minority taxi drivers. Study two aimed to validate the results of the quantitative findings of study one, as well as to explore and expand on these findings. For study two, a qualitative approach was taken to the collection of data through two focus group semi-structured interviews. The use of interviews complements a purely quantitative method by allowing for integration of researchers' and participants' perspectives and cross-validation (Jick, 1979; Reichardt & Cook, 1979; Sayer, 1992). The interviews were also conducted in an attempt to understand why the individual, organisational and environmental factors were important in the prediction of the psychological health and well-being of the drivers, why these factors were utilised while driving (e.g., aggression), how use of these factors (e.g., different coping strategies) made the drivers feel and why various factors were perceived a certain way (e.g., perception of the safety climate). Hence, the interview data strived to enhance the validity of the primary data collection method (the self-report questionnaire) as well as to explore and to expand on this data.

4.2.1 Participants

The target population for this study were taxi drivers who were working, either directly or indirectly, for the Black & White Taxi and Yellow Taxi companies. These taxi companies were the only two companies operating in the Brisbane city, airport and metropolitan areas. The target population included drivers who leased a vehicle from the taxi companies, drivers who leased a vehicle from an individual owner/owners, and owner-drivers. A convenience sample approach was used to obtain the sample of drivers.

In the questionnaire section of this research, taxi drivers were approached at the end of taxi ranks and asked if they would be interested in completing a questionnaire about their health and well-being. It was during this approach phase for the questionnaire that participants for the focus groups were also recruited. The researcher established that participants in the first focus group would contain day shift drivers and participants in the second group would contain night shift drivers. Having drivers from one shift in one group would make the setting of the time for the later interviews an easier process. Thus, recruitment for the day shift drivers was carried out between 7am and 6pm and for night shift drivers between 9pm and 10pm. The process of recruitment for these two groups was identical.

Every tenth driver the researcher approached was asked if he/she would be interested in participating in a group interview about factors that influenced their health and well-being. These drivers were not asked to complete the questionnaire, ensuring an independent sample. If he/she agreed to participate, the researcher then handed the driver a form explaining the contact details of the researcher, the process of further contact, the setting up of times for the group and the purpose of the group discussions, as well as the advantages for the driver of participation. The driver was given an opportunity to read through the form and to ask questions. The driver was informed that participation in the group interview was voluntary and that they could withdraw their consent at any time. The name, phone contact details and the address of the driver were then taken by the researcher, and the driver was told that the researcher would contact them by phone with further information about the group in the next five weeks. This process was repeated for the day shift drivers and the night shift drivers until the researcher had recruited a total of 45 drivers for the day shift group interview and a total of 45 drivers for the night shift group interview. This number of drivers were recruited in order to account for any attrition in numbers in the next stages of the research.

Three weeks after recruitment was completed, the drivers were contacted by phone and asked if they were still willing to participate in the focus group interviews. Drivers were reminded that participation was voluntary and that they could withdraw at any time from the interview. A total of 24 drivers from the day shift group and 20 drivers from the night shift group confirmed their participation. These drivers were briefed again about the nature of the interview and the fact that any food or drink requested by the drivers during the interview would be paid for by the researcher. The day shift drivers and the night shift drivers were then each given a choice of three locations, three different time slots and two week days for the interviews. The drivers stated their preferences and the researcher indicated that they would be contacted in the next week with the day, time and location of the interviews. Each driver was then contacted by

post a week later with the day, time and location of their group interview, the anticipated length of the interview, as well as a map and directions to the interview location. The researcher's contact details were also included in case the drivers had any questions about the interview. In October of 2008, one day before the interviews were to be held, the researcher again contacted the drivers by phone to confirm their participation in the appropriate interview and to make sure that they had received the letter containing the details of the time, day and location. Ten day shift drivers and 11 night shift drivers confirmed their participation in the interviews. They were instructed to contact the researcher if they wished to withdraw from the interview or if they were to be delayed for any reason on the day of the interview. They were also instructed that the researcher would be wearing a name tag and would greet them at the door of the café. Nine drivers from the day shift group, and eight drivers from the night shift group, actually participated in the group interviews.

The taxi drivers participated in the two focus group interviews represented a wide cross section of drivers. Focus group one consisted of nine drivers – seven male and two female – who all drove the day shift (between 6am and 6pm). Two drivers were aged 18-25 years, four were aged between 26 and 49 years and three were over the age of 50. There were three ethnic minority and six ethnic majority drivers in the group. Six drivers drove during the week and three drove on weekends. Five drivers worked full-time (37 or more hours per week) and four worked part-time or on a casual basis (up to 37 hours per week). Three drivers were owner-drivers, while six were lessee drivers. Four out of the seven male drivers worked 60 or more hours per week, while the two female drivers worked between 37 and 60 hours per week. Focus group two consisted of eight drivers, all male, who all worked the night shift (between 6pm and 6am). There were four ethnic minority and four ethnic majority drivers in the group. Two drivers were aged 18-25 years, four were aged between 26 and 49 years and two were over the age of 50. Six drivers drove during the week and two drove on weekends. Five drivers worked full-time and three worked part-time or on a casual basis. Two drivers were owner-drivers and six worked for a taxi base or an individual driver. Based on these demographic characteristics, the two focus groups were considered representative samples of the urban taxi driver population in the Brisbane area.

4.2.2 Measures

The measure utilised for data collection in study two was a semi-structured interview, consisting of a set of 25 core questions. The core questions were developed from the results of the questionnaire in order to further explore the contribution of environmental, organisational

and individual factors to the psychological health and well-being of taxi drivers. The questions explored: the incidence of psychological health problems; the reasons behind the use of aggression, risk-taking and various coping strategies, and how the use of these behaviours made the drivers feel; the reasons behind the drivers' perceptions of the current safety climate in the taxi industry, and how these perceptions made them feel; and if ethnic minority drivers experienced psychological illnesses and decreased well-being as a result of racial abuse and economic exploitation. Probing questions were also used in the interview where appropriate. A full list of the core questions can be seen in Appendix F.

4.2.3 Procedure

4.2.3.1 Uses and Advantages of Focus Groups

Focus groups have been proven useful following the analysis of a large-scale, quantitative survey. The focus group facilitates interpretation of quantitative results and adds depth to the responses obtained in the more structured survey. Focus groups also have a place as a confirmatory method that may be used for testing hypotheses (Stewart and Shamdasani, 1990).

Focus groups provide a number of advantages relative to other types of research. They provide data from a group of people much more quickly and at less cost than interviewing participants separately. Focus groups also allow the researcher to interact directly with the participants. This provides opportunities for the clarification of responses, for follow-up questions and for probing of responses. The open response format of a focus group provides an opportunity to obtain large and rich amounts of data in the participants' own words. Focus groups also allow participants to react to and build upon the responses of other group members. The groups may also be one of the few research tools available for obtaining data from participants who do not speak the native language well, as may be the case in this research. Finally, the results of a focus group are easy to understand. Researchers can readily understand the verbal responses of most participants. It is for these reasons that focus group, rather than individual, interviews were chosen as a method to obtain information from participants.

4.2.3.2 Focus Group Interview Procedure

In order for the focus group interviews to be successful, the researcher required information about the sampling frame, recruitment and location of the interviews, the physical arrangement of the groups, the correct interviewing style, tips on recording the interviews, beginning the interviews, time management, the use of probing questions and how to end the interviews (Berg, 2004; Bloor, Frankland, Thomas, & Robson, 2002; Grbich, 2007; Stewart &

Shamdasani, 1990). This information was obtained from well-known sources reviewing qualitative research.

The day shift focus group interview was held at 10am at a café at Chermside shopping centre and the night shift interview was held at 2pm at a café in the city's Southbank precinct. These two cafes had round table facilities which were in a separate room from the rest of the café. The cafes were contacted and the tables booked for the appropriate day and time. On the day of each interview, the researcher stood outside the café half an hour before the interview commenced and greeted the participants at the door. Each participant was directed to the table and told that there was a name tag for him/her. As the participants arrived, they were also told to order any food or drink and this would be paid for by the researcher. One day-shift worker phoned to say that he was not going to make the interview, leaving 9 participants in the group. Two drivers from the night-shift group also phoned to withdraw from the interview, leaving 9 night shift participants. Once all the participants had arrived and food and drink had been served, the researcher commenced the interview. Firstly, the researcher informed the participants that the interview was being recorded, and that anyone who was not comfortable with this process could leave the group. All of the day-shift participants remained in their group of 9 members. One of the night-shift participants indicated that he was leaving at this point, leaving 8 participants in the night-shift group. Secondly, the researcher reminded the participants that even though they had name tags on and they would be signing a consent form, the tape of the interview would remain confidential and that no identifying information would be used in the write-up of the interview results. Next, all the participants signed a consent form and answered five demographic questions used in the questionnaire to establish the demographic characteristics of each group. After the consent forms and pre-group demographic questions were collected, the researcher established the agenda for each session and outlined the ground rules. Next, the participants were encouraged to introduce themselves and tell the group something about themselves that was not too personal. After the introductions, a focus group exercise was conducted. This exercise involved each group member writing down on a card something that they enjoyed about driving a taxi, and swapping the card with another group member. These ideas were then read out and commented on by the group. This exercise helped to build rapport within the group and to break down inhibitions.

Once the focus group exercise had finished, the researcher raised the topic for discussion. Questions about the participants' psychological health and well-being were introduced first in order to understand the extent of depression, anxiety and stress in the interview groups and in the taxi driver population in general. Next, questions were asked about job demands and job control,

aggression, risk-taking, coping strategies and perceptions of the safety climate in that order. During the interview, the researcher used an interviewing style that was somewhere in between the directive and non-directive approaches. Direction was used if the discussion needed to be moved along, for re-focusing the group on the question and for probing participants in response to verbal and non-verbal cues. Otherwise, the participants were free to discuss the question, speaking one at a time. In order for the interview to finish on time, the researcher gauged the extent to which discussion for each question had been exhausted and moved the discussion along. Also, more important questions were asked at the beginning of the interview such that if time ran short, these questions would have been discussed at the expense of more general questions.

Once the interview was nearing completion (a total of one and a half hours for the day-shift group, and two hours for the night-shift group), the researcher asked a question relating to the future health of the taxi industry to wind up the session. After discussion of this question, the researcher reminded the participants that the consent forms, the pre-group demographic questions, the tape of the interview and the transcript of the interview would all remain confidential and that the write-up of the results would ensure their anonymity. A contact number for the researcher and a contact number for counselling services were given out to the participants for any further questions relating to the interviews. Finally, the participants were thanked for their valuable time and input into the group. The researcher stayed behind to answer any immediate questions the participants had about the sessions. The researcher then paid for the food and drink and thanked café staff for their help and service. The forms and the audio equipment were then collected, the researcher left the café and the tape of the interview, as well as the consent forms and pre-group question sheets were then driven to the Brisbane campus of the Australian Catholic University to be stored in an appropriate place for further analysis.

4.2.4 Analytic Techniques used to Examine the Data from the Interviews

4.2.4.1 Transcription of the Interview Data

Transcription of the interview was the first process in the analysis of the data. First, every effort was made to transcribe all recorded speech. This included: all speakers; all unfinished and interrupted speech; very brief extracts of speech; and where speech was partially inaudible. Second, speech was transcribed as it occurred and it was not tidied up in any way. Third, in addition to the content of speech, other oral communication, such as laughter, were noted where possible. Finally, it was necessary to identify the speaker. This was achieved by use of a group

exercise, where all participants stated their name at the beginning of the interview and this was used as a reference point for identification of the speaker.

The accepted academic methods for transcribing text have been developed largely for the purposes of conversation and discourse analysis (Hammersley & Atkinson, 1995). This research drew upon the notation used by Atkinson and Heritage (1984) in order to transcribe the two focus group interviews.

4.2.4.2 Content Analysis

Content analysis was chosen as the method of analysis in this study because it has a long and rich history in the social sciences (see Krippendorff, 1980, for a concise history of the method) and its methods were suitable for focus group interviews. Content analysis can be defined as "any technique for making inferences by systematically and objectively identifying special characteristics of messages" (Holsti, 1968, p.608).

The first stage of content analysis began with the research questions. What was the researcher interested in finding explanations for? Next, a number of analytic categories were developed by sorting the themes or category labels of the various chunks of transcribed data. These analytic categories arose from reading the literature, links to the research questions, and directly from the interview questions. After establishing the analytic categories, the next step was to read through the data. As this was progressing, the researcher wrote down relevant themes and category labels for sorting the data. These category labels had a grounded relationship with the research questions and were not random words that occurred with some regular frequency (Bloor et al., 2002).

After establishing the analytic and grounded categories, objective criteria for selection were established. The idea was to have an explicit definition or coding rules for each category (either analytic or grounded). In this research, this criterion was taken as specific paragraphs relating to a particular topic (e.g., aggression or risk-taking). Once the criteria for selection for various categories were accomplished, the next stage was to sort the segments of data accordingly. In this research, one copy of the text was printed out, cut, labelled with its interview number, question number and page number and placed in a file labelled with the appropriate category.

Once filing had been completed, the number of data chunks in each category were counted to allow for demonstration of the magnitude of similar responses. Next, the textual materials, as sorted into different categories, were reviewed in order to seek patterns in the data. The patterns in the data were considered in light of relevant literature and/or theory and other

research. After this had been achieved, the researcher was able to offer an explanation for, or analysis of, the findings and relate this analysis to the extant literature of the subject.

4.3 Chapter Summary

In this chapter, the execution of the two studies in the current research were described in detail. The first study, a self-report questionnaire, involved 941 taxi drivers, with a usable questionnaire response rate of 40.7%. The participants included ethnic majority and ethnic minority drivers, male and female drivers, drivers who worked full-time, part-time or on a casual basis, day shift and night shift drivers and drivers who worked on the weekend and on weekdays. Correlation, multiple regression and MANOVA analyses were used in order to examine the data and test the hypotheses. The results from these analyses are presented in chapter five.

The results from the first study were used to generate the 25 core questions to be asked in the second study, the two focus group interviews. The first focus group included nine day-shift drivers and the demographics of the group represented ethnic majority and ethnic minority drivers, male and female drivers, drivers who worked full-time, part-time or on a casual basis, and drivers who worked on the weekend and on weekdays. The second focus group included eight night-shift drivers and the demographics represented were the same as for the first group. The data from the interviews was transcribed and content analysis was used to examine the answers given by the participants. The results of this analysis are presented in chapter six.

5.0 STUDY ONE RESULTS

This research is concerned with identifying job-related factors that may predict the psychological health and job-related affective well-being of ethnic majority and ethnic minority urban taxi drivers. This chapter reports the results of the 143-item taxi driver questionnaire and examines the impact that driver individual characteristics (i.e., driver aggression, perception of risk-taking and driver coping styles), organisational factors (i.e., drivers' perceptions of the safety climate) and environmental factors (i.e., job demands and job control) have on the psychological health (i.e., depression, anxiety and stress) and job-related affective well-being of both ethnic majority and ethnic minority taxi drivers.

5.1 Initial Data Screening

A total of 402 individuals responded to the survey, an overall response rate of 42.7%. Of these, 383 were usable. A total of 19 participants did not complete the survey in full and/or provided the same response to all questions completed, thereby indicating a deliberate response bias. This left a usable response rate of 40.7%. The outcome variables were driver depression, anxiety, stress and job-related affective well-being, while the predictor variables were job demands and job control, driver aggression, driver perception of risk taking, driver coping strategies and driver perception of the current safety climate. The main statistics used in the study were correlation, multiple regression and MANOVA. SPSS (version 15.0) was the statistical package used in the initial stages of exploring the data to ensure no assumptions of multiple regression and MANOVA were violated, and also to perform the final analyses. At the initial stages of looking for outliers, skew and kurtosis, statistical calculations were conducted at a significance level of $p < .001$ (two tailed).

Data screening for respondent errors and omissions was conducted prior to analysis. Missing value analyses revealed that the missing data ranged from 0.6% to 3.1% on the aggression and risk-taking variables. Since the values were missing at random, these missing values were replaced by the participant's mean on the measure rather than deleting the cases. Prior to analysis, data was screened to examine outliers and normality using the Kolmogorov-Smirnov test. Data screening for univariate outliers and normality is described separately for each variable, on both ethnic majority and ethnic minority samples. Data screening occurred for the ethnic majority and ethnic minority samples for the regression analyses, as these analyses examined variables on both samples separately. Where transformations were performed on negatively skewed variables, all transformed variables were reflected prior to and after

transformation to ensure that the final variable was consistent with the original direction of the variable (e.g., high scores continued to reflect high scores).

Job Demands and Job Control. The Kolmogorov-Smirnov test of normality and subsequent inspection of standardised scores revealed that the assumption of normality had been violated for job demands (skewness = 1.196, kurtosis = 1.846) and job control (skewness = 3.933, kurtosis = 1.038) for the ethnic majority sample. The assumption of normality had also been violated for job demands (skewness = 1.278, kurtosis = 1.742) and job control (skewness = 3.69, kurtosis = 1.144) variables for the ethnic minority sample. To achieve adequate normality, a logarithm transformation for job demands and job control variables was performed for both samples separately.

Driver Aggression. While the Kolmogorov-Smirnov test showed that the assumption of a normal distribution had been violated for the driver aggression variable in both ethnic majority and ethnic minority samples. Inspection of standardised scores showed this violation was only moderate and within 1.96 and 2.58 standard deviations of the mean, respectively. Therefore, the distribution of this variable for both ethnic majority and ethnic minority samples was deemed acceptable for subsequent analysis (Tabachnick & Fidell, 2007).

Driver Perceptions of Risk Taking. The Kolmogorov-Smirnov test of normality and subsequent checks of standardised scores for skewness and kurtosis showed that the risk-taking variable was not normally distributed in the ethnic majority sample (skewness = -0.606, kurtosis = 0.063), nor in the ethnic minority sample (skewness = -0.513, kurtosis = 0.127). A logarithm transformation was performed on both samples to achieve greater normality, resulting in a non-significant Kolmogorov-Smirnov test.

Driver Coping Strategies. The Kolmogorov-Smirnov test of normality and subsequent inspection of standardised scores in the ethnic majority sample revealed that the assumption of normality had been violated for the Driver Coping Questionnaire sub-scales of reappraisal (skewness = 3.933, kurtosis = 17.038), emotion-focused coping (skewness = 2.405, kurtosis = 1.203) and avoidance (skewness = 1.196, kurtosis = 1.846). The sub-scales of task-focused coping (skewness = 0.239, kurtosis = 0.126) and confrontive coping (skewness = 0.084, kurtosis = 0.230) were also non-normal. To achieve greater normality, transformations were attempted on all five sub-scales. However, only four of the sub-scales (namely task-focused coping,

confrontive coping, emotion-focused coping and avoidance) could be transformed to achieve greater normality using logarithm transformations. As the reappraisal subscale could not be transformed to achieve adequate normality, or within a maximum of 2.58 standard deviations of the mean when converted to standardised scores (Tabachnick & Fidell, 2007), it was excluded from all subsequent analyses. All five sub-scales in the ethnic minority sample were also significantly non-normal. Logarithm transformations on the task-focused coping, emotion-focused coping, avoidance and confrontive coping sub-scales were performed and greater normality was achieved for each sub-scale. However, the reappraisal sub-scale remained significantly non-normal after transformation and was eliminated from all subsequent analyses.

Driver Perceptions of the Safety Climate. Inspection of the Kolmogorov-Smirnov statistic and standardised scores for the six sub-scales of the Safety Climate Questionnaire-Modified for Drivers (SCQ-MD) in the ethnic majority sample revealed that three sub-scales, namely communication and procedures (skewness = 1.347, kurtosis = 3.548), management commitment (skewness = 0.589, kurtosis = 2.345) and driver training (skewness = 0.763, kurtosis = 0.542), were significantly non-normally distributed. In order to maintain consistent subsequent analyses, it was decided to transform all of the six sub-scales using a logarithm transformation in each case. Subsequent inspection of standardised scores revealed that the assumption of normality had been met for all six sub-scales. Similarly, in the ethnic minority sample the sub-scales of communication (skewness = 1.657, kurtosis = 4.723) and management commitment (skewness = 0.895, kurtosis = 3.303) were significantly non-normal. As a consequence, all six sub-scales were transformed using logarithmic transformations to achieve statistical consistency.

Driver Depression, Anxiety and Stress. The Kolmogorov-Smirnov statistic for the three sub-scales of depression (skewness = 0.231, kurtosis = -0.173), anxiety (skewness = 0.430, kurtosis = 0.308) and stress (skewness = 0.305, kurtosis = 0.190) revealed that all variables met the assumption of normality for the DASS-21 scale in the ethnic majority sample. However, a decision was made to transform the depression sub-scale using a logarithm transformation to reduce the impact of 10 univariate outliers that were identified (Tabachnick & Fidell, 2007). A logarithm transformation was also undertaken for the anxiety sub-scale to reduce the impact of 13 identified univariate outliers. A logarithm transformation also improved normality for the stress sub-scale. In the ethnic minority sample, all three variables met the assumption of normality, however as with ethnic majority sample, logarithmic transformations were performed on all three scales to achieve statistical consistency.

Driver Job-Related Affective Well-being. While the Kolmogorov-Smirnov test showed that the assumption of a normal distribution had been violated for well-being in both the ethnic majority (skewness = 0.382, kurtosis = 0.063) and ethnic minority (skewness = 0.539, kurtosis = 0.125) samples, inspection of the standardised scores revealed that these violations were only moderate and within 1.96 and 2.58 standard deviations of the mean, respectively, for each sample. Therefore, the distributions of this variable were deemed acceptable for subsequent analyses (Tabachnick & Fidell, 2007).

Multivariate Outliers, Linearity and Homoscedasticity. The assumptions of linearity and homoscedasticity, and the presence of outliers, were assessed during the multiple regression analyses. With each regression analysis containing between three and six variables, the Mahalanobis distance values were calculated with a critical critical chi square value of 20.51 (p<.001). Five cases with marginal chi square values (between 20.0 and 21.0) were identified in the ethnic majority sample variables. These cases were all found on the Safety Climate Questionnaire-Modified for Drivers scale in the ethnic majority sample. No practical reason could be found to eliminate these outliers, therefore they were retained in all subsequent analyses (Tabachnick & Fidell, 2007). No multivariate outliers were found in the ethnic minority sample variables. The residual plots for each of the regression analyses suggested a fairly even scatter of residuals, indicating acceptable homoscedasticity between the dependent variable scores and errors of prediction, while the normal probability plots indicated that the assumption of linearity between the residuals had also been met. With no tolerance levels below.3, indicating squared multiple correlations between the variables to be above .7 (1 – tolerance), the multicollinearity assumption was met. For the MANOVA analyses, sequential adjustment for nonorthogonality was used. There were no univariate or multivariate within-cell outliers at p = .001. Results of evaluation of assumptions of normality (after transformation), homogeneity of variance-covariance matrices, linearity and multicollinearity were satisfactory.

5.2 Descriptive Statistics

Table 5.1 presents the descriptive statistics of the demographics and work-related data of the participants involved in the study. The results indicate that 70.4% of the total taxi driver sample were ethnic majority drivers, with ethnic minority drivers making up 29.6% of the sample. Most of ethnic majority taxi drivers were aged 26-49 years (69.1%) and this applied to ethnic minority drivers also (69.9%). The vast majority of ethnic majority taxi drivers (90.9%) were male, and there were no female ethnic minority drivers in the sample. Most ethnic majority

drivers were Australian (75.1%), with 15.1% being from New Zealand, while the majority of ethnic minority drivers were from India (66.4%) and Pakistan (20.4%). Most ethnic majority and minority drivers had worked for a period of between 6-10 years (63.4% and 48.7%, respectively), while approximately 20% of drivers had worked for over 10 years in the taxi industry. The majority of ethnic majority drivers worked for a taxi base (63.4%), while 20.4% worked for an individual owner and 16.2% were owner-drivers. The demographics for ethnic minority drivers were different, with 43.4% working for a taxi base and 50.4% working for an individual owner. Roughly one third of ethnic majority taxi drivers worked on a set fee basis and two thirds on a percentage basis, and this split is the same for ethnic minority drivers. Finally, 1.9% of ethnic majority drivers worked 0-12 hours per week, with 56.2% working over 60 hours. The figures are similar for ethnic minority drivers, with 4.4% working 0-12 hours and 69% working over 60 hours per week.

To detect any relationships between ethnicity and the six other demographic categorical variables, separate chi square analyses were conducted with ethnicity (majority vs minority) as one categorical variable and age, gender, number of years as a taxi driver, owner of taxi, type of payment and number of hours worked per week as the second categorical variable. Although there appeared to be a relationship between ethnicity and the owner of taxi variable, this relationship was not statistically significant. The results of the other chi square analyses were also not significant.

Table 5.1 *Descriptive Statistics for Demographic and Work-related Data*

Characteristic	Ethnic Majority (*N* = 270)		Ethnic Minority (*N* = 113)	
	Frequency	Percent	Frequency	Percent
Age				
1 = 18-25 years	22	8.2	14	12.4
2 = 26-49 years	188	69.6	79	69.9
3 = 50+ years	60	22.2	20	17.7
Gender				
1 = Male	245	90.9	113	100
2 = Female	25	9.1	0	0
English as First Language				
1 = Yes	270	100	0	0
2 = No	0	0	113	100
Country of Origin				
Australia	203	75.1		
New Zealand	41	15.1		
UK	19	7.2		
USA	4	1.5		
Canada	3	1.1		
India			75	66.4
Pakistan			23	20.4
Middle East			5	4.4
Sudan			5	4.4
Asia			3	2.7
Europe			2	1.7
No. Years as a Taxi Driver				
1 = Under 1 year	5	1.9	7	6.2
2 = 1-5 years	41	15.1	26	23.0
3 = 6-10 years	171	63.4	55	48.7
4 = 10+ years	53	19.6	25	22.1
Owner of Taxi				
1 = A taxi base	171	63.4	49	43.4
2 = An individual owner	55	20.4	57	50.4
3 = Yourself	44	16.2	7	6.2
Type of Payment				
1 = Set fee	100	37.0	29	25.7
2 = Percentage	170	63.0	84	74.3
No. Hours Worked per Week				
1 = 0-12 hours	5	1.9	5	4.4
2 = 13-36 hours	18	6.8	9	8.0
3 = 37-60 hours	95	35.1	21	18.6
4 = Over 60 hours	152	56.2	78	69.0

5.2.1 Examination of Means for all Variables

The untransformed means and standard deviations of each of the continuous variables of interest in the current study are presented in Table 5.2. Examination of each of the means will occur for each predictor variable separately.

Table 5.2
Untransformed Means and Standard Deviations of Total Scores and Sub-Scale Scores on all Variables

	Total Sample		Ethnic Majority		Ethnic Minority	
Variable	*M*	*S.D.*	*M*	*S.D.*	*M*	*S.D.*
Job Demands	16.57	2.43	14.78	2.67	20.58	3.42
Job Control	14.59	2.89	16.96	2.35	11.51	2.32
Aggression	20.49	3.65	23.47	3.21	16.78	2.90
Risk taking	22.27	2.98	18.43	2.41	26.85	3.01
Maladaptive Coping	75.42	5.36	70.64	5.99	81.23	6.79
- Emotion-focused	24.93	3.59	23.78	3.22	30.53	3.45
- Confrontive	26.83	4.01	25.43	3.68	20.42	3.22
- Avoidance	23.66	3.78	21.43	3.52	30.28	3.97
Adaptive Coping	24.56	3.52	25.12	3.78	19.55	3.29
Safety Climate	135.43	6.73	133.25	5.49	145.68	5.60
- Communication	22.58	2.45	21.35	2.14	22.97	2.31
- Work pressure	26.75	2.97	25.44	2.36	26.72	2.86
- Mgmt commitment	24.89	2.45	24.12	2.94	23.93	2.75
- Relationships	30.54	3.42	24.73	3.78	33.46	3.87
- Driver training	18.76	3.69	22.80	3.29	24.71	340
- Safety rules	11.91	1.28	14.81	2.04	13.89	1.94
Psychological Health	70.64	9.61	64.78	8.23	78.90	7.63
Depression	25.64	2.83	18.49	2.13	30.83	2.68
Anxiety	21.56	2.57	23.32	2.17	23.72	3.06
Stress	23.44	3.75	22.97	2.78	24.65	3.51
Well-being	60.38	8.90	64.37	6.73	56.79	5.40

Note: N = 270 for ethnic majority drivers N = 113 for ethnic minority drivers

Job Demands. The range for the job demands score was 6 to 24, with higher scores indicating a more demanding job situation. Owner drivers (M = 19.83, SD = 2.13) found driving a taxi to be more demanding than drivers who drove for a taxi base (M = 14.53, SD = 1.98, t(324) = 2.44, p<.01) or an individual owner (M = 13.26, SD = 1.69, t(215) = 2.37, p<.01), and drivers who worked more than 60 hours per week (M = 22.53, SD = 2.70) found their job to be more demanding than those who worked less than 60 hours per week (M = 14.51, SD = 1.93, t(381) =

3.01, $p<.01$). There were no significant differences in mean job demands scores between age groups (i.e., 18-25 years, 26-49 years, 50+ years), or between number of years worked (i.e., under 1 year, 1-5 years, 6-10 years, 10+ years).

Job Control. The range for the job control score was 8 to 32, with higher scores indicating a greater degree of control on the job. The overall mean was 14.59 (SD = 2.89), indicating a moderate to low level of perceived control by the drivers. Owner drivers (M = 11.24, SD = 2.01) perceived less control on the job than did drivers who worked for a taxi base (M = 18.97, SD = 2.47, $t(324) = 2.45$, $p<.01$) or an individual owner (M = 19.08, SD = 2.65, $t(215) = 2.01$, $p<.05$). Drivers who worked more than 60 hours per week (M = 12.31, SD = 2.64) also indicated that they had less control on the job than did drivers who worked less hours (M = 20.86, SD = 2.18, $t(381) = 2.44$, $p<.01$). There were no significant differences in mean job control scores between age groups, between genders or between number of years worked.

Aggression. The range for the driver aggression score was from 5 to 30, with higher scores indicating more aggressive driving. The overall mean was 20.49 (SD = 3.65), indicating a moderate to high level of aggressive driving. Male drivers (M = 24.35, SD = 3.42) were considerably more aggressive while driving than were female drivers (M = 11.23, SD = 2.71, $t(381) = 2.57$, $p<.01$), and owner drivers (M = 16.42, SD = 2.56) appeared to be less aggressive than drivers who worked for a taxi base (M = 22.39, SD = 3.13, $t(324) = 2.66$, $p<.01$) or an individual owner (M = 24.58, SD = 3.09, $t(215) = 1.96$, $p<.05$). There were no significant mean differences in aggression scores between age groups, between number of hours worked per week or between number of years worked.

Risk taking. The range for the risk taking score was from 6 to 30, with higher scores indicating a perception of lower risk. The overall mean score was 22.27 (SD = 2.98), indicating a perception of moderate to low risk. Male drivers (M = 23.46, SD = 2.65) had a considerably lower perception of risk than did female drivers (M = 10.97, SD = 2.13, $t(381) = 2.98$, $p<.01$), and owner drivers (M = 25.42, SD = 3.15) perceived less risk than did drivers who worked for a taxi base (M = 18.79, SD = 2.34, $t(324) = 2.77$, $p<.01$) or an individual driver (M = 20.93, SD = 3.11, $t(215) = 2.13$, $p<.01$). Drivers who were aged between 18-25 years (M = 26.57, SD = 2.78)

perceived less risk while driving than did drivers who were 26-49 years of age (M = 18.74, SD = 2.44, $t(287) = 2.79$, $p<.01$) or 50+ years of age (M = 17.63, SD = 2.51, $t(114) = 2.58$, $p<.01$). In addition, drivers who worked more than 60 hours per week (M = 26.74, SD = 2.99) appeared to have a perception of lower risk than did drivers who worked less than 60 hours (M = 17.44, SD = 3.86, $t(381) = 3.09$, $p<.01$). There were no significant differences in mean perception of risk taking scores between number of years worked.

Coping Strategies. The range for the adaptive coping (i.e., task-focused coping) total score was from 7 to 35, with higher scores indicating higher use of adaptive coping while driving. The overall mean score was 24.56 (SD = 3.52), indicating a moderate use of this coping strategy. Owner drivers (M = 24.39, SD = 3.45) tended to make more use of adaptive coping than did drivers who worked for a taxi base (M = 18.31, SD = 2.68, $t(324) = 3.12$, $p<.01$) or drivers who worked for an individual owner (M = 19.04, SD = 3.89, $t(215) = 2.86$, $p<.01$). Drivers aged between 18 -25 years (M = 17.68, SD = 3.35) tended to make less use of adaptive coping than did drivers aged between 26-49 years (M = 26.19, SD = 3.75, $t(287) = 2.55$, $p<.01$) or 50+ years of age (M = 25.49, SD = 3.67, $t(114) = 2.13$, $p<.01$). Drivers with less than 5 years of driving experience (M = 17.81, SD = 3.98) tended to make less use of adaptive coping than did drivers with over 5 years experience (M = 26.90, SD = 4.01, $t(381) = 3.11$, $p<.01$), and drivers working more than 60 hours per week (M = 18.94, SD = 3.82) used adaptive coping less than drivers who worked less than 60 hours per week (M = 24.38, SD = 3.61, $t(381) = 2.71$, $p<.01$).

The range for the maladaptive coping total score (i.e., confrontive coping + emotion-focused coping + avoidance coping) was from 21 to 105, with higher scores indicating more use of maladaptive coping strategies. The overall mean was 75.42 (SD = 5.36), indicating moderate to high use of such strategies. Female drivers (M = 83.92, SD = 5.61) used maladaptive coping more than male drivers (M = 70.67, SD = 5.42, $t(381) = 2.89$, $p<.01$). Drivers aged between 18-25 years (M = 84.63, SD = 5.35) tended to make more use of maladaptive coping than did drivers aged between 26-49 years (M = 71.49, SD = 5.48, $t(287) = 3.01$, $p<.01$) or 50+ years of age (M = 73.29, SD = 5.60, $t(114) = 1.88$, $p<.05$). Drivers with less than 5 years of driving experience (M = 87.21, SD = 5.98) tended to make more use of maladaptive coping strategies than did drivers with over 5 years experience (M = 73.51, SD = 5.08, $t(381) = 2.96$, $p<.01$), and drivers working more than 60 hours per week (M = 82.32, SD = 4.89) used maladaptive coping strategies more

than drivers who worked less than 60 hours per week (*M* = 71.38, *SD* = 5.06, *t*(381) = 1.97, *p*<.05).

Safety Climate. The range for the safety climate total score was from 35 to 175, with higher scores indicating a more negative perception of the current safety climate. The overall mean score was 135.43 (*SD* = 6.73), indicating a moderately negative perception. Drivers who were over 50 years of age (*M* = 137.83, *SD* = 7.44) tended to have a more negative perception of the safety climate than younger drivers (*M* = 124.66, *SD* = 6.73, *t*(381) = 1.98, *p*<.05), and drivers who had worked for more than 10 years (*M* = 141.14, *SD* = 6.38) had a more negative perception than drivers who had worked for 1-5 years (*M* = 119.03, *SD* = 6.51, *t(134)* = 2.73, *p*<.01) and 6-10 years (*M* = 114.97, *SD* = 5.62, *t*(271) = 3.05, *p*<.01). Male drivers (*M* = 140.43, *SD* = 7.64) had a more negative view of the safety climate than did female drivers (*M* = 127.19, *SD* = 6.71, *t*(381) = 2.47, *p*<.01). There were no significant differences in mean safety climate scores for number of hours worked and owner of the taxi groups.

Depression. The range for the depression total score was from 7 to 28, with higher scores indicating higher level of depressive symptoms. The overall mean score was 25.64 (*SD* = 2.83), indicating a moderate to severe level of depressive symptoms among drivers. Ethnic minority drivers (*M* = 23.67, *SD* = 2.68) reported a higher overall incidence of depression, with 48% of drivers indicating depressive symptoms. Of this total, 28% reported mild depressive symptoms, 54% moderate depressive symptoms and 18% reported severe symptoms. For ethnic majority drivers, the incidence of depression was 32%, with 38% reporting mild symptoms, 56% had moderate symptoms and 6% reported severe symptoms. Female drivers (*M* = 24.6, *SD* = 3.02) appeared to have a more severe level of depressive symptoms than their male counterparts (*M* = 17.83, *SD* = 2.87, *t*(381) = 3.15, *p*<.01). Drivers aged 26-49 years (*M* = 23.49, *SD* = 3.04) displayed a more severe level of depressive symptoms than did drivers aged 18-25 years (*M* = 15.05, *SD* = 3.09, *t*(287) = 2.09, *p*<.05) or over 50 years (*M* = 17.75, *SD* = 3.24, *t*(114) = 2.33, *p*<.01), with 70% of 26-49 year old depressed drivers having moderate or severe symptoms. Owner drivers (*M* = 22.97, *SD* = 3.22) reported more severe depressive symptoms than did drivers who worked for a taxi base (*M* = 17.43, *SD* = 2.93, *t*(324) = 2.76, *p*<.01), with 67% of

owner drivers reporting moderate or severe depressive symptoms. There were no significant differences in mean depression scores for number of hours worked or number of years worked.

Anxiety. The range for the anxiety total score was from 7 to 28, with higher scores indicating a more severe level of anxiety symptoms. The overall mean score was 21.56 (*SD* = 2.57), indicating a moderate level of anxiety symptoms among drivers. Ethnic minority drivers reported a higher overall incidence of anxiety, with 25% of drivers indicating anxiety symptoms. Of this total, 33% reported mild anxiety symptoms, 58% moderate symptoms and 9% reported severe symptoms. For ethnic majority drivers, 20% reported overall anxiety symptoms, with 37% reporting mild symptoms, 54% had moderate symptoms and 9% reported severe symptoms. Female drivers (*M* = 24.31, *SD* = 3.08) appeared to have a more severe level of anxiety than their male counterparts (*M* = 17.56, *SD* = 2.75, *t*(381) = 3.22, *p*<.01). Drivers aged 26-49 years (*M* = 23.28, *SD* = 3.74) displayed a more severe level of anxiety symptoms than did drivers aged 18-25 years (*M* = 15.12, *SD* = 2.99, *t*(287) = 2.03, *p*<.05) or over 50 years (*M* = 16.75, *SD* = 3.07, *t*(114) = 2.45, *p*<.01), with 70% of 26-49 year old anxious drivers having moderate or severe anxiety symptoms. Owner drivers (*M* = 22.97, *SD* = 3.92) reported more severe anxiety symptoms than did drivers who worked for a taxi base (*M* = 16.43, *SD* = 2.55, *t*(324) = 3.09, *p*<.01) or an individual owner (*M* = 15.23, *SD* = 2.33, *t*(215) = 2.94, *p*<.01), with 72% of anxious owner drivers reporting moderate or severe symptoms. There was no significant difference in mean anxiety scores for drivers who worked more than 60 hours per week and drivers who worked less than 60 hours per week.

Stress. The range for the stress total score was from 7 to 28, with higher scores indicating a more severe level of stress. The overall mean score was 23.44 (*SD* = 3.75), indicating a moderate to severe level of stress symptoms among drivers. Ethnic minority drivers reported a higher overall incidence of stress, with 76% of drivers indicating stress symptoms. Of this total, 23% reported mild stress symptoms, 60% moderate symptoms and 17% reported severe symptoms. For ethnic majority drivers, 55% reported overall stress symptoms, with 27% reporting mild symptoms, 61% had moderate symptoms and 12% reported severe symptoms. Male drivers (*M* = 24.15, *SD* = 3.48) appeared to have a more severe level of stress than their female counterparts (*M* = 17.29, *SD* = 2.58, *t*(381) = 2.49, *p*<.01). Drivers aged 26-49 years (*M* = 25.36, *SD* = 3.29) displayed a

more severe level of stress symptoms than did drivers aged 18-25 years (M = 16.12, SD = 3.61, $t(287) = 3.14$, $p<.01$) or over 50 years (M = 16.75, SD = 3.45, $t(114) = 3.04$, $p<.01$), with 78% of 26-49 year old stressed drivers having moderate or severe stress symptoms. Owner drivers (M = 25.77, SD = 3.57) reported more severe stress symptoms than did drivers who worked for a taxi base (M = 16.20, SD = 2.99, $t(324) = 3.19$, $p<.01$) or individual owner (M = 18.04, SD = 3.09, $t(215) = 2.19$, $p<.01$), with 72% of stressed owner drivers reporting moderate or severe symptoms, and drivers who worked more than 60 hours per week (M = 24.98, SD = 3.41) appeared to be more severely stressed than drivers who worked less than 60 hours (M = 16.74, SD = 3.12, $t(381) = 3.19$, $p<.01$), with 69% of drivers working longer hours reporting moderate to severe stress.

Job-related Well-being. The range for the job-related affective well-being total score was from 20 to 100, with higher scores indicating more positive well-being. The overall mean score was 60.38 (SD = 8.90), indicating an average level of well-being among drivers. Ethnic minority drivers (M = 52.37, SD = 7.86) reported a more negative sense of well-being than did ethnic majority drivers (M = 69.83, SD = 8.02) and there was no significant difference in well-being mean scores between male and female drivers. Drivers aged between 18-25 years (M = 73.26, SD = 8.37) appeared to have a more positive sense of well-being than their 26-49 year old (M = 53.86, SD = 7.69, $t(287) = 2.36$, $p<.01$) or over 50 year old counterparts (M = 55.69, SD = 7.94, $t(114) = 1.99$, $p<.05$), and drivers who had worked for 1-5 years (M = 76.81, SD = 8.09) reported a more positive sense of well-being than did drivers who had worked for 6-10 years (M = 50.27, SD = 7.18, $t(171) = 2.76$, $p<.01$), or drivers who had worked for over 10 years (M = 47.89, SD = 8.24, $t(139) = 2.99$, $p<.01$). Owner drivers (M = 49.76, SD = 8.46) reported a more negative sense of well-being than did other drivers (M = 67.42, SD = 7.60, $t(381) = 3.12$, $p<.01$), and drivers who worked more than 60 hours per week (M = 48.98, SD = 7.69) had a more negative sense of well-being than drivers who worked less hours (M = 69.03, SD = 8.06, $t(381) = 3.24$, $p<.01$).

5.2.2 Group Differences in Job Demands, Job Control, Aggression and Risk-taking Variables

In order to examine whether there were any mean group differences between ethnic majority and ethnic minority drivers when looking at job demands and job control variables and the

individual variables of driver aggression and risk-taking, a one-way MANOVA was performed. The four dependent variables were job demands, job control, aggression and risk-taking. The independent variable was ethnicity (majority vs minority). The main effect, or overall model fit, was assessed with Wilks' lambda. Table 5.3 shows the significant multivariate and univariate effects.

Table 5.3
Significant Multivariate and Univariate Effects for Job Demands, Job Control, Aggression and Risk-taking Variables

Significant Multivariate	*F*	*df*	η^2	Significant Univariate	*F*	*df*	η^2
Ethnicity	12.03**	4, 378	.044	Job Demands	8.18**	1,373	.039
				Job Control	8.88**	1,373	.020
				Aggression	9.12**	1,373	.014
				Risk-taking	4.88*	1,373	.028

Note. *p<.05 **p<.01

Table 5.3 results indicate that, with the use of Wilks' criterion, the combined dependent variables were significantly affected by the ethnicity of the drivers $F(4,378) = 12.03$, p<.01. The results reflected a modest association between ethnicity and the combined dependent variables, partial $\eta^2 = .036$. Inspection of the univariate effects indicated a significant difference between ethnic groups on all four measures.

Table 5.4
Mean and Standard Deviation Scores for Job Demands, Job Control, Aggression and Risk-taking Variables

	Total Sample		Ethnic Majority		Ethnic Minority	
Variable	*M*	*S.D.*	*M*	*S.D.*	*M*	*S.D.*
Job Demands	16.57	2.43	14.78	2.67	20.58	3.42
Job Control	14.59	2.89	16.96	2.35	11.51	2.32
Aggression	20.49	3.65	23.47	3.21	16.78	2.90
Risktaking	22.27	2.98	18.43	2.41	26.85	3.01

Note: $N = 270$ for ethnic majority drivers $N = 113$ for ethnic minority drivers

The mean results in Table 5.4 indicate that the ethnic minority drivers found their job to be significantly more demanding than the ethnic majority group. The ethnic minority group also reported significantly less control in their jobs than did ethnic majority drivers. The aggression variable also created a univariate effect between groups, with ethnic minority drivers being significantly less aggressive on the road than ethnic majority drivers. There was also a significant difference between ethnic groups on the risk-taking variable, with ethnic minority drivers perceiving a lower level of risk than their ethnic majority counterparts.

5.2.3 Group Differences in Coping Strategy Variables

In order to examine whether there were any mean group differences between ethnic majority and ethnic minority drivers when looking at different coping strategies, a one-way MANOVA was performed. The four coping strategy dependent variables were adaptive coping (ADAPT), emotion-focused coping (EMOT), confrontive coping (CONF) and avoidance (AVOID). The independent variable was ethnicity (majority vs minority). The main effect, or overall model fit, was assessed with Wilks' lambda. Table 5.5 shows the significant multivariate and univariate effects.

Table 5.5

Significant Multivariate and Univariate Effects for Adaptive and Maladaptive Coping Variables

Significant Multivariate	*F*	*df*	η^2	Significant Univariate	*F*	*df*	η^2
Ethnicity	11.98**	4,378	.037	ADAPT	9.45**	1,373	.032
				EMOT	7.38*	1,373	.027
				CONF	12.26**	1,373	.041
				AVOID	8.34**	1,373	.028

Note. *p<.05 **p<.01

Table 5.5 results indicate that, with the use of Wilks' criterion, the combined coping strategy dependent variables were significantly affected by the ethnicity of the drivers $F(4,378) = 11.98$, p<.01. The results reflected a modest association between ethnicity and the combined dependent

variables, partial η^2 = .031. Inspection of the univariate effects found a significant difference between ethnic groups on all four measures.

Table 5.6
Mean and Standard Deviation Scores of Adaptive and Maladaptive Coping Variables

	Total Sample		Ethnic Majority		Ethnic Minority	
Variable	*M*	*S.D.*	*M*	*S.D.*	*M*	*S.D.*
ADAPT	24.56	3.52	25.12	3.78	19.55	3.29
EMOT	24.93	3.59	23.78	3.22	30.53	3.45
CONF	26.83	4.01	25.43	3.68	20.42	3.22
AVOID	23.66	3.78	21.43	3.52	30.28	3.97

Note: N = 270 for ethnic majority drivers N = 113 for ethnic minority drivers

The mean results in Table 5.6 indicate that the ethnic minority drivers used the adaptive coping strategy (i.e., task-focused coping) significantly less often than did the ethnic majority drivers. The ethnic minority group also reported significantly more use of emotion-focused coping than the ethnic majority group. The strategy of confrontive coping also created a univariate effect between groups, with ethnic minority drivers using this strategy significantly less often than ethnic majority drivers. There was also a significant difference between groups on the avoidance variable, with ethnic minority drivers reporting significantly more use of avoidance coping on the road than ethnic majority drivers.

5.2.4 Group Differences in Safety Climate Variables

In order to examine whether there were any mean group differences between ethnic majority and ethnic minority drivers when looking at the different safety climate variables, a one-way MANOVA was performed. The six safety climate dependent variables were communication (COMM), work pressure (PRESS), management commitment (MGMT), relationships (RELSPS), driver training (TRAIN) and safety rules (RULES). The independent variable was ethnicity (majority vs minority). The main effect, or overall model fit, was assessed with Wilks' lambda. Table 5.7 shows the significant multivariate and univariate effects.

Table 5.7
Significant Multivariate and Univariate Effects for Safety Climate Variables

Significant Multivariate	*F*	*df*	η^2	Significant Univariate	*F*	*df*	η^2
Ethnicity	7.68*	6,376	.027	COMM	3.81	1,370	.011
				PRESS	4.33	1,370	.015
				MGMT	2.44	1,370	.008
				RELSPS	10.44**	1,370	.033
				TRAIN	8.73*	1,370	.030
				RULES	3.01	1,370	.009

Note. *p<.05 **p<.01

Table 5.7 results indicate that, with the use of Wilks' criterion, the combined safety climate dependent variables were significantly affected by the ethnicity of the drivers $F(6,376) = 7.68$, p<.05. The results reflected a modest association between ethnicity and the combined dependent variables, partial $\eta^2 = .024$. Inspection of the univariate effects found a significant difference between ethnic groups on two out of the six safety climate measures.

Table 5.8
Mean and Standard Deviation Scores of Safety Climate Variables

	Total Sample		Ethnic Majority		Ethnic Minority	
Variable	*M*	*S.D.*	*M*	*S.D.*	*M*	*S.D.*
Communication	22.58	2.45	21.35	2.14	22.97	2.31
Work pressure	26.75	2.97	25.44	2.36	26.72	2.86
Mgmt commitment	24.89	2.45	24.12	2.94	23.93	2.75
Relationships	30.54	3.42	24.73	3.78	33.46	3.87
Driver training	22.76	3.69	22.80	3.29	24.71	3.40
Safety rules	11.91	1.28	14.81	2.04	13.89	1.94

Note: N = 270 for ethnic majority drivers N = 113 for ethnic minority drivers

The mean results in Table 5.8 indicate that the ethnic minority drivers had a significantly more negative perception of the value of relationships, as it applies to the safety climate, than did ethnic majority drivers. The ethnic minority drivers also reported a significantly more negative perception of driver training, as it applies to the overall safety climate, than did ethnic majority

group of drivers. No significant univariate effects were found between ethnicity and driver communication, work pressure, management commitment and safety rules variables

5.2.5 Group Differences in the Outcome Variables

In order to examine whether there were any mean group differences between ethnic majority and ethnic minority drivers when looking at the outcome variables, a one-way MANOVA was performed. The four dependent variables were stress, anxiety, depression and well-being. The independent variable was ethnicity (majority vs minority). The main effect, or overall model fit, was assessed with Wilks' lambda. Table 5.9 shows the significant multivariate and univariate effects. Table 5.9 results indicate that, with the use of Wilks' criterion, the combined dependent variables were significantly affected by the ethnicity of the drivers $F(4,378) = 11.97$, $p<.01$. The results reflected a modest association between ethnicity and the combined dependent variables, partial $\eta^2 = .042$. Inspection of the univariate effects found a significant difference between ethnic groups on all four measures.

Table 5.9
Significant Multivariate and Univariate Effects for the Outcome Variables

Significant Multivariate	*F*	*df*	η^2	Significant Univariate	*F*	*df*	η^2
Ethnicity	11.97**	4,378	.042	Stress	5.14*	1,373	.022
				Anxiety	6.45*	1,373	.043
				Depression	9.08**	1,373	.039
				Well-being	11.23**	1,373	.048

Note. *$p<.05$ **$p<.01$

Table 5.10
Mean and Standard Deviation Scores of the Outcome variables

	Total Sample		Ethnic Majority		Ethnic Minority	
Variable	*M*	*S.D.*	*M*	*S.D.*	*M*	*S.D.*
Stress	23.44	3.03	22.97	2.99	24.65	3.09
Anxiety	21.56	2.63	23.32	3.03	24.72	2.88
Depression	25.64	2.83	18.49	2.75	30.83	2.68
Well-being	60.38	8.90	64.37	6.73	56.79	5.40

Note: $N = 270$ for ethnic majority drivers $N = 113$ for ethnic minority drivers

The mean results in Table 5.10 indicate that the ethnic minority drivers were significantly more stressed, anxious and depressed than their ethnic majority counterparts. Ethnic minority drivers also had a more negative sense of affective well-being than did ethnic majority drivers.

5.3 Inferential Statistics

5.3.1 Relationships between each of the variables in the study.

The bivariate correlations and significance values for all transformed continuous variables in the study are presented in Table 5.11 for ethnic majority drivers, and in Table 5.12 for ethnic minority drivers. As shown in Table 5.11, the strength of associations amongst variables ranged from small to medium size correlations, ranging from -.003 to .468. In Table 5.12, the strength of associations amongst variables ranged from small to medium in size, ranging from .029 to -.442.

Table 5.11

Bivariate Correlations among Transformed Variables for Ethnic Majority Drivers

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Job Demands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Job Control	-.003	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Aggression	.021	-.275	-	-	-	-	-	-	-	-	-	-	-	-
4. Risk taking	.120	.032	-.124	-	-	-	-	-	-	-	-	-	-	-
5. Maladaptive Coping	.092	.121	.265	.198	-	-	-	-	-	-	-	-	-	-
6. Emotion-focused Coping	.135	.167	.095	.273	.138	-	-	-	-	-	-	-	-	-
7. Confrontive Coping	.023	.069	.304	.121	.204	. 093	-	-	-	-	-	-	-	-
8. Avoidance Coping	.128	-.294	-.056	.074	.287	.162	.068	-	-	-	-	-	-	-
9. Adaptive Coping	.134	-.304	.071	.193	.046	.057	.173	.186	-	-	-	-	-	-
10. Safety Climate	-.191	.202	.045	-.235	.163	-.132	.149	-.065	.068	-	-	-	-	-
11. Communication	.057	-.173	.068	-.239	.125	-.098	.059	.136	.306	.191	-	-	-	-
12. Work Pressure	.341	-.213	.287	.243	.170	.294	.187	.142	-.069	.068	.034	-	-	-
13. Mgmt Commitment	-.197	.025	.139	.192	-.059	-.135	.047	.033	.315	.298	.213	-.257	-	-
14. Relationships	-.043	.068	.013	.055	.093	.026	.104	.062	.294	.235	.191	-.204	.268	-
15. Driver Training	.124	.323	.095	.196	.034	.254	.088	.013	.256	.125	.212	.278	.021	.024
16. Safety Rules	.092	.045	.027	-.278	.135	.176	.012	.167	.307	.228	.034	.088	.076	.055
17. Psychological Health	.316	-.298	.396	.402	.347	.278	.254	.284	-.268	.302	-.299	.323	-.257	-.188
18. Depression	.309	-.312	.377	.405	.389	.334	.325	.262	-.253	.327	-.298	.336	-.347	.165
19. Anxiety	.327	-.347	.405	.378	.343	.394	.338	.289	-.302	.390	-.355	.399	-.406	-.179
20. Stress	.435	-.426	.435	.396	.309	.403	.327	.295	-.369	.455	-.393	.343	-.367	-.124
21. Well-being	-.356	.403	-.345	-.325	-.297	-.368	-.413	-.258	.397	-.405	.344	-.309	.457	.167

Variable	15	16	17	18	19	20	21
15. Driver Training	-	-	-	-	-	-	-
16. Safety Rules	.176	-	-	-	-	-	-
17. Psychological Health	-.349	-.275	-	-	-	-	-
18. Depression	-.284	-.367	-.274	-	-	-	-
19. Anxiety	-.289	-.405	.265	.298	-	-	-
20. Stress	-.265	-.468	.295	.273	.299	-	-
21. Well-being	.089	-.321	.304	-.261	-.296	-.293	-

Note. All Variables $N = 270$ $p<.05$ (*r*'s b/n .252 and .324) $p<.01$ (*r*'s b/n .325 and .468)

Psychological Health = Stress + Depression + Anxiety

Safety Climate = Communication + Work pressure + Mgmt commitment + Relationships + Driver training + Safety rules

Maladaptive Coping = Confrontive coping + Avoidance + Emotion-focused coping

Table 5.12

Bivariate Correlations among Transformed Variables for Ethnic Minority Drivers

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Job Demands	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2. Job Control	-.063	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Aggression	.078	-.243	-	-	-	-	-	-	-	-	-	-	-	-
4. Risk taking	.128	.132	-.173	-	-	-	-	-	-	-	-	-	-	-
5. Maladaptive Coping	.092	.121	.234	.147	-	-	-	-	-	-	-	-	-	-
6. Emotion-focused Coping	.143	.144	.135	.253	.099	-	-	-	-	-	-	-	-	-
7. Confrontive Coping	.029	.089	.335	.105	.196	.115	-	-	-	-	-	-	-	-
8. Avoidance Coping	.153	-.304	-.109	.103	.238	.157	.102	-	-	-	-	-	-	-
9. Adaptive Coping	.167	-.323	.065	.189	.056	.091	.149	.132	-	-	-	-	-	-
10. Safety Climate	-.131	.214	.105	-.256	.139	-.144	.187	.104	.029	-	-	-	-	-
11. Communication	.127	-.093	.033	-.224	.092	-.112	.107	.178	.315	.206	-	-	-	-
12. Work Pressure	.291	-.231	.275	.258	.166	.279	.202	.109	-.078	.033	.066	-	-	-
13. Mgmt Commitment	-.167	.075	.149	.177	-.044	-.166	.088	.093	.304	.267	.204	-.231	-	-
14. Relationships	-.088	.128	.013	.113	.113	.083	.154	.056	.264	.278	.213	-.191	.289	-
15. Driver Training	.165	.375	.082	.176	.095	.270	.103	.023	.256	.129	.209	.258	.112	.078
16. Safety Rules	.124	.105	.029	-.287	.148	.152	.055	.129	.323	.256	.079	.102	.139	.115
17. Psychological Health	.323	-.278	.366	.395	.376	.254	.274	.288	-.288	.316	.134	.333	-.269	.295
18. Depression	.387	-.343	.378	.357	.379	.122	.319	.217	-.249	.309	-.305	.356	-.386	.128
19. Anxiety	.333	-.347	.427	.380	.364	.409	.145	.281	-.156	.368	-.378	.407	-.394	.139
20. Stress	.395	-.408	.406	.405	.318	.412	.344	.285	-.187	.432	-.373	.384	-.347	-.157
21. Well-being	-.316	.387	-.366	-.365	.288	.387	.401	.189	-.206	-.408	-.367	.363	-.439	.191

Variable	15	16	17	18	19	20	21
15. Driver Training	-	-	-	-	-	-	-
16. Safety Rules	.198	-	-	-	-	-	-
17. Psychological Health	-.123	-.245	-	-	-	-	-
18. Depression	-.159	-.349	-.224	-	-	-	-
19. Anxiety	.204	-.383	.279	.126	-	-	-
20. Stress	.156	-.442	.135	. 257	.089	-	-
21. Well-being	.109	-.309	.332	-.163	-.278	-.165	-

Note. All variables $N = 113$ $p<.05$ (r's b/n .243 and .345) $p<.01$ (r's b/n .346 and -.442)

Psychological Health = Stress + Depression + Anxiety

Safety Climate = Communication + Work pressure + Mgmt commitment + Relationships + Driver training + Safety rules

Maladaptive Coping = Confrontive coping + Avoidance + Emotion-focused coping

5.3.2 Relationships between Job Demands, Job Control, Psychological Health and Job-Related Affective Well-being

The first hypothesis predicted that job demands would be positively associated with psychological ill-health and negatively associated with job-related affective well-being. As predicted, for ethnic majority drivers, there was a significant positive relationship between job demands and depression (r = .31, p<.01), anxiety (r = .33, p<.01) and stress (r = .44, p<.01), indicating that as job demands increase, so do the symptoms of psychological ill-health. There was a significant negative relationship between job demands and job-related affective well-being for ethnic majority drivers (r = -.36, p<.01), indicating that as job demands increase, there is a diminished sense of job-related affective well-being amongst drivers. Similarly, for ethnic minority drivers there was a significant positive relationship between job demands and symptoms of depression (r = .39, p<.01), anxiety (r = .33, p<.01) and stress (r = .40, p<.01), and a significant negative association between job demands and job-related affective well-being (r = -.32, p<.01).

The second hypothesis predicted that job control would be negatively associated with psychological ill-health and positively associated with job-related affective well-being. As predicted, for ethnic majority drivers, there was a significant negative relationship between job control and depression (r = -.31, p<.01), anxiety (r = -.35, p<.01) and stress (r = -.43, p<.01), indicating that as job control decreases, there is an increase in symptoms of psychological ill-health. There was a significant positive relationship between job control and job-related well-being for ethnic majority drivers (r = .40, p<.01), indicating that as job control decreases there is a diminished sense of job-related well-being amongst drivers. Similarly, for ethnic minority drivers there was a significant negative relationship between job control and symptoms of depression (r = -.34, p<.01), anxiety (r = -.35, p<.01) and stress (r = -.41, p<.01), and a positive association between job control and job-related affective well-being (r = .39, p<.01).

In order to test whether there would be an interaction effect between job demands and job control (after controlling for the possible main effects of job demands and job control variables), when considering psychological health and job-related well-being, hierarchical regression analyses were performed to investigate this phenomenon.

Table 5.13

Hierarchical Regression for Predicting Psychological Health from Job Demands and Job Control and Interaction Variables in Ethnic Majority Drivers

Variable	*B*	*β*	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.35	.12*			3.91*
Job Demands	.05	.23*				.09	
Step 2			.54	.29**	.17**		6.03**
Job Demands	.07	.29*				.08	
Job Control	-.10	-.36**				.10	
Step 3			.55	.30**	.01		5.95**
Job Demands	.06	.26*				.07	
Job Control	-.09	-.33**				.09	
Job Demands x Job Control	-.02	-.01				.01	

Note. *p<.05 **p<.01

The results in Table 5.13 reveal that, for ethnic majority taxi drivers, job demands and job control significantly predict 29% (adjusted R^2 = .25) of the variability in psychological health $F(2,267) = 6.03$, p<.01. Individually, there is a main effect of job demands, with this variable uniquely contributing a significant 8% (sr^2 = .08) of the variance in psychological health. Similarly, there is a main effect of job control, with this variable uniquely contributing a significant 10% (sr^2 = .10) of the variability in psychological health. In step three of the analysis when the interaction variable was included, the ability of the regression equation to predict psychological health of ethnic majority taxi drivers increased by 1% (R^2_{change} = .01), which was not a significant improvement to the regression equation ($F_{\text{change}}(1,266) = 2.36$, p>.05). Thus, at step three in the equation, the main effects of job demands and job control remain, with these variables uniquely contributing 7% (sr^2 = .07) and 9% (sr^2 = .09) of the variability in psychological health, respectively. However, while there was a small effect by the interaction variable of 1% (sr^2 = .01), this effect was not significant ($\beta = -.01$, t = 1.62, p> .05). Therefore the interaction hypothesis, as stated by Karasek (1979), was not supported in an ethnic majority driver sample when looking at the effects of this interaction on psychological health.

Table 5.14

Hierarchical Regression for Predicting Psychological Health from Job Demands and Job Control and Interaction Variables in Ethnic Minority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.42	.18*			5.67*
Job Demands	.08	.25*				.12	
Step 2			.60	.36**	.18**		8.31**
Job Demands	.09	.30*				.10	
Job Control	-.15	-.39**				.08	
Step 3			.61	.37**	.01		7.85**
Job Demands	.15	.26*				.11	
Job Control	-.13	-.37**				.10	
Job Demands x Job Control	-.02	-.01				.01	

Note. *p<.05 **p<.01

The results in Table 5.14 indicate that, for ethnic minority taxi drivers, job demands and job control significantly predict 36% (adjusted R^2 = .31) of the variability in psychological health $F(2,110) = 8.31$, $p<.01$. Individually, there is a main effect of job demands, with this variable uniquely contributing a significant 10% (sr^2 = .10) of the variance in psychological health. Similarly, there is a main effect of job control, with this variable uniquely contributing a significant 8% (sr^2 = .08) of the variability in psychological health. In step three of the analysis when the interaction variable was included, the ability of the regression equation to predict psychological health of ethnic majority taxi drivers increased by 1% (R^2_{change} = .01), which was not a significant improvement to the regression equation ($F_{\text{change}}(1,109) = 0.89$, $p>.05$). Thus, at step three in the equation, the main effects of job demands and job control remain, with these variables uniquely contributing 11% (sr^2 = .11) and 10% (sr^2 = .10) of the variability in psychological health, respectively. However, while there was a small effect by the interaction variable of 1% (sr^2 = .01), this effect was not significant ($\beta = -.01$, t = 1.62, $p> .05$). Therefore the interaction hypothesis, as stated by Karasek (1979), was not supported in an ethnic minority driver sample when looking at the effects of this interaction on psychological health.

Table 5.15

Hierarchical Regression for Predicting Job-related Affective Well-being from Job Demands and Job Control and Interaction Variables in Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.33	.11**			10.04**
Job Demands	.37	.18*				.13	
Step 2			.44	.19**	.08**		15.68**
Job Demands	.32	.15*				.11	
Job Control	-.28	-.13*				.10	
Step 3			.45	.20**	.01		15.44**
Job Demands	.30	.22*				.11	
Job Control	-.26	-.12*				.09	
Job Demands x Job Control	-.02	-.01				.01	

The results in Table 5.15 reveal that, for ethnic majority taxi drivers, job demands and job control significantly predict 19% (adjusted $R^2 = .16$) of the variability in job-related well-being $F(2,267) = 15.68$, $p<.01$. Individually, there is a main effect of job demands, with this variable uniquely contributing a significant 11% ($sr^2 = .11$) of the variance in well-being. Similarly, there is a main effect of job control, with this variable uniquely contributing a significant 10% ($sr^2 = .10$) of the variability in well-being. At step three of the analysis when the interaction variable was included, the ability of the regression equation to predict the well-being of ethnic majority taxi drivers increased by 1% ($R^2_{\text{change}} = .01$), which was not a significant improvement to the regression equation ($F_{\text{change}}(1,266) = 1.23$, $p>.05$). Thus, at step three in the equation, the main effects of job demands and job control remain, with these variables uniquely contributing 11% ($sr^2 = .11$) and 9% ($sr^2 = .09$) of the variability in job-related well-being, respectively. However, while there was a small effect by the interaction variable of 1% ($sr^2 = .01$), this effect was not significant ($\beta = -.01$, $t = 1.87$, $p>.05$). Therefore the interaction hypothesis, as stated by Karasek (1979), was not supported in an ethnic majority driver sample when looking at the effects of this interaction on job-related well-being.

Table 5.16

Hierarchical Regression for Predicting Job-Related Affective Well-being from Job Demands and Job Control and Interaction Variables in Ethnic Minority Drivers

Variable	*B*	*β*	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.40	.16**			8.45**
Job Demands	.45	.31*				.15	
Step2			.52	.27**	.11**		13.09**
Job Demands	.43	.29*				.14	
Job Control	-.38	-.26*				.12	
Step 3			.53	.28**	.01		12.87**
Job Demands	.39	.27*				.13	
Job Control	-.36	-.22*				.11	
Job Demands x Job Control	-.04	-.02				.02	

Note. *p<.05 **p<.01

The results in Table 5.16 indicate that, for ethnic minority taxi drivers, job demands and job control significantly predict 27% (adjusted R^2 = .24) of the variability in job-related well-being $F(2,110) = 13.09$, p<.01. Individually, there is a main effect of job demands, with this variable uniquely contributing a significant 14% (sr^2 = .14) of the variance in well-being. Similarly, there is a main effect of job control, with this variable uniquely contributing a significant 12% (sr^2 = .12) of the variability in well-being. At step three of the analysis when the interaction variable was included, the ability of the regression equation to predict job-related well-being of ethnic minority taxi drivers increased by 1% (R^2_{change} = .01), which was not a significant improvement to the regression equation ($F_{\text{change}}(1,109) = 1.11$, p>.05). Thus, at step three in the equation, the main effects of job demands and job control remain, with these variables uniquely contributing 13% (sr^2 = .13) and 11% (sr^2 = .11) of the variability in job-related well-being, respectively. However, while there was a small effect by the interaction variable of 1% (sr^2 = .01), this effect was not significant ($\beta = -.02$, t = 1.43, p> .05). Therefore the interaction hypothesis, as stated by Karasek (1979), was not supported in an ethnic minority driver sample when looking at the effects of this interaction on job-related affective well-being.

5.3.3 Relationships between Driver Aggression, Psychological Health and Job-Related Affective Well-being

The third hypothesis predicted that driver aggression would be positively associated with psychological ill-health and negatively associated with job-related affective well-being. As predicted, for ethnic majority drivers, there was a significant positive relationship between aggression and depression (r = .38, p<.01), anxiety (r = .41, p<.01) and stress (r = .44, p<.01), indicating that as driver aggressive behaviour on the road increases, so do the symptoms of psychological ill-health. There was a significant negative relationship between aggression and job-related affective well-being for ethnic majority drivers (r = -.35, p<.01), indicating that as aggression by drivers on the road increases, there is a diminished sense of job-related affective well-being amongst drivers. Similarly, for ethnic minority drivers there was a significant positive relationship between driver aggressive behaviour on the road and symptoms of depression (r = .38, p<.01), anxiety (r = .43, p<.01) and stress (r = .41, p<.01), and a significant negative association between aggression and job-related affective well-being (r = -.37, p<.01).

5.3.4 Relationships between Driver Perceptions of Risk-taking, Psychological Health and Job-Related Affective Well-being

The fourth hypothesis predicted that drivers' perceptions of low risk would be positively associated with psychological ill-health and negatively associated with job-related well-being. As predicted, for ethnic majority drivers, there was a significant positive relationship between a low risk perception and depression (r = .41, p<.01), anxiety (r = .38, p<.01) and stress (r = .40, p<.01), indicating that drivers who perceive a low risk in certain situations on the road display an increase in symptoms of psychological ill-health. There was a significant negative relationship between risk-taking and job-related well-being for ethnic majority drivers (r = -.33, p<.01), indicating that a perception of low risk in certain situations on the road is associated with a diminished sense of job-related well-being amongst drivers. Similarly, for ethnic minority drivers there was a significant positive relationship between perceptions of low risk on the road and symptoms of depression (r = .36, p<.01), anxiety (r = .38, p<.01) and stress (r = .41, p<.01), and a significant negative association between perceptions of low risk and job-related affective well-being (r = -.37, p<.01).

5.3.5 Relationships between Driver Coping Strategies, Psychological Health and Job-Related Affective Well-being

In order to test the fifth hypothesis that maladaptive coping strategies would be significant predictors of psychological ill-health and job-related well-being, after accounting for adaptive coping strategies, hierarchical regression analyses were performed to investigate this phenomenon in ethnic majority and minority driver samples separately. Tables 5.17, 5.18, 5.19 and 5.20 represent summaries of results for the regression analyses for this hypothesis. The maladaptive coping strategies are avoidance, confrontive coping and emotion-focused coping.

Table 5.17

Hierarchical Regression for Predicting Psychological Health from Adaptive and Maladaptive Coping Strategies in Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.33	.11**			12.84**
Adaptive Coping	-.32	-.25**				.09	
Step 2			.52	.27**	.16**		21.53**
Adaptive Coping	-.26	-.19**				.07	
Confrontive Coping	.38	.26**				.09	
Avoidance	.23	.05				.00	
Emotion-focused Coping	.75	.29**				.10	

Note. *p<.05 **p<.01

The results in Table 5.17 reveal that, for ethnic majority taxi drivers, the adaptive coping strategy significantly predicted 11% (adjusted R^2 = .09) of the variability in psychological health (F(1,268) = 12.84, p<.01), with a unique contribution of 9% (sr^2 = .09) to the regression equation. In step two of the analysis, when maladaptive coping strategies were included, the ability of the regression equation to predict the psychological health of taxi drivers increased by 16% (R^2_{change} = .16), which was a significant improvement to the regression equation (F_{change} (3,266) = 7.47, p<.01). Thus, adaptive coping and maladaptive coping strategies together explain a statistically significant 27% (adjusted R^2 = .23), (F (4,265) = 21.53, p<.01) of the variance in drivers' psychological health status. In step two of the analysis, the unique contribution of adaptive coping decreased to 7% (sr^2 = .07), which was still a significant contribution to the equation (β = -.19, t = -4.22, p<.01). With a unique contribution of 9% (sr^2 =

.09), confrontive coping adds significantly to the regression equation (β = .26, t = 3.89, p<.01). Emotion-focused coping also contributed significantly to the regression equation (β = .29, t = 3.04, p<.01), with a unique contribution of 10% (sr^2 = .10). Coping by way of avoidance did not make any significant contribution to predicting the psychological health of ethnic majority drivers.

Table 5.18
Hierarchical Regression for Predicting Psychological Health from Adaptive and Maladaptive Coping Strategies in Ethnic Minority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.29	.08**			10.13**
Adaptive Coping	-.54	-.19**				.07	
Step 2			.58	.34**	.26**		19.34**
Adaptive Coping	-.40	-.15**				.05	
Confrontive Coping	.25	.07				.00	
Avoidance	.79	.35**				.11	
Emotion-focused Coping	.87	.40**				.14	

Note. *p<.05 **p<.01

The results in Table 5.18 reveal that, for ethnic minority taxi drivers, the adaptive coping strategy significantly predicted 8% (adjusted R^2 = .06) of the variability in psychological health (F(1,111) = 10.13, p<.01), with a unique contribution of 7% (sr^2 = .07) to the regression equation. In step two of the analysis, when maladaptive coping strategies were included, the ability of the regression equation to predict the psychological health of taxi drivers increased by 26% (R^2 change = .26), which was a significant improvement to the regression equation (Fchange (3,109) = 6.53, p<.01). Thus, adaptive and maladaptive coping strategies together explain a statistically significant 34% (adjusted R^2 = .31), (F (4,108) = 19.34, p<.01) of the variance in drivers' psychological health status. In step two of the analysis, the unique contribution of adaptive coping decreased to 5% (sr^2 = .05), which was still a significant contribution to the equation (β = -.15, t = -3.44, p<.01). With a unique contribution of 11% (sr^2 = .11), avoidance coping adds significantly to the regression equation (β = .35, t = 4.05, p<.01). Emotion-focused coping also contributed significantly to the regression equation (β = .40, t = 4.54, p<.01), with a unique contribution of 14% (sr^2 = .14). The maladaptive strategy of confrontive coping did not

make any significant contribution to predicting the psychological ill-health of ethnic minority drivers.

From these two regression analyses, it is clear that, after controlling for the adaptive coping strategy (i.e., task-focused coping), maladaptive coping strategies do significantly predict the psychological health status of taxi drivers. While ethnic majority drivers appear to use confrontive coping and emotion-focused coping to deal with stressful situations, ethnic minority drivers prefer the use of emotion-focused coping and avoidance strategies to deal with stressful situations while driving, and this appears to affect their psychological health.

Table 5.19

Hierarchical Regression for Predicting Job-related Well-being from Adaptive and Maladaptive Coping Strategies in Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.25	.06*			7.63**
Adaptive Coping	.05	.23*				.06	
Step 2			.50	.25**	.19**		18.21**
Adaptive Coping	.03	.16*				.04	
Confrontive Coping	-.20	-.26**				.08	
Avoidance	- .73	-.21*				.04	
Emotion-focused Coping	- .95	-.54**				.07	

Note. *p<.05 **p<.01

The results in Table 5.19 indicate that, for ethnic majority taxi drivers, the adaptive coping strategy significantly predicted 6% (adjusted R^2 = .04) of the variability in job-related well-being (F(1,268) = 7.63, p<.01), with a unique contribution of 6% (sr^2 = .06) to the regression equation. In step two of the analysis, when maladaptive coping strategies were included, the ability of the regression equation to predict the well-being of drivers increased by 19% (R^2_{change} = .19), which was a significant improvement to the regression equation (F_{change} (3,266) = 9.82, p<.01). Thus, adaptive and maladaptive coping strategies together explain a statistically significant 25% (adjusted R^2 = .21, F (4,265) = 18.21, p<.01) of the variance in drivers' well-being status. In step two of the analysis, the unique contribution of adaptive coping decreased to 4% (sr^2 = .04), which was still a significant contribution to the equation (β = .16, t = 2.36,

p<.05). With a unique contribution of 8% (sr^2 = .08), confrontive coping added significantly to the regression equation (β = -.26, t = 2.57, p<.01). Coping by way of avoidance also added a significant 4% unique contribution to the analysis (sr^2 = .04), and emotion-focused coping also contributed significantly to the regression equation (β = -.54, t = 3.58, p<.01), with a unique contribution of 7% (sr^2 = .07). Thus, the use of all three maladaptive coping strategies to deal with stressful driving situations appeared to affect the job-related well-being status of ethnic majority taxi drivers.

Table 5.20

Hierarchical Regression for Predicting Job-related Well-being from Adaptive and Maladaptive Coping Strategies in Ethnic Minority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.30	.09**			11.37**
Adaptive Coping	.54	.40**				.08	
Step 2			.50	.25**	.19**		22.49**
Adaptive Coping	.44	.36**				.05	
Confrontive Coping	-.35	-.05				.00	
Avoidance	-.44	-.49**				.10	
Emotion-focused Coping	-.46	-.39**				.09	

Note. *p<.05 **p<.01

The results in Table 5.20 reveal that, for ethnic minority taxi drivers, the adaptive coping strategy significantly predicted 9% (adjusted R^2 = .07) of the variability in job-related well-being (F(1,111) = 11.37, p<.01), with a unique contribution of 8% (sr^2 = .08) to the regression equation. In step two of the analysis, when maladaptive coping strategies were included, the ability of the regression equation to predict the well-being of drivers increased by 19% (R^2_{change} = .19), which was a significant improvement to the regression equation (F_{change} (3,109) = 8.29, p<.01). Thus, adaptive and maladaptive coping strategies together explained a statistically significant 25% (adjusted R^2 = .22, F (4,108) = 22.49, p<.01) of the variance in drivers' well-being status. In step two of the analysis, the unique contribution of adaptive coping decreased to 5% (sr^2 = .05), which was still a significant contribution to the equation (β = .36, t = -2.26, p<.01). With a unique contribution of 10% (sr^2 = .10), avoidance coping adds significantly to

the regression equation (β = -.49, t = 3.45, p<.01). Emotion-focused coping also contributed significantly to the regression equation (β = -.39, t = 3.01, p<.01), with a unique contribution of 9% (sr^2 = .09). The maladaptive strategy of confrontive coping did not make any significant contribution to predicting the job-related well-being of ethnic minority drivers. Thus, as with the prediction of psychological health, the maladaptive strategies of avoidance and emotion-focused coping appear to affect the job-related well-being status of ethnic minority taxi drivers, when controlling for adaptive strategies.

5.3.6 Relationships between Driver Perceptions of the Safety Climate, Psychological Health and Job-related Affective Well-being

The sixth hypothesis proposed that drivers' negative perceptions of the current safety climate would be positively associated with psychological ill-health and negatively associated with job-related well-being. For ethnic majority drivers, there was a significant positive relationship between negative perceptions of the safety climate and depression (r = .33, p<.01), anxiety (r = .39, p<.01) and stress (r = .46, p<.01). There was a significant negative relationship between safety climate negative perceptions and job-related well-being for ethnic majority drivers (r = -.41, p<.01). Similarly, for ethnic minority drivers there was a significant positive relationship between negative safety climate perceptions and symptoms of depression (r = .31, p<.01), anxiety (r = .37, p<.01) and stress (r = .43, p<.01), and a significant negative association between driver perceptions and job-related well-being (r = -.41, p<.01). The safety climate questionnaire tested for six different aspects of the safety climate for professional drivers. These six subscales were communication, work pressure, management commitment, relationships, driver training and safety rules. In order to examine which of these aspects of the safety climate significantly influenced driver psychological health and job-related well-being, regression analyses were performed. The results for ethnic majority drivers are presented in Tables 5.21 and 5.23, and for ethnic minority drivers in Tables 5.22 and 5.24.

Table 5.21

Multiple Regression for Predicting Psychological Health from Safety Climate Variables in Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	sr^2	*F*
Step 1			.54	.29**		23.41**
Work Pressure	.23	.54**			.08	
Mgmt Commitment	.70	.36*			.04	
Driver Relationships	-.20	-.26			.02	
Driver Training	- .73	-.31*			.04	
Safety Rules	- .35	-.14			.01	
Communication	.65	.43**			.07	

Note. *p<.05 **p<.01

The results in Table 5.21 indicate that the six aspects of the driver safety climate that were measured significantly predict 29% (adjusted R^2 = .26) of the variability in psychological health amongst ethnic majority taxi drivers (F(6,263) = 23.41, p<.01). Four aspects of the safety climate contributed significantly to the regression equation. With a unique contribution of 8% (sr^2 = .08), work pressure was the most significant predictor of psychological health (β =.54, t = 3.37, p<.01). This was followed by communication between management and drivers, with a significant unique contribution of 7% (sr^2 = .07, β = .43, t = 3.45, p<.01). Finally, both management commitment and driver training factors uniquely contributed a significant 4% (sr^2 = .04) to the prediction of psychological health. The factors of driver relationships and safety rules did not make significant contributions to the regression equation.

Table 5.22

Multiple Regression for Predicting Psychological Health from Safety Climate Variables in Ethnic Minority Drivers

Variable	*B*	β	*R*	R^2	sr^2	*F*
Step 1			.51	.26**		15.32**
Work Pressure	.14	.23*			.04	
Mgmt Commitment	.60	.37**			.10	
Driver Relationships	-.54	-.19			.01	
Driver Training	- .86	-.41**			.12	
Safety Rules	- .35	-.14			.01	
Communication	.30	.25*			.05	

Note. *p<.05 **p<.01

The results in Table 5.22 indicate that the six aspects of the driver safety climate that were measured significantly predict 26% (adjusted R^2 = .23) of the variability in psychological health amongst ethnic minority taxi drivers (F(6,106) = 15.32, p<.01). As with ethnic majority drivers, four factors of the safety climate contributed significantly to the regression equation. With a unique contribution of 12% (sr^2 = .12), driver training was the most significant predictor of psychological health (β = -.41, t = 3.13, p<.01). This was followed by management commitment, with a significant unique contribution of 10% (sr^2 = .10, β = .37, t = 3.76, p<.01). Finally, both work pressure and communication factors uniquely contributed a significant 4% (sr^2 = .04) and 5% (sr^2 = .05), respectively, to the prediction of psychological health. As with ethnic majority drivers, the factors of driver relationships and safety rules did not make significant contributions to the regression equation.

Table 5.23

Multiple Regression for Predicting Job-related Well-being from Safety Climate Variables in Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	sr^2	*F*
Step 1			.48	.23**		12.39**
Work Pressure	.70	.44**			.10	
Mgmt Commitment	.23	.36*			.08	
Driver Relationships	-.44	-.23			.01	
Driver Training	-.64	-.25			.02	
Safety Rules	-.25	-.19			.00	
Communication	.23	.31*			.07	

Note. *p<.05 **p<.01

The results in Table 5.23 indicate that the six aspects of the driver safety climate that were measured significantly predict 23% (adjusted R^2 = .19) of the variability in job-related well-being amongst ethnic majority taxi drivers F(6,263) = 12.39, p<.01). Three aspects of the safety climate contributed significantly to the regression equation. With a unique contribution of 10% (sr^2 = .10), work pressure was the most significant predictor of well-being (β =.44, t = 2.31, p<.01). This was followed by management commitment, with a significant unique contribution of 8% (sr^2 = .08, β = .36, t = 2.17, p<.05). Finally, communication between management and drivers uniquely contributed a significant 7% (sr^2 = .07) to the prediction of job-related well-

being. The factors of driver relationships, driver training and safety rules did not make significant contributions to the regression equation.

Table 5.24

Multiple Regression for Predicting Job-related Well-being from Safety Climate Variables in Ethnic Minority Drivers

Variable	*B*	β	*R*	R^2	sr^2	*F*
Step 1			.57	.32**		28.76**
Work Pressure	.74	.42**			.12	
Mgmt Commitment	.60	.33**			.08	
Driver Relationships	-.19	-.23			.01	
Driver Training	- .86	-.41**			.12	
Safety Rules	- .15	-.22			.01	
Communication	.30	.25*			.05	

Note. *p<.05 **p<.01

The results in Table 5.24 indicate that the six aspects of the driver safety climate that were measured significantly predict 32% (adjusted R^2 = .28) of the variability in job-related well-being amongst ethnic minority taxi drivers (F(6,106) = 28.76, p<.01). Four factors of the safety climate contributed significantly to the regression equation. With a unique contribution of 12% (sr^2 = .12), work pressure was the most significant predictor of well-being (β = .42, t = 3.81, p<.01). This was followed by driver training, also with a significant unique contribution of 12% (sr^2 = .12, β = -.41, t = 3.48, p<.01). Finally, both management commitment and communication factors uniquely contributed a significant 8% (sr^2 = .08) and 5% (sr^2 = .05), respectively, to the prediction of job-related well-being. As with ethnic majority drivers, the factors of driver relationships and safety rules did not make significant contributions to the regression equation for ethnic minority taxi drivers.

It appears that work pressure, management commitment to workplace health and safety, current driver training and communication between management and drivers all are significant predictors of the psychological health and job-related well-being of both ethnic majority and ethnic minority taxi drivers in the Brisbane area. Relationships between drivers was not a significant factor, and this was expected as it was observed that most taxi drivers do not have much time to meet with other drivers on taxi ranks, particularly during the daytime. Safety rules

did not make a significant contribution to the prediction of either psychological health or job-related well-being in both ethnic majority and minority drivers. This may be because drivers engage the current rules to protect their safety, regardless of their state of psychological health or well-being.

5.3.7 Predicting Drivers' Psychological Health

The seventh hypothesis proposed that after accounting for the variables of job demands and job control, the individual factors of aggression, risk-taking and maladaptive coping styles, and the organisational factor of safety climate perceptions, would contribute significantly to explaining the variance in the psychological health of ethnic majority and ethnic minority taxi drivers. Summaries of the results of the hierarchical regression analyses conducted to test this hypothesis are presented in Tables 5.25 and 5.26.

Table 5.25

Hierarchical Regression for Predicting the Psychological Health of Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.45	.20**			13.09**
Job Demands	.43	.29**				.14	
Job Control	-.38	-.26**				.10	
Step 2			.60	.36**	.16		19.87**
Job Demands	.39	.27**				.12	
Job Control	-.36	-.22**				.08	
Aggression	-.79	-.21*				.06	
Risk-taking	.54	.21*				.05	
Maladaptive Coping	-.69	-.19*				.04	
Safety Climate	-.36	-.20*				.05	

Note. *p<.05 **p<.01

The results in Table 5.25 indicate that job demands and job control significantly predict 20% (adjusted R^2 = .18) of the variability in psychological health for ethnic majority drivers (F (2,267) = 13.09, p<.01). With a unique contribution of 14% (sr^2 = .14), job demands contributed significantly to the regression equation (β = .29, t = 3.04, p<.01). Job control also contributed significantly to the regression model (β = -.26, t = -3.33, p<.01) and on its own accounted for

10% (sr^2 = .10) of total variance in psychological health. In step two of the analysis when aggression, risk-taking, maladaptive coping and safety climate perceptions were included, the ability of the regression equation to predict the psychological health of ethnic majority taxi drivers increased by 16% (R^2_{change} = .16) which was a significant improvement to the regression model (F_{change} (4,265) = 6.47, p<.01). Thus, job demands, job control, aggression, risk-taking, maladaptive coping and safety climate factors together explain a statistically significant 36% (adjusted R^2 = .33, F(6,263) = 19.87, p<.01) of the variance in the psychological health of drivers. With all of the factors included in the regression, job demands and job control still made significant unique contributions of 12% and 8%, respectively to the regression equation. Driver aggression made a significant unique contribution of 6% (sr^2 = .06, β = -.21, t = 2.75, p<.05) and driver risk-taking perceptions contributed a significant 5% (sr^2 = .05, β =.21, t = 2.34, p<.05) to the regression equation. The contribution from maladaptive coping styles was also a significant 4% (sr^2 = .04, β = .19, t = 2.56, p<.05) and safety climate uniquely contributed a significant 5% (sr^2 =.05, β = -.20, t = 2.71, p<.05) towards the total variance in the psychological health of ethnic majority taxi drivers.

Table 5.26

Hierarchical Regression for Predicting the Psychological Health of Ethnic Minority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.41	.17**			16.58**
Job Demands	.75	.40**				.12	
Job Control	-.55	-.38**				.10	
Step 2			.59	.35**	.18		22.81**
Job Demands	.66	.36**				.10	
Job Control	-.58	-.32**				.08	
Aggression	-.69	-.20*				.04	
Risk-taking	.79	.23*				.05	
Maladaptive Coping	-.54	-.19*				.03	
Safety Climate	-.74	-.30*				.07	

Note. *p<.05 **p<.01

The results in Table 5.26 indicate that job demands and job control significantly predict 17% (adjusted R^2 = .15) of the variability in psychological health for ethnic minority drivers (*F*

(2,110) = 16.58, p<.01). With a unique contribution of 12% (sr^2 = .12), job demands contributed significantly to the regression equation (β = .40, t = 3.04, p<.01). Job control also contributed significantly to the regression model (β = -.38, t = -3.33, p<.01) and on its own accounted for 10% (sr^2 = .10) of total variance in psychological health. In step two of the analysis when aggression, risk-taking, maladaptive coping and safety climate perceptions were included, the ability of the regression equation to predict the psychological health of ethnic majority taxi drivers increased by 18% (R^2_{change} = .18) which was a significant improvement to the regression model (F_{change} (4,108) = 6.24, p<.01). Thus, job demands, job control, aggression, risk-taking, maladaptive coping and safety climate factors together explain a statistically significant 35% (adjusted R^2 = .32, F(6,106) = 22.81, p<.01) of the variance in the psychological health of taxi drivers. With all of the factors included in the regression model, job demands and job control still made significant unique contributions of 10% and 8%, respectively to the regression equation. Driver aggression made a significant unique contribution of 4% (sr^2 = .04, β = -.20, t = 3.05, p<.05) and driver risk-taking perceptions contributed a significant 5% (= sr^2 = .05, β =.23, t = 3.14, p<.05) to the regression equation. The contribution from maladaptive coping styles was also a significant 3% (sr^2 = .03, β = -.19, t = 2.89, p<.05) and safety climate uniquely contributed a significant 7% (sr^2 = .07, β = -.30, t = 3.71, p<.05) towards the total variance in the psychological health of ethnic minority taxi drivers.

5.3.8 Predicting Drivers' Job-related Affective Well-being

The eighth hypothesis proposed that after accounting for the variables of job demands and job control, the individual factors of aggression, risk-taking and maladaptive coping styles, and the organisational factor of safety climate perceptions, would contribute significantly to explaining the variance in the job-related well-being of ethnic majority and ethnic minority taxi drivers. Summaries of the results of the hierarchical regression analyses conducted to test this hypothesis are presented in Tables 5.27 and 5.28.

The results in Table 5.27 indicate that job demands and job control significantly predict 15% (adjusted R^2 = .13) of the variability in job-related well-being status of ethnic majority taxi drivers (F (2,267) = 10.04, p<.01). With a unique contribution of 15% (sr^2 = .15), job demands contributed significantly to the regression equation (β = .40, t = 4.22, p<.01). Job control also contributed significantly to the regression model (β = -.33, t = - 4.17, p<.01) and on its own

accounted for 12% (sr^2 = .12) of total variance in job-related well-being. In step two of the analysis when aggression, risk-taking, maladaptive coping and safety climate perceptions were included, the ability of the regression equation to predict the well-being of ethnic majority taxi

Table 5.27

Hierarchical Regression for Predicting the Job-related Well-being of Ethnic Majority Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.39	.15**			10.04**
Job Demands	.51	.40**				.15	
Job Control	-.42	-.33**				.12	
Step 2			.55	.30**	.15		22.37**
Job Demands	.48	.34**				.12	
Job Control	-.40	-.31**				.10	
Aggression	-.75	-.27*				.08	
Risk-taking	.44	.19*				.05	
Maladaptive Coping	-.23	-.05				.01	
Safety Climate	-.36	-.18*				.04	

Note. *p<.05 **p<.01

drivers increased by 15% (R^2_{change} = .15) which was a significant improvement to the regression model (F_{change} (4,265) = 8.57, p<.01). Thus, job demands, job control, aggression, risk-taking, maladaptive coping and safety climate factors together explain a statistically significant 30% (adjusted R^2 = .27, F(6,263) = 22.37, p<.01) of the variance in the job-related well-being of drivers. With all of the factors included in the regression, job demands and job control still made significant unique contributions of 12% and 10%, respectively, to the regression equation. Driver aggression made a significant unique contribution of 8% (sr^2 = .08, β = -.27, t = 3.75, p<.05) and risk-taking perceptions contributed a significant 5% (sr^2 = .05, β =.19, t = 3.32, p<.05) to the regression equation. The contribution from the safety climate factor was a significant 4% (sr^2 = .04, β = -.18, t = 2.99, p<.05), while the maladaptive coping styles factor did not contribute significantly towards the prediction of job-related affective well-being in ethnic majority taxi drivers.

Table 5.28

Hierarchical Regression for Predicting the Job-related Affective Well-being of Ethnic Minority Taxi Drivers

Variable	*B*	β	*R*	R^2	ΔR^2	sr^2	*F*
Step 1			.44	.19**			13.46**
Job Demands	.49	.33**				.10	
Job Control	-.61	-.43**				.12	
Step 2			.57	.33**	.14		24.84**
Job Demands	.45	.30**				.09	
Job Control	-.57	-.39**				.10	
Aggression	-.76	-.19*				.03	
Risk-taking	.49	.27*				.06	
Maladaptive Coping	-.23	-.17*				.03	
Safety Climate	-.33	-.20*				.04	

Note. *p<.05 **p<.01

The results in Table 5.28 indicate that job demands and job control significantly predict 19% (adjusted R^2 = .16) of the variability in the job-related well-being status of ethnic minority taxi drivers (F (2,110) = 13.46, p<.01). With a unique contribution of 10% (sr^2 = .10), job demands contributed significantly to the regression equation (β = .33, t = 4.02, p<.01). Job control also contributed significantly to the regression model (β = -.43, t = - 4.33, p<.01) and on its own accounted for 12% (sr^2 = .12) of total variance in job-related well-being. In step two of the analysis when aggression, risk-taking, maladaptive coping strategies and safety climate perceptions were included, the ability of the regression equation to predict the job-related well-being of ethnic minority taxi drivers increased by 14% (R^2_{change} = .14) which was a significant improvement to the regression model (F_{change} (4,108) = 6.59, p<.01). Thus, job demands, job control, aggression, risk-taking, maladaptive coping and safety climate factors together explained a statistically significant 33% (adjusted R^2 = .29, F(6,106) = 24.84, p<.01) of the variance in the job-related well-being of drivers. With all of the factors included in the regression, job demands and job control still made significant unique contributions of 9% and 10%, respectively, to the regression equation. Driver aggression made a significant unique contribution of 3% (sr^2 = .03, β = -.19, t = 3.43, p<.05) and driver risk-taking perceptions contributed a significant 6% (sr^2 = .06, β =.27, t = 3.75, p<.05) to the regression equation. The

contribution from the safety climate factor was a significant 4% (sr^2 = .04, β = -.20, t = 3.54, p<.05), while maladaptive coping strategies also made a significant unique contribution of 3% (sr^2 = .03, β = -.17, t = 3.02, p<.05) towards the prediction of job-related affective well-being in ethnic minority taxi drivers.

5.4 Chapter Summary

This chapter provided the results of the first study, the self-report taxi driver questionnaire, and tested the eight proposed hypotheses. Descriptive statistics revealed that 29.6% of the drivers in the sample were from an ethnic minority background, most of the drivers worked over 60 hours per week and the majority of drivers were aged 26-49 years. There were differences between the ethnic majority and ethnic minority groups in the level of aggression used on the road, perceptions of risk-taking, the use of different coping strategies, their perceptions of the safety climate, and their perceptions of job demands and job control. High perceived job demands and low job control were significantly associated with psychological ill-health and a low level of well-being. Increased aggression and a perception of low risk were also significantly associated with psychological ill-health and a lower level of well-being. Increased use of maladaptive coping strategies was significantly associated with increased symptoms of depression, anxiety and stress, as well as a more negative sense of well-being. A negative perception of the safety climate was significantly associated with psychological ill-health and low level of well-being. The variables of aggression, risk-taking, job demands, job control, safety climate and maladaptive coping strategies together were able to account for up to 36% of the variance in psychological health, and up to 33% of the variance in the job-related affective well-being of the ethnic majority and ethnic minority taxi driver samples.

6.0 STUDY TWO RESULTS

The second phase of the current research consisted of two focus group semi-structured interviews, one with day-shift drivers and one with night-shift drivers. The interviews aimed to validate the results of study one, as well as to explore and expand on the results of the quantitative analyses. The method for recruitment of participants for the focus groups, the procedures used in conducting the focus groups, transcription procedures and content analysis were described in chapter four. This chapter examines the demographic make-up of the two focus groups and the results of the focus group interviews.

6.1 Demographic Characteristics of the two Focus Groups

Prior to the commencement of the actual focus group interviews, the participants completed a short questionnaire with five demographic questions. These questions were the same as those asked in the taxi driver questionnaire and collected information on driver age, gender, ethnicity, number of hours worked per week, and type of driver (i.e., owner-driver, lessee driver). The taxi drivers who agreed to participate in the two group interviews represented a wide cross section of drivers. Focus group oneconsisted of nine drivers – seven male and two female – who all drove what is called the "day shift", which is usually from 6am to 6pm. Two drivers were aged 18-25 years, four were aged between 26 and 49 years and three were over the age of 50. There were three ethnic minority and six ethnic majority drivers in the group. Six drivers drove during the week and three drove on weekends. Five drivers worked full-time (37 or more hours per week) and four worked part-time or on a casual basis (up to 37 hours per week). Three drivers were owner-drivers, while six were lessee drivers. Four out of the seven male drivers worked 60 or more hours per week, while the two female drivers worked between 37 and 60 hours per week.

Focus group two consisted of eight drivers, all male, who all worked the "night shift" (between 6pm and 6am). There were three ethnic minority and five ethnic majority drivers in the group. Two drivers were aged 18-25 years, four were aged between 26 and 49 years and two were over the age of 50. Six drivers drove during the week and two drove on weekends. Five drivers worked full-time and three worked part-time or on a casual basis. Two drivers were owner-drivers and six worked for a taxi base or an individual driver. Six drivers worked for

over 60 hours per week, while two drivers worked less than 60 hours per week. Based on these demographic characteristics, the two focus groups were considered representative samples of the urban taxi driver population in the Brisbane area.

6.2 Results of the Focus Group Interviews

6.2.1 Level of Depression, Stress, Anxiety and Well-being Experienced by the Drivers

The initial question to the drivers addressed the high levels of stress, depression, anxiety and low level of affective well-being, compared with other occupational groups, found in the taxi driver questionnaire. Drivers were told about the levels of depression, anxiety and stress that were revealed in the questionnaire, as well as the job-related well-being level, and they were asked to comment on these findings. The drivers were informed of the symptoms of stress, anxiety and depression that were assessed in the questionnaire.

Overall, most drivers were not surprised by the numbers, nor the symptoms. Most of the drivers in the two groups had "heard on the grapevine" that a lot of drivers were suffering with stress-related illnesses and depression, and that some of these drivers had to have time off work because they couldn't cope with daily driving tasks. One driver summed it up by saying that "we know that we all basically are stressed by the job. Every driver suffers in one way or another. Hearing that we are more stressed and depressed than other jobs doesn't surprise me one bit". The drivers also started sharing their own experiences of stress, anxiety and depressive symptoms. Several drivers commented that they felt increasingly tense, agitated and they "found that I can't wind down at the end of the shift". Another driver reported that he "was having trouble relaxing. I get touchy about things for no reason with my family and friends". One driver stated that most other drivers he came into contact with were experiencing stress symptoms in varying degrees. He stated that "we all get stressed on the job. It's a given in this business. I'm not surprised that the level of stress was high". Other drivers indicated that they felt anxious on the job. "I get the heart sensation. You know, like your heart is beating out of your chest and it is beating faster. I get worried about little things on the job. I get sweaty too". Another driver commented that "I get panicked by some situations on the job, and the panic doesn't go away straight away. It gets me worried about how I cope with stuff while I'm driving". One driver reported that "I worry about everything in the job. It's like I worry without a good reason for worrying. I don't know, but it's scary". Symptoms of depression were also

reported by the drivers interviewed. Several drivers stated that they had lost interest in their job and they "found it hard to get the energy to care about the job anymore". "I think that there's nothing to look forward to in this job. You know, I don't talk much to my fares anymore. I don't have any hope that the bosses are gonna fix anything anymore" one driver commented. Another stated that "you feel like you're nothing in this job. I feel like nothing to the bosses because we're treated like dirt all the time". "I don't have excitement about the job anymore. I used to be keen and enthusiastic, but now I find it really hard to get to that level on the job" reported another driver. It appears that the drivers interviewed did experience stress, anxiety and depressive symptoms and that these symptoms were interfering with their functioning while working.

The majority of the drivers stated that they felt stressed and/or anxious because of the amount of pressure put on them to find a fare and deliver that fare to his/her destination in the quickest time possible. For the drivers, this pressure was "constant and unavoidable". Another major issue that stressed drivers was their "home situation with regards to the amount of money we make". According to the drivers, pressure from home to obtain a reasonable income increased unsafe practices on the road, including risk-taking, in order to gain a fare. The drivers stated that they had "no real hope anymore" because they could not envisage an end to the lack of safety practices, lack of communication between management and drivers and the constant incidents of psychological and physical abuse to which they were regularly subjected. Drivers also were depressed because they could not see the government stepping in to improve the situation in general. Anxiety levels were reported by drivers to be higher because many of them could not cope, or were experiencing difficulty coping with, the increased incidents of abuse and dangerous traffic conditions on the road. Another comment made by the majority of the drivers involved the current economic downturn. Drivers had noticed a distinct decrease in fares over the last two years, mainly due to "people in the lower socioeconomic classes not being able to afford a taxi". The drivers commented that this situation caused them to feel more negative about their jobs in general. The drivers finally commented that current driver training does not address the issues of the psychological health and well-being of drivers, even though the drivers themselves display increased levels of stress, depression and anxiety while on the road. There appears to be a wide range of issues that are related to increased levels of stress, depression and anxiety in the drivers interviewed. These issues were explored further in the interview.

The next question addressed the issue of why ethnic minority drivers appeared to be more stressed, anxious and depressed than ethnic majority drivers. All but one of the ethnic minority drivers in the two groups worked for an individual owner. In the quantitative study, it was established that over 50% of ethnic minority drivers worked for an individual owner. The ethnic minority drivers reported that the working conditions were inferior to those working for a taxi company directly. The hours were longer because the owners expected a particular level of revenue to be reached in each shift. Maintenance and running costs mostly fell to the drivers, which according to some drivers was expensive. Both of these issues increased drivers' levels of stress because they were afraid of being sacked by the owner if revenue was not reached, and because they could not "get out" of the current working conditions.

Another issue that the ethnic minority drivers identified was the racial discrimination and abuse they received while working. All of the ethnic minority drivers in the two groups indicated that they were racially abused and pushed by passengers on virtually every shift. Examples included "bloody ethnic scum", "Indian faggot", "lower class wog", and "wog scab driver". The drivers also reported that they were not paid by passengers on a regular basis. These issues increased their stress levels perhaps further than their ethnic majority counterparts, because the drivers did not know how to effectively deal with the abuse and the economic exploitation. All drivers reported being anxious because they were constantly afraid of being pushed and abused by passengers, and some of the drivers stated that they "had run out of hope" because they did not see the situation changing in the near future. The ethnic minority drivers commented further that they "had to put up with the abuse and payment deals because we are not qualified to do anything else in Australia", and taxi driving did not require prior experience. This alludes to the ethnic minority drivers being economically disadvantaged by their limited job choices. Overall, the ethnic minority drivers encountered situations that most of the ethnic majority drivers did not have to cope with on a regular basis, and this appeared to increase their perceived level of stress, anxiety and sense of hopelessness experienced on the job.

6.2.2 Perceptions about Job Demands

6.2.2.1 Drivers' understanding of Job Demands

The next question in the interview examined whether public perception of the demands placed on taxi drivers was accurate. Public opinion, as perceived by the taxi drivers, was that

taxi drivers “laze around, drive occasionally and have an easy job”. All the drivers disagreed with this perception. The drivers were then asked what they thought job demands were. One driver identified a job demand as “working hard all the time..... like having to deal with the pressure of getting fares to make enough money, or dealing with passengers”. Generally, the drivers thought demands were “something that the job demands of you.....it may be good, or it may be bad, like driving through heavy traffic all the time”. The drivers were then asked to identify the job demands that they experienced. One driver stated that “it’s all about the constant pressure to find a gig and have it pay well”. All the other drivers agreed with this statement. Other drivers identified “the traffic..... all the heavy traffic roads in peak hour or after an accident, and you have to deal with it to get passengers”. Another demand that the drivers identified was making sure a passenger/s arrived at their destination on time. One driver reported that “it’s like having to deal with the pressure of getting the client to their place in a good time period”. Another driver stated that dealing with the environment was a demand: “I hate all the dust and the smog and the exhaust of other cars, but you have to put up with it, I suppose, because it’s part of what the job is”. Most of the drivers commented that they sit in the one place for long periods of time. One commented that “I sit for fourteen hours straight sometimes, and it’s demanding, it gets hard to deal with”. The ethnic minority drivers in the groups identified that dealing with racial abuse by passengers was “really, really hard. I guess you could say it’s demanding, because it saps you of energy”. Similarly, most of the drivers agreed that having to deal with the public in a courteous manner was demanding. One driver commented that “having to put up a good front with passengers who yell, who get out of the windows, who don’t pay the fare or who abuse you is what you would call demanding”. In summary, it appears that there are several sorts of job demands that taxi drivers have to deal with: monetary demands (i.e., pressure to earn a living); traffic congestion; time demands (i.e., getting passengers to their destination on time); environmental demands (i.e., dust, exhaust, smoke, etc.); physical demands (including driving when tired, sitting for long periods of time); and passenger demands.

6.2.2.2 Drivers’ comments on the Outcomes of Job Demands

Once they had identified what the demands of their job were, the drivers were asked what some of the outcomes of these demands were. Most of the drivers agreed that the pressure

to always have a fare was draining physically and mentally: “it saps your body and your mind. It makes you lose concentration on the job and it forces you to do things just to earn a living” was the remark by one driver. The ‘things’ that this driver referred to included taking risks on the road with or without passengers in the car, driving when he was tired, foregoing safety practices in order to maintain a living and not getting out of the car to “shake my legs every now and again”. The other drivers in the group agreed with this statement. Another driver stated that “sitting down all day has played up with my body physically.....I’m overweight, I have muscle problems and I have diabetes as well”. In turn, all of the drivers, even those who worked shorter shifts, agreed that their physical health was suffering as a result of their job and the demands placed on them. One driver stated that “I feel like, overall, the job demands as they are actually make me a worse driver on the road..... there’s no time to relax. The bottom line is that my boss needs to be paid a certain amount each shift. I take risks, I take on risky passengers, I don’t look after my body and I get very stressed about the amount of money I make”.

Another outcome identified was the stress and anxiety felt by the drivers. For example, “ I get stressed the whole shift because I’m expected to haul in this amount of money, and safety standards, traffic or nasty passengers get in the way of that goal”. Another commented that “I’m always worried about the bottom line. I get panicked when I don’t reach it”. Still another commented that “I get very down, very sad because I can’t ever see the demands of the job getting better anytime soon”. Other drivers also reported that they felt helpless because they couldn’t change the demands of the job, and they worried what the job was doing to their health. The drivers agreed that they didn’t feel good about their job because of the demands placed on them. One driver commented that “I just don’t get a nice feeling about the job at all. I can’t handle some of the demands and I get all negative about the job in general. It’s just not good”. In summary, it appears that job demands do have several different outcomes for the drivers: safety practices are sometimes compromised; risk-taking on the road is increased, including driving when tired; the drivers are suffering physically (e.g., muscle problems, obesity); the drivers appeared to be suffering psychologically in the form of stress, anxiety and some depressive thoughts also; and the drivers did not feel positive about their job in general.

6.2.3 Perceptions about Job Control

6.2.3.1 Drivers' understanding of Job Control

The drivers were then asked what they thought decision latitude, or job control, was in their job. Several of the drivers commented that job control meant the amount of decisions they reasonably could make in their job. One driver stated that "it's like the amount of decisions we can make on our own, freely, without the boss chiming in". Another driver reported that "job control means the amount of decision authority we are given everyday in our jobs". The other drivers appeared to agree with this statement.

The drivers were then asked about how much decision latitude they thought they had in their job. Most of the drivers thought they had very little decision latitude. The reasons for this varied. For example, the drivers had no choice and no say on the minimum amount of money they could make on a shift. This was set by the taxi companies or owners, and the drivers had to attain this figure "no questions asked". The drivers subsequently said that they perceived little control over the amount of time they spent in the taxi each day trying to earn a living. They stated that 12-14 hour shifts were "a given requirement of the bosses" and the drivers agreed that they had little choice but to go along with this requirement. Some of the drivers commented that they didn't think they had control over whether they took risks on the road or not. "Taking risks gets you fares. There is no decision involved" stated one driver. Similarly, the drivers agreed that they had no real decision latitude when it came to accepting potentially risky passengers. "Risky passengers are money. They make money for us. Not taking on every passenger that I thought was a risk would eat into my earnings and this would affect my take-home pay in the end". The drivers also agreed that they had no control over the verbal, racial and physical abuse they received from some passengers. One driver reported that "you've got no idea whether it's going to happen, and we are not allowed to fight back. There is no room for your own decision about it".

Other areas that the drivers thought they had little or no control over included the overall running and maintenance costs for the taxi (the drivers stated that these are "at the whim of the company or the owner") and their ability to contribute to the safety protocols instilled by the companies and owners. Regarding this last point, drivers commented that they had little control over what was considered 'safe' and what was not. The drivers stated that they all had ideas that they wanted to bring to the companies and the government about safety practices, but the

companies and the government “didn’t want to know. What they say goes, and we don’t get to decide if they (the safety practices) are really applicable to driving a taxi or not”. In summary, it appears that taxi drivers perceive little or no control over most of the aspects in their job. This lack of control was more often than not non-negotiable with taxi owner or companies, and the drivers lacked input into, and daily control over, important aspects of the job such as appropriate safety practices.

6.2.3.2 Drivers’ comments on the Outcomes of Perceived Job Control

Once the drivers had identified what decision latitude was and how much control they perceived they had on the job, the drivers were asked what some of the outcomes of this level of control were. The major reply to this question was anger. The drivers were angry that they did not have a say in most of the major aspects of their job. As one driver described, “not being able to control even how much fuel you use in a day makes me angry. I work hard, but I’m banging my head against a brick wall when it comes to making decisions in my job. The taxi bosses don’t allow us any lee-way, and it pisses me off”. Another outcome that the drivers identified was that they could not improve their safety in any legal way without approval from the companies and the government, and this frustrated them. “We get no say in how we should be protected from violent and abusive passengers. We have no control over our own safety anymore. It’s hard to take, because we’ve got some good ideas, but no-one is listening to us. It’s stressful and frustrating”.

Some of the drivers stated that not having any control over the number of hours worked (their perception) led to driver fatigue, risky driving practices and traffic accidents. This situation had them worried about their safety, and it apparently was stressful. One driver remarked that “we have no choice but to cut corners to get a fare. We can’t really make decisions about which fare we will take. I take risks like speeding and illegal turns just so I can make a living. We should get a choice as to the number of hours worked and the number of fares taken in a shift. It’s not a fair system. I guess you could say I’m stressed about the situation”. Finally, some of the drivers commented that the overall lack of control in their job was draining and it made them less interested in continuing in their occupation. One driver stated that “I just can’t get motivated to care anymore. I just am not interested in my own job because there’s no way I can change the situation. I get down about it, and my family don’t understand”. Another driver stated that “I

just don't gain a good feeling from my job anymore because I can't get to make even small decisions". No control in their job also meant that families suffered because the driver was continually not at home. A driver commented that "this job ruins your family life. No control over the basics, like the number of hours you work, or how much someone pays for a fare, means that you work longer just to make ends meet. My wife is always on at me to spend more time at home, but what can I do?". In summary, there were a number of different outcomes for the drivers from the perceived lack of control over aspects of their job. Psychologically, some drivers felt angry, some felt stressed, and some apparently were depressed about their lack of decision-making ability. Safety on the job was compromised because the drivers felt that they could not make decisions about safety practices. Family life was affected because the drivers had no perceived decision making power over the number of hours they worked to make the minimum amount required on a shift. It appeared that, because the drivers perceived an overall lack of control on the job, there was no positive outcome in this situation.

6.2.4 Perceptions about Driver Aggression on the Job

6.2.4.1 Drivers' understanding of Aggressive Driving

The drivers were asked what their definition of aggressive driving entailed. Most of the drivers agreed that intimidating the other driver/s was the objective of aggressive driving. Some drivers expressed that yelling at other drivers was aggressive driving, while others reported that "giving the other driver the finger" would fall in the category of aggressive driving. Several drivers commented that they followed cars closely to intimidate the other driver (i.e., tailgating), and another driver reported that "I think that I flash my lights when I'm pissed off with drivers".

The drivers were then asked whether they were aggressive towards other drivers while on the job. Most drivers indicated that they did use aggressive tactics, and one commented that "every day, there is at least one incident of aggression towards another driver for me". The two female drivers indicated that becoming aggressive was "not an option" for them due to their general vulnerability as a driver, and the possible repercussions if the incident escalated. Most of the drivers in the two groups also indicated that swearing at other drivers, purposeful tailgating and honking the horn were behaviours that they engaged in regardless of whether or not they had passengers in the car, and this did not appear to concern them.

6.2.4.2 Drivers' Reasons for Driving Aggressively

The drivers were then asked about the reasons for driving aggressively while working. Many drivers commented that the constant pressure placed on them to get to a fare or to get a passenger to their destination on time had to be relieved somehow, and that they relieved some of this pressure by driving aggressively. Two drivers indicated that they were "naturally aggressive" in other areas of their lives, and aggressively driving was seen as a "natural part" of their jobs. Other drivers replied that driving aggressively helped them to "deal with traffic congestion and work pressure in order to gain a fare". Most of the drivers in the two groups indicated that they also drove aggressively to "intimidate the other driver.....get in his head". Other reasons for becoming aggressive on the road for the day-shift drivers included poor impulse control and the "thrill of driving in such a manner". For the night-shift drivers, the thrill factor was also evident, but boredom on the job was a major reason for driving aggressively for all of these drivers. One night-shift driver commented that "the job, you know, is not always full-on, and sometimes I get in someone's face just to give me relief from boredom for the night".

6.2.4.3 The Outcomes from Driving Aggressively

The next question to the drivers asked what the outcomes were from driving in an aggressive manner. A lot of the drivers indicated that they thought that aggression was "a good thing.....it relieves tension, boredom, anger and that kind of stuff". One driver commented that "I know that yelling and honking and giving someone the finger are all wrong things to do, but it's part of the job, and most of the time it's a good part of the job". The other drivers in the group appeared to agree with this statement. However, several drivers did say that they had experienced accidents because they were following cars too closely, and they also had diverted their attention from the road in order to yell at another driver and had run in to the car in front of them as a consequence. Overall, although the drivers knew that driving aggressively was wrong and could have serious consequences, they engaged in this behaviour and it was considered part of their job.

The next question to the drivers asked how driving aggressively made them feel. Some drivers expressed that they felt relieved after an aggressive incident, but that this feeling of relief did not last for long and they "ultimately felt stressed by the incident". Other drivers

agreed that driving aggressively was stressful. They indicated that the feeling of stress lasted for a significant amount of time after an aggressive incident, and drivers noticed that their driving in general was impaired by the build-up of stressful thoughts and feelings. One driver indicated that he became "worn down, tired and depressed by driving aggressively" because driving in this manner did not enhance his long-term driving experience in any way. A few of the drivers were also upset with themselves because they drove aggressively with passengers in the taxi, because they were worried that they "might crash and harm my fare". Two drivers indicated that they were "clearly more anxious" in the aftermath of an aggressive driving incident because of the potential consequences, and they also indicated that they became agitated. Overall, although driving aggressively may give drivers some relief from anger or boredom or the pressures of the job, the drivers did acknowledge that their attention was not on the road in these incidents and that traffic accidents were a real consequence of driving in this manner. Drivers also indicated that they were worried that their passengers may get hurt if they drover too aggressively, they became stressed by driving in this manner, and several drivers became anxious, agitated and depressed by aggressive driving incidents.

6.2.5 Perceptions about Driver Risk-taking Behaviours

6.2.5.1 Drivers' views on taking Risks on the Road

The drivers were then asked briefly about their views on risk-taking while driving. Virtually all drivers in both groups indicated that risk-taking while driving was "a given" and it was "beneficial to my job, because the risk of losing a fare is greater than taking risks to get the fare in the first place". One driver commented "I have the view that all risks taken on the job are low in actual risk, that is, if it involved getting a passenger home on time, speeding is not risky". Most of the drivers also acknowledged that they took risks on a regular basis, and that risks were taken with or without passengers in the car. One driver reported that "I know risky driving is not right, but the job comes first. Even if I have a fare in the cab, I'll take risks to get him to where he wants to go". Examples of risks given by the drivers included speeding, generally ignoring traffic rules in order to gain a fare, driving through stop signs and jumping the queue at taxi ranks.

6.2.5.2 Drivers' reasons for taking Risks while Driving

The drivers were then asked to explain the reasons behind risk-taking behaviour while driving. The main reason for risk-taking while on the job was to gain a fare and get that fare to his/her destination in a timely manner. Virtually all drivers agreed with this point. Some drivers revealed that "residual anger from incidents with passengers" caused them to take more risks on the road immediately following the incidents. Surprisingly, accidents with other drivers also increased the likelihood of taxi drivers taking risks on the road. The reason given by one driver was that "accidents piss me off and I speed to blow off steam". One driver commented that "risk-taking gives you a natural high" (i.e., sensation-seeking) and he indicated that boredom was the reason for him wanting this 'high' feeling.

One of the drivers, who indicated that he worked more than 60 hours per week, stated that he was "more experienced on the road, and I have more driving skills than drivers who drive shorter hours", a case for driver self-enhancement bias. Another driver also stated that he saw the risk of an accident to be lower because of his "superior driving skills", thus he took more risks on the road. The two female drivers in the day-shift group both had a more cautious attitude towards risk-taking. Their reasons for this centred around the fact that they felt they were more conscious of their actions and the consequences of risky driving than their male driving counterparts. Another reason given was potential retribution by passengers for driving dangerously.

6.2.5.3 The Outcomes from taking Risks on the Road

The drivers were then asked about the potential outcomes of taking risks on the road. Virtually all of the drivers indicated that there was an overall gain from taking risks, thus the outcomes were in favour of the driver. However, several drivers did admit that "taking risks may be good, but you can have accidents, you can potentially swerve all over the road, you can make other drivers have accidents, and you can injure your passenger/s". Even though the drivers had this view of the negative consequences of risk-taking, they indicated that they would continue to take risks on the road "for the good of my job". Another driver said that "the bosses say on the one hand that they don't like us taking risks, but on the other hand they expect us to make a living by gaining as many fares as possible. You can't win". In addition, one driver stated that "the depots have rules that you have to pay for any accidents, but the chances of

having an accident while taking a risk on the road are low, so this rule doesn't bother me too much". It appears that a low perception of risk influenced this driver's thinking about risk-taking.

The drivers were then asked about how taking risks on the road made them feel afterwards. Most of the drivers agreed that while taking risks on the road was to their advantage, "in the long run you feel stressed and chewed out by the experience". One driver said that "I eventually get stressed out by taking risks for my job because I know it's wrong, but I have to survive too". Another driver, who indicated that he had been driving a taxi for 23 years, stated that "I get really down about taking risks. It's as if I'm depressed about the whole situation. I mean, having to take risks and not seeing any change in 'the rules' for the future". Other drivers indicated their agreement with this statement. Still another driver commented that "risky driving sometimes leaves me panicky and worried that I won't pull it off the next time. I'm worried all the time while I'm working". Finally, some drivers felt angry about risk-taking on the job. They explained that the nature of the job was to gain fares in any way possible, which meant taking risks, and they were angry that there was not an easy solution to this problem.

The drivers were then asked whether taking risks on the road changed the way they felt about their job. Virtually all of the drivers agreed that taking risks was potentially dangerous, yet they were compelled to continue with this behaviour. As a result, most drivers indicated that they did not gain a good feeling from their job and their job satisfaction was low. One driver commented that "the more risks I take on the road, the more negative I feel about my job in general. But it's a necessary evil, so I'm caught".

Clearly, as with aggression, risk-taking is virtually 'the norm' for taxi drivers in the Brisbane area. However, drivers pay a price for this style of driving in the form of increased anger, stress, anxiety and depressive symptoms, as well as lowered job-related well-being. Accidents and other road incidents are also a consequence of risk-taking on the road.

6.2.6 Perceptions about Coping Strategies while Driving

6.2.6.1 How Drivers cope with stressful situations on the Road

The drivers were asked to think about situations on the job that made them stressed, and how they coped with this stress. Most of the drivers stated that they "concentrated on the driving and safety stuff" to cope with "everyday driving problems" such as slow drivers, traffic

congestion, roadworks, near-misses, going in the wrong direction and long traffic lights. They stated that they could easily control these situations. One driver summed up the opinion of the drivers when he reported that "everyday stressful stuff, like traffic, is easier to cope with, it's easier to control. I just concentrate on safe driving to get me there in one piece". The drivers then commented that when they encountered a situation that was more stressful than the 'everyday boring stuff', they couldn't control the situation anymore, and they tended to cope in ways other than safe driving. The situations while driving that the drivers classed as particularly stressful or upsetting included drunken passengers who were moving around in the seat, abusive passengers (this included verbal abuse and physical abuse), traffic congestion with passengers in the car, situations which resulted in an accident, and passengers hanging out of the windows while the taxi was moving. One driver reported that "when I get really stressed, like when a passenger is playing up in the cab, I pretend that nothing's happening. I just zone out". Another driver agreed, and stated that "it's weird, but I pretend that nothing is happening when the situation involves passengers, like being abusive or drunken behaviour, because I don't want to get beaten up". Other drivers had a different coping strategy to deal with troubling passengers. One of these drivers commented that "I get really worked up and I yell at them to shut-up or to sit still, otherwise I'll stop the cab". Another stated that "passengers really get under my skin if they're playing up. I get angry and shout at them generally". Virtually all the drivers agreed that "safe driving thinking goes out the window when there is trouble in the cab".

It appears that most drivers use avoidant and confrontive coping strategies to deal with passengers who are not behaving in the taxi, and the safe driving strategy is used less often in these situations. When talking about stressful traffic situations, most drivers admitted that they were not focused on safe driving practices and they coped in other ways. For example, one driver stated that "if I've just had an accident, I get upset and I blame myself for getting upset. Does that make sense?". Another commented that "if the traffic situation is really bad, I get worried about my ability to do the right thing.....you know, to do the safe thing". Still another stated that "I worry about how I drive when I'm stressed out with the traffic. I tend to worry about what I'm gonna do next". Several drivers reported that they got angry in stressful traffic situations. "I get mad and I get even by yelling and stuff" one driver stated. Another driver commented that "I'll show 'em who's boss on the road, you know, I yell at the other drivers and sometimes I'll get up the back of them to teach them a lesson". Still another reported that "I

show them (the other drivers) what I think of them by giving ‘em the finger or yelling at them through the window”. Most drivers agreed that concentrating on safe driving was not how they coped when the traffic situation was very stressful. It appears that the drivers used either emotion-focused or confrontive coping strategies to cope with these stressful traffic incidents.

6.2.6.2 How Drivers feel when they use certain Coping Strategies

The drivers were asked how they felt after either pretending that nothing has happened when a passenger becomes troublesome, or yelling at the troublesome passenger to cope with their behaviour. Most of the drivers who pretended that nothing was happening stated that they were stressed by the situation, and “a little worried about what was going to happen next”. “I get upset with myself and I find it hard to relax” was a comment by one driver. Of the drivers who used confrontive coping strategies, one stated that “I know that yelling at a passenger stresses me out, because it doesn’t solve anything in the end”. Another commented that “I feel on edge, I feel agitated and strung out after an abusive passenger has been in the cab”. The drivers were then asked how they felt after coping with very stressful traffic situations. Several drivers commented that they were worried about their ability as drivers to cope with these situations. They stated that they felt on edge, tense and angry afterwards. One driver reported that “when I get angry in traffic, I get really down on myself afterwards and I ask myself, did yelling work? No, it didn’t”. Another driver stated that “I reckon that when I’m tired on the job, it’s easier to yell at someone or the traffic to cope. Thinking about driving safely takes too much concentration”. Several other drivers agreed with this comment.

It appears that when the drivers used avoidant, emotion-focused or confrontive coping strategies in stressful traffic situations, they felt stressed, tense, worried and sometimes angry afterwards. When asked whether how they coped affected their feelings about their job, most of the drivers agreed that they did not feel good. One driver commented that “my job makes me feel sad and angry at the same time if that’s possible. Overall, it’s not a good feeling”. Another reported that “I don’t get a good feeling about my job because coping the way I do is just not right, and I should be able to cope better”. It appears that affective well-being is affected by the way drivers cope with stressful situations on the job.

6.2.6.3 What Drivers can do to Cope Better with Stressful Driving Situations

The drivers were then asked what would need to happen for them to cope better with troublesome passengers and stressful traffic situations. Virtually all the drivers agreed that they received no training as to how to deal with very stressful driving situations, particularly abusive and drunken passengers, and they thought that the taxi companies should run training sessions to teach them alternative and better ways of coping. “That'd be really helpful, because yelling and giving people the finger just doesn’t work” commented one driver. Another driver stated that “I really need to know how to talk to an abusive client, how to calm him down, how to have a sensible conversation with him in the cab so he doesn’t start swinging at me or rob me”. A lot of the other drivers agreed with this comment. Another driver stated that “I want to learn how to concentrate better when I’m stuck in traffic or whatever. I lose my concentration and safe driving goes out the window sometimes”. It appears that the drivers needed, and wanted, training in appropriate coping strategies to deal with troublesome passengers and stressful traffic situations. Currently, in Brisbane no training exists for taxi drivers in the area of coping strategies.

6.2.7 Perceptions about the current Safety Climate

6.2.7.1 Drivers’ thoughts on the Critical Factors in Safety Climate

The concept of a safety climate was explained to the drivers in each group. The drivers were then asked to list what they thought were important factors to have in a functioning safety environment. The first factor that the drivers listed as important was that of communication between “the bosses and the drivers” with regard to safety policies and practices. Virtually all drivers agreed that they had no real communication with management about safety issues, and they were expected to follow up on practices themselves. The drivers commented that “we don’t get asked by the bosses about stuff to do with safety anymore. We are the ones who know what needs to be done, yet no-one is prepared to listen to us”. Another driver stated that “I get the feeling that the bosses don’t want our input into safety issues and changes. It’d cost them too much money”.

The second factor that drivers identified was that of driver safety training. All of the drivers agreed that having an effective safety training program was integral to correct safety practice. Some of the drivers who attended the training programs given by Black and White and Yellow

Taxis commented that “we did get the basics of operating a cab safely and what the occupational health protocols were. But we didn’t get training on how to cope safely with abusive dangerous passengers or how to avoid taking risks on the road yet still make enough money. Knowing this stuff from the start would be good”. In addition, “simple stuff, such as when a car has to go in for maintenance, or what the exact safety protocols, wasn’t discussed either” stated one driver.

The third factor that drivers identified concerned management commitment to workplace safety. “I get the feeling that the bosses don’t follow the safety rules too often, such as correctly maintaining the vehicles mechanically or following up on a complaint of passenger abuse. It doesn’t happen in my book” commented one driver. The other drivers seemed to agree that ‘the bosses’ don’t practice what they preach. Another driver stated that “I would probably follow the rules more closely if the bosses got out here and showed that they were committed to our safety, instead of slacking off on maintenance and tidiness and reporting assaults”. Still another driver commented that “I don’t think that management are fully committed to our safety because they don’t do enough to protect us from passengers who are violent or who want to rob us”. It is clear from these comments that management could do more to maintain a high standard of safety.

The fourth factor that the drivers identified was “cutting safety corners because the job puts so much pressure on you”. The pressure to find a fare appears to be associated with increased risk-taking behaviours, thus safety is not adhered to at all times. The drivers stated that to attain a safe driving environment, risk-taking must be minimised. Even though the minimisation of risk-taking behaviours would have a significant impact on the drivers’ income levels (their perception), the drivers seemed to agree that too many accidents and traffic violations were occurring every day and these incidents were putting their safety at risk. The drivers agreed that a way must be found to still be able to obtain enough fares to make a living without taking risks on the road.

The fifth factor that the drivers identified was that of support from other drivers with respect to safety issues. Drivers tended to “help each other out with info about how to deal with situations that come up” and that “talking with other drivers helps my confidence when I come across a dangerous situation in the cab”. Where possible, drivers waiting at ranks “took care of each other where possible to avoid getting hurt”. This was particularly the case with the night-

shift drivers, who more often witnessed violence against their colleagues. Overall, drivers' relationships appeared to engender a sense of hope that drivers would be able to deal with unsafe situations when they arose because of the comments and the protection offered by their colleagues, suggesting a strong sense of collegial support. Some drivers commented that this was enough to keep them driving a taxi in spite of the current safety concerns.

6.2.7.2 The Impact of the Identified Safety Issues on the drivers

The drivers were then asked whether the identified safety factors were in place in their work environment, and to provide examples of where the factors were not present. The lack of management commitment to relevant safety issues and a lack of communication about safety procedures appeared to be associated a vote of no confidence by the drivers. As one driver put it, "I think that the bosses aren't committed enough to our safety. I have lost faith that they ever will come around and do something about, say, physical abuse against us by passengers". This lack of confidence caused the drivers to feel as though their safety didn't matter. Several drivers stated that they had stopped reporting an assault by passenger/s because management didn't care enough to pass the complaint on to police. Other drivers stated that they flouted the rules because there was no-one who cared enough to stop them, thus they reported an increase in accidents and other traffic violations as a result. The lack of appropriate driver training also caused the drivers to be angry with management. "The training should be addressing the real issues, such as coping with real situations out there, instead of concentrating on how to clean the cab and how to operate the gadgets" commented one driver. The consequences of this lack of desired driver training included a lack of coping skills for the drivers, a lack of general safe practice and a lack of commitment by the drivers to current safety protocols.

The pressure to find a fare, and the risks taken to secure the fare in order to earn a sufficient living, also had an impact on the drivers. One driver summed up the situation by saying that "taking risks is second nature. It is 'the norm'. I have lost the ability to find any danger in the risks that I take anymore, and this worries me". The drivers stated that they knew that taking risks was the wrong thing to do, however management had put no practices in place to help minimise risk-taking on the road. Several drivers suggested that an increase in the percentage pay rate, and an increase in the set pay rate, would decrease their need to take risks

to get as many fares as possible. However, the drivers were not confident that this suggestion would impress the taxi companies or taxi owners enough to implement it.

It appears that taxi drivers see management communication of safety practices, management commitment to workplace health and safety, appropriate driver safety training, minimising work pressure/risk-taking and relationships with other drivers as important factors in a correctly functioning safety environment. However, all of these areas (with the exception of relationships), according to the drivers, are not up to standard at present. This has created a lack of confidence in management by the drivers and a general ignorance of basic safety rules. The drivers were then asked what effect these issues have on their state of mind. In essence, virtually all the drivers indicated that they were stressed by the lack of direction by management in the areas mentioned. They were angry that "nothing appears to be done about anything anymore". And some of the drivers commented that they had been "worn down" by the lack of care, and that they were "saddened by the views of the companies and the government when it comes to our safety on the road and in the taxi". Clearly, safety climate issues have an effect on the safe behaviour of drivers and they have an effect on the mental health of drivers also.

6.2.8 Future Driver Health and the Taxi Industry

The final question for the drivers asked them what would have to change in the Brisbane taxi industry to improve their health and well-being. All drivers agreed that their future health and well-being would be impaired if the current system was continued. The major change that would have to come into effect for the drivers is the commitment of management and governments to health reform in the industry. Shorter working hours, greater breaks between shifts, exercise and dietary plans run by the taxi companies or the government, better management of fatigue, counselling for drivers when necessary, greater safety measures and better training to cope with serious problems were all issues cited by the drivers as areas for improvement. The last major change cited by drivers was better procedures to deal with hazards in their workplaces, including psychological and physical abuse follow-up by the police and the taxi companies. The drivers commented that the use of fixed cameras in the taxis was not a sufficient deterrent for most physically abusive passengers or robbers, and that safety screens, like those in use in taxis in Victoria, would significantly decrease these problems. All of these

changes would aid drivers to attain better physical and psychological health and well-being while working.

6.3 Chapter Summary

The two focus group interviews intended to validate the results of the questionnaire, and to explore and expand on these results. The interviews explored the drivers' definitions of aggression, risk-taking, job demands, job control and safety climate. The interviews also explored the impact of these factors on the drivers' health and safety on the road. It appears that high perceived job demands, low perceived job control, use of aggression and risk-taking behaviours, use of maladaptive coping strategies and a negative perception of the safety climate all have a negative impact on the drivers' perceptions of their psychological health, their job-related affective well-being and their safety behaviours. Interpretation of the data in this study points to the urgent need for further study of the mental health and safety practices of Brisbane taxi drivers.

7.0 DISCUSSION

7.1 Introduction

A vast body of research conducted over several decades has established that (a) psychological stress is a major occupational health problem (Brogmus, 1996; Godin & Kittel, 2004; Hill & Boyle, 2007), and (b) drivers in the transport industry are one of several occupational groups who report disproportionately high levels of work-induced stress and psychological ill-health (e.g., Orris et al., 1998; Ueda et al., 1992). Although the psychological health of truck, coach and urban bus drivers has been studied extensively over the past three decades, the taxi industry has not received the same level of research scrutiny. Only two studies, by Machin and De Souza (2004), and Facey (2003), have investigated the effects that driving a taxi has on drivers' psychological health and well-being. These studies identified potential job-related factors that may influence drivers' health. The present research aimed to further contribute to knowledge by investigating job-related environmental, organisational and individual factors and their effects on the levels of depression, anxiety, stress and well-being of samples of ethnic majority and ethnic minority taxi drivers in the Brisbane metropolitan area.

The theoretical framework for this research utilised Karasek's (1979) job demand-control model of job strain. In essence, jobs in which demands are high and control is low create an increased level of job strain, which can manifest as psychological illness and a diminished sense of job-related well-being. Various researchers have successfully incorporated specific individual and organisational factors, in addition to job demands and job control factors, into models in order to highlight the relationship with job stress and well-being in specific industrial workplaces (Cheyne, Oliver, Tomas & Cox, 2002; Oliver, Cheyne, Tomas & Cox, 2002; Tomas, Melia & Oliver, 1999). The studies concluded that the additional factors do enhance the ability of the job demand-control model to predict the psychological health and well-being of different occupational groups. This 'extended Karasek model' approach was taken in this thesis in order to predict the psychological health and well-being of samples of ethnic majority and ethnic minority urban taxi drivers. In addition to the job demands and job control environmental factors, the individual factors of driver aggression, risk-taking and coping strategies, and the organisational factor of safety climate, were incorporated into a proposed new model in order to more accurately predict the psychological health and well-being of the taxi drivers. One

criticism of Karasek's (1979) job strain model is that it has limited validity in different cultural societies. Since the number of ethnic minority taxi drivers in the Brisbane area approaches 30%, the proposed extended model was tested against ethnic majority and ethnic minority sub-samples to investigate this cultural criticism. Ethnic majority drivers have English as their first language, and ethnic minority drivers do not have English as their first language.

7.2 Summary of the Research

In order to examine the ability of the proposed extended Karasek model to predict levels of depression, anxiety, stress and job-related well-being in the taxi drivers, two studies were developed and implemented. The first study was quantitative in nature and involved 383 drivers answering a self-report questionnaire. This questionnaire investigated: drivers' level of aggression; perceptions of risk-taking; coping strategies; perceived level of job demands; perceived level of job control; safety climate perceptions; symptoms of depression, stress and anxiety; and the overall level of job-related affective well-being. Correlation, MANOVA and multiple regression analyses were performed in order to test eight hypotheses relating to each of the predictor variables and their association with psychological health and well-being. Study two was qualitative in nature and consisted of two focus group semi-structured interviews. This study aimed to validate the findings from the first study and also to explore further, and expand on, these findings. Content analysis was utilised to explore themes in the interviews.

7.3 Discussion

The aim of this research was to ascertain factors affecting the psychological health and well-being of taxi drivers. Karasek's (1979) model was used as a theoretical framework, and additional individual and organisational factors were incorporated into the model in order to more accurately reflect the range of factors that may predict the psychological health and well-being of the ethnic majority and ethnic minority taxi drivers in the Brisbane metropolitan area. In addition, the incidence levels of stress, depression and anxiety, and the level of affective well-being, in ethnic majority and ethnic minority drivers were investigated in this research in an effort to set a benchmark for Australian researchers who may want to further investigate these variables in the taxi industry.

The reported incidence of depression was significantly higher for ethnic minority drivers (48%) than for ethnic majority drivers (32%), and ethnic minority drivers also reported more severe symptoms. Symptoms of anxiety were also reported by ethnic majority drivers (20%), with a higher percentage of ethnic minority drivers affected (25%), although the severity of the symptoms reported was approximately the same for both groups. The overall high incidence of depression and anxiety in taxi drivers is similar to figures for truck and bus drivers reported by Yu et al. (2006), and Kawakami and Haratani (1999). The ethnic minority group of drivers displayed a more severe level of stress symptoms than did drivers in the ethnic majority group. The overall incidence of stress, recorded as being between 55% (for ethnic majority drivers) and 76% (for ethnic minority drivers), was higher than the incidence level reported by Berraho and his colleagues (2006), who found that 44% of taxi drivers in Morocco were moderately to severely stressed by their job. Regarding affective well-being, ethnic minority drivers reported a significantly lower level of well-being than did ethnic majority drivers, although both groups scored in the mid-range on the JAWS-SF scale. This moderate to low level of overall well-being is consistent with scores reported for truck drivers and urban bus drivers in the UK and USA (Blanchflower & Oswald, 2005; Rose, 2003).

It is clear that the incidence levels of depression, anxiety and stress for the taxi drivers in the present research are much higher than in other occupational groups (Australian Bureau of Statistics, 2008; Canadian Compensation Board, 2006), and the taxi drivers' moderately low level of job-related emotional well-being was consistent with levels reported by other transport industry drivers. According to the taxi drivers who were interviewed, the effects of these illnesses in the workplace were considerable. Absenteeism was increasing in frequency as drivers tried to cope with increased pressure to gain fares and to deal with abusive passengers. Presenteeism (i.e., low productivity while at work) was also increasing, as drivers reported being distracted, having poor concentration and a lower level of overall performance of their tasks. The most concerning consequence of the high level of psychological illness in the drivers was the fact that they acknowledged that they have a lower level of tolerance for any problems on the job, resulting in increased frustration and anger and increased use of aggression and risk-taking on the road. This resulted in the drivers foregoing safety rules more often and they reported more accidents, traffic violations and near-misses when they were depressed, anxious and/or stressed. These current findings add weight to the argument that psychological distress

may indeed be linked to the overall safety behaviour of the taxi drivers, and future research is needed to corroborate and to further explore this relationship.

The reasons that ethnic minority drivers came up with regarding why they experienced more depressive, anxiety and stress symptoms than their ethnic majority counterparts revealed some interesting findings. Many of the ethnic minority drivers worked for individual owners, and the inferior working conditions, the increased pressure to bring in revenue, the long hours and costs associated with maintaining the taxi all served to increase the level of psychological distress in the minority drivers. They were anxious and stressed at the thought of being sacked by the owner if revenue was not reached, and they were increasingly depressed that the working conditions would not change in the future. Another issue that the ethnic minority drivers identified was the racial discrimination and abuse they received while working. Most of the drivers indicated that they were racially abused and pushed by passengers on virtually every shift. They were not hired by passengers because they were 'foreigners'. They also reported that they were not paid by passengers on a regular basis. These issues increased their stress levels perhaps further than their ethnic majority counterparts, because the drivers acknowledged that they did not know how to effectively cope with the abuse and the economic exploitation. The ethnic minority drivers commented further that they had to put up with the abuse and payment deals because they were not qualified to do anything else in Australia, and taxi driving did not require prior experience. Overall, the ethnic minority drivers encountered situations that most of the ethnic majority drivers did not have to deal with on a regular basis, and this appeared to increase their level of stress, anxiety and depression experienced on the job. These findings are consistent with the research by Facey (2003) on taxi drivers in Canada, and also with the wider literature on ethnicity, work characteristics, stress and health (Roberts, Swanson & Murphy, 2004; Smith et al., 2005; Wadsworth et al., 2007).

The proposed conceptual relationships between job demands, psychological health and affective well-being were supported by both studies in this research. The studies suggested that high job demands were associated with increased symptoms of depression, anxiety and stress, and a decreased level of well-being in both ethnic majority and ethnic minority drivers. To the observer, the job of a taxi driver may not seem particularly demanding: they only need driving skills and navigation skills. However, results suggested that the taxi drivers in this research perceived their job to be very demanding, as the scores on the Job Content Questionnaire

reflected. The constant pressure to find a fare was the primary demand, followed by navigating traffic congestion, making sure a customer arrived at the destination on time, the physical demands placed on the driver, combating environmental dust and exhaust, the excessive number of hours spent driving the taxi and the repetitive nature of the job. These demands appeared to be heightened in drivers who worked over 60 hours per week and with owner-drivers. The overall impression is one of survival on the job. The demands are so high that drivers are forced to endure long work hours, heavy traffic, passenger abuse and increasing taxi costs just to earn a sufficient living. As a consequence, the drivers are in a constant state of psychological and physical job strain. Further, it appears that levels of depression, anxiety and stress are increased because the drivers are in a situation where the perceived demands would not lessen, the demands are constant (such as work pace, work rate, time pressure), and the drivers had lost hope that this situation would change in the future. This also affects the drivers' level of job-related affective well-being. Overall, the finding that high job demands affects the health and well-being of taxi drivers is consistent with previous research findings regarding job demands, psychological health and the well-being of truck and bus drivers in particular (De Croon et al., 2000; De Croon et al., 2002; De Croon et al., 2004; Orris et al., 1998; Ueda et al., 1992).

Results show that the predictions made about the relationships between job control, psychological health and affective well-being were supported by both studies. In line with predictions, a decreased perceived level of control on the job was associated with increased symptoms of depression (specifically, a sense of hopelessness, a major factor in clinical depression), anxiety and stress, and a decreased level of well-being in both ethnic majority and ethnic minority drivers. As with job demands, the observer may not think that the job of taxi driving involved low control: the drivers can choose to wait at ranks or cruise for fares, they can refuse passengers and they can choose to work during the day or at night. However, results suggested that the taxi drivers perceived a low level of control on the job, as the scores on the Job Content Questionnaire reflected. Most of the drivers worked over 60 hours per week because they couldn't control the number of passengers in order to make enough money to pay for expenses. Drivers who worked for individual owners reported less control over their rate of pay, their hours of work (sometimes a 6-hour shift, sometimes a 12-hour shift), the costs of running the taxi and the fact that they wanted to refuse to drive certain passengers, but they couldn't because of the constant pressure to obtain an income. Another aspect of the job that

drivers reported to have no control over was verbal and physical abuse by passengers. This experience was heightened for ethnic minority drivers who also experienced racial discrimination and abuse. It appears that the drivers' control over the elementary aspects of their job is actually quite low, and the drivers experienced increased levels of psychological ill-health and decreased well-being as a result. The theme that emerged was that drivers overall had decreased control over the day-to-day activities of their job and they felt powerless and overwhelmed in this situation. They tried to work longer hours and more days per week in an attempt to gain some control, but this did not alleviate the overall situation. It appeared that, as with job demands, the drivers were in a constant state of job strain, a constant state of wanting control but not achieving it. The drivers also appeared to have no control over their input into discussions about how to improve their job. The drivers were not consulted about strategies to control the costs involved in running a taxi, the pressure to find a fare or the uncontrolled abuse by passengers, and the drivers became increasingly distressed as a result. Overall, taxi drivers appear to have limited to no control over almost every element in their occupation, resulting in symptoms of psychological ill-health and a lowered level of affective well-being. These findings are consistent with previous research on truck and urban bus drivers in the transport industry (De Croon et al., 2000; De croon et al., 2002; De Croon et al., 2004; Orris et al., 1998; Ueda et al., 1992). Future research may be able to investigate ways that both job demands can be minimised and job control can be maximised in order to alleviate the psychological symptoms associated with these states in taxi drivers.

Results show that the ability of the job control variable to buffer the effects of job demands (i.e., Karasek's (1979) interaction hypothesis), and decrease the level of psychological distress, was not found for both ethnic minority and ethnic majority driver samples in this research. Although there was an interaction effect for psychological health, this effect was not significant. There was also a non-significant interaction effect when considering driver well-being levels in both driver samples. These non-significant findings are consistent with research carried out on truck and urban bus drivers using Karasek's (1979) model (De Croon et al., 2000; Ueda et al., 1992). It has been suggested by various researchers that the current measure of job control as tested by the Job Content Questionnaire is too broad to account for individual differences in occupations (e.g., De Croon et al., 2000; De Croon et al., 2002; Ganster & Mayes, 1988; Perrewe & Ganster, 1989; Wall et al., 1996). Future research on Karasek's model in the

taxi industry may benefit from using a more specific measure of job control, as this may produce a larger and significant interaction effect for psychological health and well-being outcomes.

One of the criticisms of Karasek's (1979) model has been that it has limited validity in different cultural societies. The taxi driver sample in this research included a large number of drivers who were from non-English speaking backgrounds, so the model was tested against both ethnic majority and ethnic minority drivers. Significant main effects were found for both job demands and job control, and a significant amount of the variance in the psychological health outcomes and job-related affective well-being was accounted for by these two environmental predictor variables in both ethnic samples. Although the interaction hypothesis was not supported, the basic tenets of Karasek's model were validated in this research. Whether this is a true test of the cultural validity of Karasek's model is debatable, since the ethnic minority drivers were working in an Australian environment rather than, for example, in India or Pakistan. Future research using Karasek's model with taxi driver samples in these overseas countries, in their own cultural environment, is needed in order to more accurately answer this question.

Although ethnic minority drivers were significantly less aggressive towards other drivers than were ethnic majority drivers, the hypothesis that aggressive driving behaviour would affect the psychological health and well-being of taxi drivers in both ethnic groups was supported by both studies in this research. Specifically, an increase in aggressive driving behaviour towards other drivers was associated with an increase in depressive, anxiety and stress symptoms and a lowered level of job-related affective well-being. The aggression – well-being relationship in this research is consistent with that found by Machin and De Souza (2004). The reasons given for driving aggressively varied widely. Some drivers acknowledged that they were 'naturally angry and aggressive', thus supporting the theories of Fox (1982), Lorenz (1966) and Morris (1967), who state that aggression is a drive and an accumulating anger force that needs to be discharged, usually in response to a specific stimulus. Various researchers have investigated these theories and have concluded that professional drivers, particularly urban bus and truck drivers, who score highly on the Driving Anger Scale and the Aggression Questionnaire are up to four times more likely to relive the anger via physically aggressive and verbally aggressive gestures (e.g., Blanchard et al., 2000; Deffenbacher, Oetting & Lynch, 1994; Deffenbacher et

al., 2000, 2001, 2002, 2003a, 2003b; Herrick, 2001; Knee et al., 2001; Lajunen & Parker, 2001; Underwood et al., 1999). Thus, the finding that some taxi drivers are 'naturally angry and aggressive on the road' is consistent with the research in the transport field. Other drivers had different aims in mind when driving aggressively. For example, some of the drivers indicated that they drove aggressively to relieve frustration with traffic conditions and boredom, while others commented that aggressive driving was intended to intimidate and psychologically harm the other driver/s. These two reasons are at the centre of theories of aggression by Buss (1961) and Baron (1977). These theorists proposed that there are two categories of aggressive behaviour: (1) where the sole intention of the aggressive act was not to intentionally harm the other person/s, but to obtain another goal (such as relieving frustration regarding traffic conditions); and (2) where the aim was to intentionally cause suffering to the other person/s (such as intimidation and psychological harm to other drivers). It appears that both categories were used by the taxi drivers in this research, and this finding is also consistent with other researchers' findings for professional drivers (e.g., Arnett, 1990; Dahlen et al., 2005; Furnham & Saipe, 1993; Herrick, 2001; Lajunen & Parker, 2001; Rupp & Vodanovich, 1997; Verwey & Zaidel, 2000).

The central theme that emerged from these findings is that most taxi drivers tended to use aggression in order to control their feelings of frustration with their job in certain situations, such as heavy traffic, periods of boredom, or indeed the lack of control over their job in general. These situations occurred frequently for the drivers, and aggressive driving was considered the 'norm' by both ethnic majority and ethnic minority drivers. Instead of dealing internally and constructively with the frustration, the drivers vented this feeling via an outward expression of aggression towards other drivers because they were not in control of their frustration. This may have given them a feeling of relief in the short-term, but the current results indicate that the long-term use of aggression is associated with increased symptoms of stress, a sense of hopelessness and anxiety. It is concerning that the taxi drivers considered aggressive driving a 'norm' in their job, because research has also shown that such driving behaviours by professional drivers are associated with increased traffic violations, accidents and crashes (e.g., Chapman, Roberts & Underwood, 2000; Chliaoutakis et al., 2002; Dalziel & Job, 1997a; Dimmer & Parker, 1999; Gabler & Hollowell, 1998; Lynn & Lockwood, 1998; Rosenbloom, Eldror & Shahar, in press; Rowland et al., 2008; Sullman, Meadows & Pajo, 2002). Future

research could investigate ways of reducing aggressive behaviour on the road by the use of a training program, and testing the program's effectiveness by measuring the cognitive restructuring processes used by the drivers in situations that otherwise would have caused them to become aggressive (John & Gross, 2004).

Although ethnic majority drivers perceived a significantly lower level of risk in certain driving situations than did ethnic minority drivers, the hypothesis that a perception of low risk would affect the psychological health and well-being of taxi drivers in both ethnic groups was supported by both studies in this research. Specifically, a perception of low risk in potentially risky driving situations was associated with an increase in depressive, anxiety and stress symptoms and a lowered level of job-related affective well-being. The perception of risk – well-being relationship is not consistent with that found by Machin and De Souza (2004), who reported no relationship between risk perception and well-being levels. Although the same measure of risk perception was used in both studies, sampling differences or experimental design may have influenced the results obtained. The fact that the interviews with the taxi drivers confirmed the quantitative results in this research lends support to the view that perception of risk does influence the affective well-being levels of drivers. However, more research is needed on an independent sample to confirm these results.

As with aggressive driving, the reasons for having a perception of low risk, and taking risky driving options, varied between drivers. Overall, most drivers in both ethnic groups justified taking risks by stating that gaining a fare and getting passengers to their destination on time overrode the risks involved, and that most risks they took were able to be controlled by them (their perception). This reasoning aligns with the theory of reasoned action (Fishbein & Ajzen, 1975), as well as with work by Delhomme and Meyer (1998) and Hatakka et al. (2002). These researchers state that external motives (such as gaining a fare) influence a driver's willingness to take risks and to perceive a situation as risky, and that, as a result, their behaviour becomes less adaptive to the prevailing conditions, thus accidents, near misses and crashes increase (Van der Hulst, Meijman & Rothengatter, 1999, 2001). This concept has been shown to exist in bus, fleet and truck drivers (e.g., Gabler & Hollowell, 1998; Sullman, Meadows & Pajo, 2002). The younger taxi drivers in study two in this research stated that they perceived a lower level of risk because they seek 'a high while driving', in other words, sensation-seeking behaviour. High sensation-seeking might lead to risky driving because of the thrill it provides

(Arnett, 1994). Research in the transport industry supports this claim. For example, Burns and Wilde (1995) found links between sensation-seeking, risky driving and accidents in a sample of 78 taxi drivers in the UK.

Another reason that the taxi drivers gave for perceiving a low level of risk on the road was boredom, particularly among the night-shift drivers. Research has shown that bored drivers take more risks to relieve this feeling (Arnett, 1990; Furnham & Saipe, 1993; Verwey & Zaidel, 2000). With regard to the transport industry, Dahlen et al. (2003), and Rupp and Vodanovich (1997), have found a modest association between boredom proneness and risky driving in bus and truck drivers, and relationships with the amount of near misses and crashes these drivers have been involved in also. Some of the taxi drivers interviewed also stated that their driving skills were superior to other drivers, and that the risks were thus not dangerous for them. Research on self-enhancement bias with other professional drivers has supported this claim (Groeger & Brown, 1989; McKenna, 1993; Svenson, 1981). Basically, Walton (1999) has suggested that self-enhancement bias is mediated through self-justification, indicating that drivers believe that traffic rules are more appropriate to the other worse drivers than to themselves, thus increasing risky driving. This is a concern, particularly if taxi drivers take the risky options.

It appears that there is a 'culture' of risky driving among the taxi drivers sampled. Particularly when gaining a fare, or transporting a fare, was involved, the drivers perceived risks in a different way and they tended to take more risks in order to gain an income, to survive on the road. It seemingly is a case of 'having no choice but to take risks if you want to earn a living'. This reasoning may have caused them to take risks with passengers in the taxi. This way of thinking led some of the drivers to think that their driving skills were superior to those of other drivers. It also appears that a perception of low risk persists even after the drivers have been involved in accidents. In their quest for fares, accidents are part of the process of making a living and are perhaps not seen as serious enough to stop drivers from achieving this goal. The 'cognitive blunting' of perceived risks, however, harms the psychological health and well-being of the drivers, because this kind of behaviour drains the driver mentally with every occurrence.

Whilst it appears that there are a variety of reasons why taxi drivers perceive a low level of risk while driving, the ramifications of this behaviour potentially goes in two directions. Firstly, the safety of the taxi driver, the passenger/s and other road users is compromised.

Research on Australian taxi drivers has shown that the number of near misses, traffic violations and crashes increase with drivers taking risks on the road (Dalziel & Job, 1997b). Secondly, the effect that a perception of low risk has on taxi drivers' psychological health and well-being has been shown in this research to be significant. Future research is required to corroborate these findings, however it is imperative that management train their drivers to drive responsibly in order to reduce the impact of risky driving behaviours in the short- and long-term. Regular checks on driving violations, incident reports and police reports could also be used to appraise drivers' progress with regards to risk-taking on the road. This may be difficult to achieve with owner-drivers, however.

The proposed conceptual relationships between coping strategies, psychological health, and well-being were supported by both studies in this research. Specifically, increased use of maladaptive coping strategies (i.e., emotion-focused coping, avoidance, confrontive coping), after controlling for adaptive coping strategies (i.e., task-focused coping), was associated with increased symptoms of depression, anxiety and stress, and a decreased level of affective well-being in both ethnic majority and minority taxi driver groups. In accordance with established research on bus, coach and truck drivers (e.g., Dawson & Haten, 2004; Games & Gotham, 2002; King, Ling & Yates, 2005; Lingstrom & Tomlinson, 2002; Machin & Hoare, 2008; Manson, Heath & Feather, 2004; Skillett, 1998; Thackett & Yates, 2002; Tyne, Malcolm & Sater, 2002), the taxi drivers in both ethnic groups utilised maladaptive coping strategies when the situation was perceived as uncontrollable and more stressful than usual, and this affected the way they felt about their job in general. Although there are studies reporting the effect of using maladaptive strategies on the physical health of truck and bus drivers (e.g., Faulkner, 2001; Hadlee, 2000; Jones, Jones & Damon, 2004; Long & Vines, 2005; Skillet, 1998; Thackett & Yates, 2002), this is the first study to examine the effect of these strategies on the psychological health of professional drivers, and it appears that maladaptive strategies do take a toll on the psychological aspects of health as well as the physical aspects.

Most of the ethnic majority taxi drivers stated that they used confrontive coping and emotion-focused coping to try and deal with 'uncontrollable' situations, including incidents with passengers. This is in line with previous research on urban bus, fleet and truck drivers (e.g., Boin, Mines & Fiens, 2005; Dawson & Haten, 2004; Grimes & Jones, 2006; King, Ling & Yates, 2005; Kontogiannis, 2006; Yung & Bjorn, 2003). In the present research, ethnic majority

drivers not only were more aggressive in their general driving behaviour, they also used aggressive coping strategies to deal with 'uncontrollable' events. The drivers tended to lose focus on the task at hand and tried to defend themselves against a perceived stressor by outwardly expressing their anger at passengers and other drivers, and themselves. This may be the case because of lack of training as to how to cope with situations that are appraised as very stressful. The ethnic minority drivers, on the other hand, utilised avoidance and emotion-focused coping strategies to cope with very stressful situations. This also is in line with research on Indian bus drivers (Singh & Damon, 2003; Singh & Gubta, 2002; Talik, Singh & Yates, 2006; Yates, Singh & Talik, 2004). It appears that avoidance was the best strategy to deal with racial discrimination and abuse by passengers and potential confrontations with other drivers, while the negative emotion-focused strategy was utilised in stressful heavy traffic situations. Once again, these drivers lost focus on the driving task at hand and attempted to defend themselves against the stressor that was perceived as 'uncontrollable'. The drivers appeared to not have any other strategies, such as negotiation skills and reappraisal, to utilise in these situations.

An important finding was the fact that drivers who worked over 60 hours per week reported that when they became fatigued during their shift, they utilised maladaptive coping strategies more often. It may be the case that the mental energy required to stay focused on the task at hand is greater than the mental energy required to be aggressive or avoidant in 'uncontrollable' situations, and tired drivers take the path of least resistance. Future research is needed to investigate further the link between fatigue and maladaptive coping in professional drivers. Another finding was that when the drivers utilised maladaptive coping strategies, they were prone to more near misses, traffic violations and accidents because of a lack of concentration on the task at hand. This finding also is open to further research to establish its validity.

From the present research, it appears that the use of maladaptive coping strategies is not conducive to good psychological health in the short- or long-term, and job-related affective well-being is also affected. Future research could involve investigating the use of different coping styles (involving cognitive restructuring) in particularly stressful situations in order to decrease the use of maladaptive styles. This may lead to more comprehensive strategies to

minimise the use of maladaptive styles of coping when drivers are on the road, and when they have passengers in the taxi.

Results indicate that predictions made about the relationships between drivers' perceptions of the current safety climate, psychological health and well-being were supported by both studies in this research. For both ethnic groups, a more negative perception of the overall safety climate was associated with an increase in symptoms of depression, anxiety and stress and a decreased affective well-being score on the JAWS-SF. Recent research in most industries has indicated that the most important aspect of the safety climate is management commitment to workplace health and safety (Wills, Watson & Biggs, 2006). However, Flin, Mearns, O'Connor, and Bryden (2000) reported that specific features of safety climates in specific industries can be identified, and should be investigated. This was the reason for using the six-factor Safety Climate Questionnaire-Modified for Drivers (SCQ-MD)(Wills, Biggs & Watson, 2005). The use of the SCQ-MD allowed measurement of management commitment to workplace health and safety aspects, as well as five other climate factors that were specific to professional drivers. The SCQ-MD items also tended to be behaviourally anchored or dealt primarily with respondents' perceptions, making this instrument conceptually distinct from other safety climate scales, and this allowed greater accuracy in gauging respondents' thoughts on different safety aspects. The SCQ-MD measured six safety climate factors: communication between management and drivers about procedures; work pressure; management commitment to workplace health and safety; relationships; driver safety training; and safety rules. Overall, scores on each of these factors were high (item scores were reverse-scored), supporting a general negative perception of the safety climate by drivers. However, four factors were responsible for the relationship with psychological ill-health and negative well-being levels in both ethnic groups. The most significant factor was work pressure. The drivers stated that this pressure forced them to cut corners when it came to safe driving and dealing safely with passengers. Management commitment to workplace health and safety was also perceived as poor. The drivers commented in particular that the increased level of violence against them, and the inaction by management and the government to minimise this, was detrimental to their health and well-being in general. Communication of safety procedures between management and the drivers was perceived as low by the drivers. Most drivers indicated that they only talked to 'middlemen' about safety and the actual policies released by management were vague and

too general. Lastly, driver training was perceived as inadequate to deal with the safety aspects of driving a taxi. Most of the ethnic minority drivers in the interviews had not received any training on any aspect of driving and operating a taxi, thus their impressions may have been overly negative on this factor. The overall effect on the drivers was that they did not have confidence in the current safety practices, nor in management, because the practices were not specific enough to the job of taxi driving, the practices were not enforced enough by management, not enough training for all drivers was given on anything related to safety, and the penalties for passengers who violated the safety of the drivers were not adequate. This created a constant stress for the drivers in their daily job, they were depressed because they could not foresee a change to safety practices in the future, and their feelings about their job were overly negative.

The finding that decreased management commitment to workplace health and safety was related to decreased levels of job-related affective well-being was not consistent with results reported by Machin and De Souza (2004). These two researchers found that the lower the driver's perception of management commitment to health and safety, the better the job made him/her feel. Possible reasons for this included the fact that taxi drivers enjoy the autonomy that their job provides and that the less management is involved in issues relating to their health, the more this promoted job-related emotional well-being. The current research investigated more than just management commitment to health and safety, thus gave a more thorough view of drivers' overall safety perceptions. An explanation for the findings in the current research may be that the workplace health and safety systems in the taxi industry are simply not succeeding. If so, then the results support the view by Shannon, Robson, and Sale (2001) and other researchers (e.g. Barling & Hutchinson, 2000) that workplace health and safety programs in general have been unsuccessful because they have been founded on legal and economic pressures rather than genuine commitment, thus drivers do not derive any benefit from the programs. Interestingly, research by Rowland, Davey, Wishart, and Freeman (2008) investigated the impact that safety climate factors had on the economic stability of taxi companies in Queensland. These researchers discovered that although safety initiatives had been instigated by the head offices of these companies, management at various depots had not been able to carry out these initiatives due to financial constraints. The flow-on from this was that the drivers gave a less than favourable response to the question of management

commitment to safety issues. This could well be a consideration in the current research. Another consideration is that there were drivers in the current sample who answered only to a taxi owner, or to themselves, rather than a taxi company that has safety practices in place, and this may have biased the safety perceptions of the drivers who worked for individual owners in the negative direction. Future research could investigate the actual safety perceptions of drivers who work for an owner or themselves, and drivers who work for a taxi company, in order to explore this aspect. It may well reveal that the safety climate factors that are perceived as relevant for one group are not perceived as relevant to the other group of drivers. This has implications in terms of actual management policies for all taxi drivers.

The ability of the proposed additional individual and organisational factors to contribute towards the prediction of the psychological health and well-being of taxi drivers, after controlling for the environmental factors of job demands and job control, was upheld in this research. The four individual and organisational factors contributed between 15% (for job-related well-being) and 18% (for psychological health) of the variance in the outcome variables for both ethnic groups. Overall, the ability of job demands and job control to predict psychological health and well-being was not diminished by the addition of these individual and organisational variables, indicating that the integrity of Karasek's (1979) job demands-control model was not violated, but enhanced by these additional factors. The ability of the extended Karasek model to significantly predict the psychological health and well-being of the taxi drivers is consistent with other researchers' findings that job-specific factors, in addition to job demands and job control variables, increase the statistical power of the proposed extended model (Barling & Hutchinson, 2000; Chu & Dwyer, 2002; Dugdill, 2000; Ettner & Grzywacz, 2001; Rollenhagen, 2000; Yule, Flin, & Murdy, 2001). This supports the criticism that Karasek's original model is too simplistic, and it must include additional job-specific factors if it is to be a reliable and more accurate predictor of psychological job strain and well-being.

The fact that, in this research, the extended Karasek model was able to significantly predict the psychological health and job-related well-being of both ethnic majority and ethnic minority drivers was an encouraging result. This was not entirely surprising, since ethnic majority and ethnic minority drivers to a large extent experience the same job conditions and experiences while working, however the validity of the model with drivers of different cultural

backgrounds increases its ability to be generalised to other transport industry professions with a similar cultural mix of individuals, thus enhancing future research endeavours.

7.4 Practical Implications of the Research

Based on the findings in the current research, there are a number of practical implications that can be identified for taxi drivers and for the taxi industry in general.

The results regarding the incidence levels of depression, anxiety and stress indicated that taxi drivers were in distress at a much higher level than other occupational groups, and it was clear that the ramifications of this included drivers underperforming at work and not driving safely. It is recommended that counselling be offered to all drivers who are distressed in order to help them deal with their symptoms and to reduce the impact that their job has on their health. This could be achieved by the two taxi companies implementing a counselling policy for all drivers, including those who work for themselves or an individual owner.

A further practical implication that may be beneficial to taxi drivers is that of increasing the percentage rate of pay, or the set rate, to try and decrease job demands (in particular the pressure to find a fare) and increase the drivers' control of the hours they work, the days they work, and the areas in which they operate (with respect to unsafe locations such as Fortitude Valley on a Friday night). This would involve the state government adjusting the relevant regulations and policies. If this occurred, the drivers would benefit in a number of ways. They would have less pressure on them to always 'find a fare'. They would not become as fatigued because the length of shifts may be shorter. They would have more time for exercise to better their physical health, and they may not experience the levels of stress, depression and anxiety that they currently report. Their overall feeling about their job would also improve. However, the reality is that taxi fares would probably increase to cover the difference, and this has ramifications for drivers, owners, taxi companies and passengers.

This study confirmed that the individual difference variables of aggression and risk-taking perceptions were able to explain significant amounts of the variance in the emotional well-being and psychological health of both ethnic majority and ethnic minority taxi drivers. A recommendation that could be implemented is more stringent recruitment standards, whereby taxi companies screen new employees to ensure that individuals who work as taxi drivers are not those who display aggressive tendencies or who take more risks on the road. This strategy

has been shown to be effective when recruiting urban bus and truck drivers overseas (e.g., Gabler & Hollowell, 1998; Lajunen, Parker & Summala, 1999; McGarva & Steiner, 2000; Miles & Johnson, 2003). This is a strong recommendation, however the practicality of its implementation could pose some interesting issues. An alternative strategy is to provide both future and current taxi drivers with appropriate training to address the use of aggression and risk-taking on the road. This may include each driver identifying what causes them to become aggressive or to take risks, and developing strategies to better cope with the causal factors. Experienced taxi drivers could be brought into the training sessions to share some of their effective strategies regarding aggression and risk-taking. The drivers could also keep a log of incidents that occur that potentially have them becoming aggressive or taking risks, and write down how they coped. This log could be reviewed periodically by the company trainers or a psychologist. The taxi companies could also keep a record of the number of traffic accidents and violations that occur for each driver after training to see if any improvement in these figures is achieved by the training program.

It was apparent from this research that drivers used adaptive forms of coping (i.e., task-focused coping) when the driving or passenger situation was controllable, and they tended towards maladaptive forms of coping (i.e., confrontive coping, avoidance and negative emotion-focused coping) when the situation at hand became, in their perception, uncontrollable or hostile. According to the transactional model of coping by Lazarus and Folkman (1984), it is the secondary appraisal process and positive emotion-focused coping strategies that are important in dealing effectively with uncontrollable situations. The secondary appraisal process involves evaluating resources and options for dealing with the situation at hand, and positive emotion-focused coping involves cognitive efforts to change the meaning of a situation without changing the environment. These coping strategies can control and better manage the situation in general. In addition to addressing the issues of aggression and risk-taking, a training program could be implemented to inform drivers that there are adaptive coping options available to deal with different ‘uncontrollable’ situations, and to train them in task-focused and positive emotion-focused coping strategies, such as cognitive reframing and minimisation, and communication and negotiating skills to deal with hostile passengers. This approach has been tried with urban bus drivers and short-haul truck drivers and has been successful (e.g., Kontogiannis, 2006). As with aggression and risk-taking, experienced taxi drivers could share their effective coping

strategies with the trainees. In addition, the drivers could keep a log of the situations that cause them to cope in maladaptive ways, how they used a more effective strategy to cope, and how they felt afterwards. This log could be periodically reviewed by trainers or a psychologist. The training approach could potentially increase the drivers' concentration on the task at hand and decrease unsafe driving practices. It could also help to decrease the levels of stress, anxiety and depression felt by the drivers in 'uncontrollable' situations on the job.

Another issue that emerged in this research was that of management commitment to workplace health and safety procedures. Overall, drivers' perceptions of management commitment to, and communication of, health and safety procedures was not favourable, and they felt that they were not listened to regarding actual safety issues that needed to be addressed. They also mentioned that policies were vague and to generic to other professions. A recommendation is that management involve the taxi owners and the drivers when creating job-specific health and safety policies and procedures (Chu & Dwyer, 2002). This would give the drivers the ability to address major points of concern, and would also assure the drivers that management was serious in their commitment to such policies. Effective communication of these policies would take place in regular training and update sessions, the policies could be mentioned in monthly taxi magazines and newsletters and in depot staff rooms. The government also needs to address the safety issue of hostile and physically abusive passengers by firstly adopting the policy of installing safety screens in all Queensland taxis, as Victoria has done, and secondly by increasing the legal penalties that apply to passengers who behave in this manner. The drivers mentioned that they did not report assaults to police and the taxi company because they were not often investigated or took too much time. A policy by the taxi company, stating that all assaults and robberies will be investigated by police on the same day as the incident, would serve to assure the drivers that their complaints are taken seriously by management.

Finally, a more general finding from this research was that owner-drivers, and drivers who work for individual owners, may not fulfil current requirements regarding driver training, English proficiency or conditions of employment. This hole in the system needs to be addressed. A recommendation is that there be more stringent controls on accessibility to the taxi driver's licence, and that these requirements are policed on a regular basis by the government and the Department of Transport. Another recommendation is that all drivers must undertake the initial training programs offered by both Yellow Taxis and Black and White Taxis. These

programs initially require that the driver has the appropriate taxi licence and has passed an English proficiency test. The driver would also be trained in the operation of a taxi and they would be exposed to the workplace health and safety policies that are relevant to their profession. This process may help to better equip drivers with the necessary knowledge and skills to perform their job successfully, to decrease their level of psychological distress, and to increase their job-related well-being.

A more efficient way to implement many of the recommendations stated above is by way of in-service training for the drivers on a regular basis. Topics for discussion could be suggested by the drivers as well as the taxi companies. For example, the topic might be risk-taking behaviour, the goal of the training might be reduction of risk-taking, strategies to reduce risk-taking would then be addressed, and the results of these strategies could be monitored by the taxi companies by way of checking driver traffic records and asking drivers to record situations in which risk-taking was considered or taken. Training on a regular basis would help to reduce the psychological strain felt by the drivers, it would help drivers to feel better about their job in general, it would help drivers to better cope with the situations they encounter on the job, and it would potentially reduce traffic violations and accidents on the road. The drivers must be paid for the period during which they are at these training programs, and training must be available to all taxi drivers to be of maximum benefit.

7.5 Limitations of the Research

Several limitations can be identified in the current research that could potentially affect the findings. Firstly, the data was collected over a two-month period, and in a dynamic occupation such as taxi driving where income fluctuates with economic, social and even differing weather conditions, it is difficult to assess the reliability of the data collected. It should be noted that the data collection period coincided with the general economic downturn in 2008. In addition, data collected at the end of the year when it is generally very busy for taxi drivers may differ dramatically from data collected at the beginning of the year when earnings are lower. A longitudinal study may have provided additional information.

Another limitation was the use of self-report data that can be biased and confounded by various factors, such as social desirability. For example, in the current research the responses to the aggression measure may have been biased by confounding factors such as the time of day,

the temperature, or a situation the driver may have just encountered prior to completing the questionnaire. The presence of the researcher at the ranks while some of the drivers were filling out their questionnaires may also have produced a confounding effect on the responses. In addition, even though the reported incidence levels of the outcome variables were relatively high (in the case of psychological health), the data collected may have been biased due to the 'healthy worker' effect. Future research could address this problem by also collecting data from taxi drivers who are not currently working due to depression, anxiety and/or stress-related illnesses. However, this may heighten the issue of reverse causality: did the illness cause the behaviour or did the behaviour cause the illness?

The use of a cross-sectional design, and the use of correlation and multiple regression analyses in the first study of this research, meant that causality could not be implied. This is an inherent problem in psychological research where certain constructs cannot be measured by conventional scales. This was also evident in the research by Machin and De Souza (2004). However, correlation and regression analyses in this instance provided a way of pointing to the magnitude and the direction of relationships between variables, and the combined ability of various factors to predict certain outcomes. In this research, the environmental, individual and organisational variables hypothesised to predict the two outcomes only accounted for a modest 36% (for psychological health) and 33% (for job-related well-being) of the variance in these outcomes. Thus, the regression analyses pointed to another limitation in the research, that too few variables were included in the investigation of taxi driver psychological health and well-being.

Finally, due to limitations in the size of the ethnic minority driver sample, the researcher did not attempt more complex modelling analyses, such as structural equation modelling, that could have identified the direct as well as the indirect effects of the predictor variables on the outcome variables. The researcher also chose not to focus on the relationships between the predictor variables and between the outcome variables. These factors may have limited the ability to more comprehensively examine the predicted relationships between the predictor variables and the outcome measures of psychological health and job-related well-being. Future research may be able to investigate these relationships.

7.6 Concluding Comments

Job-related factors that influence the physical health of drivers in the transport industry have been extensively studied over the past three decades. However, research that identifies job-related factors that are related to the drivers' psychological health and well-being is lacking, and limited research on this topic has been undertaken in the taxi industry in Queensland. One of the important findings of the current research was that the incidence of depression, anxiety and stress among ethnic majority and ethnic minority taxi drivers was higher than that experienced by other occupational groups (Orris et al., 1998; Ueda et al., 1992). Thus, it shows the importance of identifying workplace factors that contribute towards taxi drivers' psychological ill-health and lowered well-being levels.

The current exploratory research presented an integrated model that contained individual, environmental and organisational job-related factors that could predict the psychological health status and affective well-being levels of samples of ethnic majority and ethnic minority taxi drivers in the Brisbane metropolitan area. A key finding was the relationship between the individual factors of driver aggression, risk-taking and maladaptive coping strategies, and the two outcome measures. This research confirmed that these factors were able to explain a significant amount of the variance in psychological health and well-being of both groups of taxi drivers. Drivers should be assessed to identify those who are less aversive to taking risks or more likely to behave aggressively, and assistance provided in the form of health and safety training interventions. Further, drivers may benefit from training in appropriate cognitive coping strategies to deal with stressful situations involving other drivers or passengers.

Another important finding involved the relationship between drivers' perceptions of the safety climate and their psychological health and well-being. It appeared that negative driver perceptions of the safety climate (including management's commitment to workplace health and safety) promoted psychological distress and elicited more negative job-related feelings. This finding should encourage managers to focus on the importance of developing and communicating a positive climate for health and safety among the drivers.

The current research also found a significant relationship between the work environmental factors of job demands and job control, and psychological health and well-being of the taxi drivers in both ethnic groups. The drivers perceived their job to be high in demands and low in control, thus increasing the level of psychological distress and negative feelings

about their job. This is a difficult area to address, however more research is needed to corroborate the current findings and to examine ways in which the job demands of taxi drivers can be moderated, and job control to be increased, to benefit their overall health and well-being.

One concerning finding from this research involved the high reported incidence of racial discrimination and racially motivated verbal and physical abuse against taxi drivers who were in the ethnic minority group. This result confirmed the findings of another study involving taxi drivers in Canada, and was related to increased and more severe levels of depression, anxiety and stress in this group of drivers than in the ethnic majority group. It is imperative that managers formulated a training program to address these issues, as well as the state government raising the penalties for such behaviours.

While this research has confirmed that organisational, environmental and individual factors all contribute towards the psychological health and well-being of taxi drivers, these factors only explained up to 35% of the variance in the two outcome measures. Thus, more research is needed to explore other important job-related factors that may have an impact on psychological health and well-being levels.

It is clear that the managers of the two taxi companies in Brisbane, and indeed the government, must develop and implement a range of interventions to address the issues raised in this research. Since a viable and competitive enterprise needs healthy and satisfied workers to be productive and efficient, it is essential for employers to examine how they can best fulfil their legal and leadership roles in promoting the psychological health and well-being of employees in the taxi industry.

APPENDIX A

Human Research Ethics Committee Approval Form

APPENDIX B - INFORMATION LETTER TO PARTICIPANTS

(Australian Catholic University Letterhead)

INFORMATION LETTER TO PARTICIPANTS

PROJECT: Factors Impacting the Health and Well-being of Urban Taxi Drivers

PRINCIPAL INVESTIGATOR: Dr Ann Bramwell

STUDENT RESEARCHER: Mrs Elizabeth Evans

PROGRAMME IN WHICH ENROLLED: PhD

Dear Participant,

You are invited to participate in the current study that assesses some of the factors that are important in determining your health and well-being in the workplace. It may prompt you to think about areas in your life you never once thought relate to your work. Your involvement in this study will give us a better understanding of some of the job-related factors that affect your emotional health and well-being, with the hope that the information gathered will be useful in improving your health conditions while at work. This research is being conducted by the Australian Catholic University. The principal investigator, Dr Ann Bramwell, is on the academic staff in the National School of Psychology, and Elizabeth Evans is a student enrolled in the Doctor of Philosophy program. Elizabeth Evans will be collecting the data for this study.

Previous research has demonstrated that work-related factors, such as traffic congestion, long work hours and the safety environment, may play an important role in the physical health of employees in the transport industry, however to date no research has examined the effects of these and other factors on the mental health and well-being of taxi drivers.

If you agree to participate, we invite you to complete the following questionnaire. The questionnaire should take about 20 minutes to complete. As participants, you may find this activity informative and educational. There will be basic questions about your age, gender, employment type, number of hours worked per week and number of years of experience. There will be questions about behaviours and attitudes that increase or decrease the dangers you face at work, your level of safety on the job and management's commitment to workplace health and safety, the content of your job, and how you cope while driving. There will also be questions about your well-being.

Alternatively, you may be asked to participate in a focus group interview. This interview will occur after the results of the questionnaire have been examined. The focus group will discuss any issues that have been identified by the questionnaire results. This group interview will be held at a mutually convenient place and you will be asked to sign a consent form if you agree to participate. Individuals will not be able to be identified when completing the questionnaire. Individuals attending the focus group interviews will be required to state their first name only to other group members. Only group trends will be reported. All responses will be treated with the utmost respect.

As a possible participant, being involved in this research is completely voluntary, and you are free to withdraw at any stage. You do not have to submit your partially-completed or completed questionnaire. Non-participation in this questionnaire will not affect your employment at your employing organisation. You do not have to participate in the group interviews, even when you have indicated an interest. The results of the questionnaire and the group interviews will be reported in my research, and may be reported in a professional journal or conference, but no personal information that could identify you in any way will be reported. Relevant feedback may also be provided to Yellow Taxis and Black and White Taxis to provide an understanding of what current personal and environmental characteristics impact on employee health and well-being.

There are relatively small risks, inconveniences and/or discomforts associated with completing this questionnaire. Should you, however, feel that this questionnaire is distressing you in any way, you should contact Kate Baker at Interlock Employee Assistance Programs on 07 3831 5355. This study has been approved by the Human Research Ethics Committee at the Australian Catholic University. If you have any questions regarding this study, please do not hesitate to contact the principal investigator or myself at the contacts listed below:

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Dr Ann Bramwell
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In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any questions that the principal investigator or student researcher have not been able to answer, you may write to the Chair of the Human Research Ethics Committee:

Chair, HREC
Research Services
Australian Catholic University
Brisbane Campus
PO BOX 456
VIRGINIA QLD 4014
Phone: 07 3623 7429
Fax: 07 3623 7328
Email: qld_ethics@mcauley.acu.edu.au

Any complaint or concern will be treated in confidence and will be fully investigated. You will be informed of the outcome.

Thankyou for your consideration of this project.

....
Principal Investigator Student Researcher

APPENDIX C - Consent Form

(Australian Catholic University Letterhead**)**

CONSENT FORM

(Copy for Researcher)

TITLE OF THE PROJECT: The Health and Well-being of Taxi Drivers

PRINCIPAL INVESTIGATOR: Dr Ann Bramwell

STUDENT RESEARCHER: Mrs Elizabeth Evans

PROGRAMME IN WHICH ENROLLED: PhD

I, _____

(INSERT YOUR FULL NAME)

have listened to, and read (or, where appropriate, have had read to me), and understood the information provided to me by the researcher and in the Letter to Participants. Any questions I have asked have been answered to my satisfaction. I agree that I can withdraw my consent at any time without comment or penalty. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify me in any way. This will be done by detaching this consent form from the rest of the research data so that my name is not attached to the questions. I declare that I am at least 18 years of age, and I hereby give my consent to participate in this study.

SIGNATURE: …….

DATE: …….

SIGNATURE OF PRINCIPAL INVESTIGATOR: ……..

DATE: ……

SIGNATURE OF STUDENT RESEARCHER: ……

DATE: ……

APPENDIX D - The Taxi Driver Questionnaire

(Australian Catholic University Letterhead)

FACTORS IMPACTING ON THE HEALTH AND WELL-BEING OF URBAN TAXI DRIVERS

Thankyou for participating in this study. Please read each question carefully and ensure that all questions have been answered. There are no right or wrong answers. Do not spend too much time on any one question as your first response is usually the most accurate. Your completion and return of this questionnaire is your agreement to participate in the study.

These questions ask you to consider ***how dangerous*** you think certain actions are while driving. ***CIRCLE the number that best represents how you think about the following actions.***

How dangerous do you think the following actions are while driving:	**Not at all Dangerous**				**Extremely Dangerous**
1. Running a red light	1	2	3	4	5
2. Keep driving even though you are tired ……	1	2	3	4	5
3. Do an illegal U-turn……	1	2	3	4	5
4. Turn right across a busy road even when there is a small chance of collision……	1	2	3	4	5
5. Change lanes without checking properly for vehicles in other lanes……	1	2	3	4	5
6. Drive at more than 15 km/hr above the speed limit…	1	2	3	4	5

These questions ask about the likelihood of you engaging in certain behaviours while driving. ***CIRCLE the number that best represents how likely you are to perform the following actions.***

How likely is it for you to perform the following actions:	**Not at all** →				**Almost all the time**
1. Honking the horn out of frustration….....	1	2	3	4	5
2. Swearing or yelling at other drivers……..	1	2	3	4	5
3. Purposeful tailgating…….	1	2	3	4	5
4. Flashing your high beam lights at other drivers	1	2	3	4	5
5. Giving other drivers hand gestures……	1	2	3	4	5

This section asks you to describe the emotions that your job makes you feel (e.g., feelings about the work, passengers, the pay etc.). Please be open and honest with your answers. The rating scale is as follows:

1 Never **2 Rarely** **3 Sometimes** **4 Often** **5 Extremely Often**

Please CIRCLE one response for each item indicating your emotions in the past 30 days.

1. My job made me feel angry…….	1	2	3	4	5
2. My job made me feel anxious…….	1	2	3	4	5
3. My job made me feel at ease……	1	2	3	4	5
4. My job made me feel bored…….	1	2	3	4	5
5. My job made me feel calm……..	1	2	3	4	5
6. My job made me feel content……..	1	2	3	4	5
7. My job made me feel depressed……..	1	2	3	4	5
8. My job made me feel discouraged ……..	1	2	3	4	5

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Extremely Often
9. My job made me feel disgusted……..	1	2	3	4	5
10. My job made me feel ecstatic……	1	2	3	4	5
11. My job made me feel energetic…….	1	2	3	4	5
12. My job made me feel enthusiastic…….	1	2	3	4	5
13. My job made me feel excited…….	1	2	3	4	5
14. My job made me feel fatigued……	1	2	3	4	5
15. My job made me feel frightened…….	1	2	3	4	5
16. My job made me feel furious……..	1	2	3	4	5
17. My Job made me feel gloomy…….	1	2	3	4	5
18. My job made me feel inspired…….	1	2	3	4	5
19. My job made me feel relaxed……..	1	2	3	4	5
20. My job made me feel satisfied…….	1	2	3	4	5

These next questions are concerned with how you usually cope with driving when it is difficult, stressful or upsetting. Think of those occasions during the ***last year*** when driving was particularly stressful. Perhaps you nearly had an accident, or you were stuck in a traffic jam, or you had to drive with poor visibility. The rating scale is as follows:

1 Not at all	2 Rarely	3 Sometimes	4 Often	5 Almost always

Use your experiences of driving during the last year to indicate how much you <u>usually</u> engage in the following actions by <u>circling</u> the appropriate number. .

1. Relieved my feelings by taking risks or driving fast……	1	2	3	4	5
2. Cheered myself up by thinking about things unrelated to the drive ……	1	2	3	4	5

	1 Not at all	2 Rarely	3 Sometimes	4 Often	5 Almost always
3. Stayed detached or distanced from the situation……..	1	2	3	4	5
4. Tried to make other drivers more aware of me by driving close behind them…….	1	2	3	4	5
5. Wished that I was a more confident and forceful driver……	1	2	3	4	5
6. Ignored my feelings about the drive.....	1	2	3	4	5
7. Made sure I avoided reckless or impulsive actions….	1	2	3	4	5
8. Showed other drivers what I thought of them…….	1	2	3	4	5
9. Drove assertively or aggressively……	1	2	3	4	5
10. Tried to gain something worthwhile from the drive…	1	2	3	4	5
11. Showed other drivers I was in control of the situation……	1	2	3	4	5
12. Made an extra effort to drive safely……...	1	2	3	4	5
13. Felt that I was becoming a more experienced driver..	1	2	3	4	5
14. Made an effort to stay calm and relaxed…….	1	2	3	4	5
15. Swore at other drivers (aloud or silently)……..	1	2	3	4	5
16. Thought about good times I've had……	1	2	3	4	5
17. Wished that I found driving more enjoyable……...	1	2	3	4	5
18. Made sure I kept a safe distance from the car in front	1	2	3	4	5
19. Went on as if nothing had happened……	1	2	3	4	5
20. Refused to believe that anything unpleasant had happened…….	1	2	3	4	5
21. Told myself there wasn't really any problem…….	1	2	3	4	5

1 Not at all	2 Rarely	3 Sometimes	4 Often	5 Almost always

22. Let other drivers know they were at fault……	1	2	3	4	5
23. Criticised myself for not driving better……	1	2	3	4	5
24. Thought about the consequences of having an accident……..	1	2	3	4	5
25. Flashed the car lights or used the horn in anger……..	1	2	3	4	5
26. Felt I was learning how to cope with stress…….	1	2	3	4	5
27. Deliberately slowed down when I met a difficult traffic situation or bad weather……	1	2	3	4	5
28. Made a special effort to look out for hazards……..	1	2	3	4	5
29. Blamed myself for getting too emotional or upset…..	1	2	3	4	5
30. Concentrated hard on what I had to do next……	1	2	3	4	5
31. Worried about what I was going to do next…….	1	2	3	4	5
32. Looked on the drive as a useful experience…….	1	2	3	4	5
33. Worried about my shortcomings as a driver……	1	2	3	4	5
34. Thought about the benefits I would get from making the journey……..	1	2	3	4	5
35. Learnt from my mistakes…….	1	2	3	4	5

These next questions are concerned with how you view your job and what is required of you to successfully do your job. The rating scale is as follows:

1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree

<u>CIRCLE</u> the number that best represents how you think about the following statements.

---

1. My job requires that I learn new things……..	1	2	3	4

1 Strongly disagree	2 Disagree	3 Agree	4 Strongly agree

2. My job involves a lot of repetitive work……	1	2	3	4
3. My job requires me to be creative……..	1	2	3	4
4. My job allows me to make a lot of decisions on my own……..	1	2	3	4
5. My job requires a high level of skill……..	1	2	3	4
6. In my job, I am given a lot of freedom to decide how I do my work……..	1	2	3	4
7. I get to do a variety of things in my job…….	1	2	3	4
8. I have a lot to say about what happens in my job……..	1	2	3	4
9. I have an opportunity to develop my own special abilities……...	1	2	3	4
10. My job requires working very fast……	1	2	3	4
11. My job requires working very hard…….	1	2	3	4
12. I am not asked to do an excessive amount of work….	1	2	3	4
13. I have enough time to get the job done……	1	2	3	4
14. I am free from conflicting demands others make…….	1	2	3	4

In this section, please read each statement and ***circle a number 0,1,2 or 3*** which indicates how much the statement applied to you ***over the past week.*** Please answer openly and honestly. The rating scale is as follows:

0 Did not apply to me at all	1 Applied to me rarely	2 Applied to me some of the time	3 Applied to me most of the time

---

1. I found it hard to wind down…….	0	1	2	3
2. I was aware of dryness of my mouth…….	0	1	2	3

0 Did not apply to me at all	1 Applied to me rarely	2 Applied to me some of the time	3 Applied to me most of the time

3. I couldn't seem to experience any positive feeling at all…..	0	1	2	3
4. I experienced breathing difficulty (e.g., excessively rapid breathing or breathlessness)…….	0	1	2	3
5. I found it difficult to work up the initiative to do things…..	0	1	2	3
6. I tended to over-react to situations……	0	1	2	3
7. I experienced trembling (e.g., in the hands)…….	0	1	2	3
8. I felt that I was using a lot of nervous energy……..	0	1	2	3
9. I was worried about situations in which I might panic and make a fool of myself……	0	1	2	3
10. I felt I had nothing to look forward to…….	0	1	2	3
11. I found myself getting agitated……	0	1	2	3
12. I found it difficult to relax……...	0	1	2	3
13. I felt down-hearted and blue …….	0	1	2	3
14. I was intolerant of anything that kept me from getting on with what I was doing……..	0	1	2	3
15. I felt I was close to panic……..0		1	2	3
16. I was unable to become enthusiastic about anything……0		1	2	3
17. I felt I wasn't worth much as a person……..0		1	2	3
18. I felt that I was rather touchy……0		1	2	3
19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase)……0		1	2	3
20. I felt scared without any good reason……	0	1	2	3
21. I felt that life was meaningless……..0		1	2	3

These questions are concerned with how you view your level of safety at work, and the management's commitment to workplace safety. The rating scale is as follows:

0	1	2	3
Strongly disagree	**Disagree**	**Agree**	**Strongly agree**

<u>CIRCLE</u> the number that best represents how you think about the following statements.

1.	Changes in working procedures and their effects on safety are effectively communicated to workers…….....	0	1	2	3
2.	Employees are consulted when changes to driver safety practices are suggested….....	0	1	2	3
3.	Employees are told when changes are made to the working environment, such as the vehicle, maintenance or garaging procedures…….....	0	1	2	3
4.	Safety policies relating to the use of motor vehicles are effectively communicated to workers……	0	1	2	3
5.	Safety procedures relating to the use of motor vehicles are complete and comprehensive…….	0	1	2	3
6.	An effective documentation management system ensures the availability of safety procedures relating to the use of motor vehicles…….....	0	1	2	3
7.	Safety problems are openly discussed between employees and managers.....	0	1	2	3
8.	Safety procedures relating to the use of motor vehicles match the way tasks are done in practice…… ……	0	1	2	3
9.	Employees can discuss important driver safety policy issues……	0	1	2	3
10.	Employees are consulted for suggested vehicle/driver safety improvements…….....	0	1	2	3
11.	Employees can easily identify the relevant procedure for each job…	0	1	2	3
12.	Employees can express views about safety problems……	0	1	2	3
13.	Employees are encouraged to support and look out for each other…	0	1	2	3

0 **Strongly disagree**	**1** **Disagree**	**2** **Agree**	**3** **Strongly agree**			
14. Time schedules for completing jobs are realistic……				0	1	2	3
15. There is sufficient 'thinking time' to enable employees to plan and carry out their work to an adequate standard……				0	1	2	3
16. Workload is reasonably balanced……				0	1	2	3
17. There are enough employees/drivers to carry out the required work……..				0	1	2	3
18. Changes in workload, which have been made at short notice, can be dealt with in a way that does not affect driver safety……				0	1	2	3
19. When driving, employees have enough time to carry out their tasks……..				0	1	2	3
20. Problems that arise outside of employees' control can be dealt with in a manner that does not affect driver safety……				0	1	2	3
21. Management are committed to driver safety……				0	1	2	3
22. Management are committed to motor vehicle safety……				0	1	2	3
23. Driver safety is central to management's values and philosophies.……..				0	1	2	3
24. Driver safety is seen as an important concern of management in this organisation……				0	1	2	3
25. Good working relationships exist in this organisation……				0	1	2	3
26. Drivers are confident about their future with the organisation……				0	1	2	3
27. Morale is good……				0	1	2	3
28. Drivers trust management……				0	1	2	3
29. Management trust drivers……				0	1	2	3
30. Potential risks and consequences are identified in driver training…				0	1	2	3

0 Strongly disagree	1 Disagree	2 Agree	3 Strongly agree

31. Driver training is provided on skills specific to the type of vehicle driven for work……	0	1	2	3
32. Motor vehicle training is carried out by people with relevant experience……..	0	1	2	3
33. Safety rules relating to the use of motor vehicles can be followed without conflicting with work practices……	0	1	2	3
34. Safety rules relating to the use of motor vehicles are followed when a job is rushed……	0	1	2	3
35. Safety rules relating to the use of motor vehicles are always practical…….	0	1	2	3

General Information

The following questions are about you and your work. ***Please put a tick in the appropriate box.***

1. Age: ☐18 – 25 ☐ 26 – 49 ☐ 50+

2. Gender: ☐ Male ☐ Female

3. Is English your first language? ☐ Yes ☐ No Country of Origin:_____

4. How long have you worked as a taxi driver?
   ☐ Under 1 year ☐ 1 – 5 yrs ☐ 6 – 10 yrs ☐ 10+ yrs

5. Is the taxi you drive operated by….
   ☐ A taxi base ☐ an individual owner ☐ yourself

6. What payment basis do you work on? ☐ set fee ☐ percentage

7. How many hours a week do you work?
   ☐ 0 - 12 ☐ 13 - 36 ☐ 37 - 60 ☐ 61+ If over 72 hours, please state how many hours you work: _____

Thankyou for your participation!

APPENDIX E - Factor Analyses for Risk-taking and Aggression Scales

Table E1

Factors and Item Factor Loadings for the Perceptions of Risk-taking Scale

Item	Factor 1
How dangerous do you think it is to run a red light	.64
" keep driving when you are very tired	.61
" do an illegal U turn	.60
" turn right across a busy road even with a slight chance of a collision	.58
" change lanes without checking properly	.53
" drive more than 15km/hr above the speed limit	.47

Note. One factor extracted. Extraction Method: Principle Axis Factoring.

Table E2

Factors and Item Factor Loadings for the Self-Report Driver Aggression Questionnaire

Item	Factor 1
How likely is it for you to perform the following actions:	
Honking the horn out of frustration	.71
Swearing or yelling at other drivers	.68
Purposeful tailgating	.64
Flashing your high beam lights at other drivers	.59
Giving other drivers hand gestures	.53

Note. One factor extracted. Extraction Method: Principle Axis Factoring.

APPENDIX F - List of Core Questions for the Focus Group Semi-structured Interviews

Q1. A recent taxi driver survey found that up to 48% of drivers had symptoms of depression, 25% had symptoms of anxiety, up to 76% showed signs of stress, and the drivers did not feel good about their job. (The symptoms of stress, depression and anxiety, and the definition of affective well-being, were described to the drivers). What is your comment on these figures?

Q2. The survey also found that drivers from minority ethnic backgrounds were more stressed, anxious and depressed than other drivers. Why do you think this is the case?

Q3. Do you think that the public perception of the demands placed on taxi drivers is accurate? Why/why not?

Q4. What is your understanding of the term job demands? What are some of the demands of your job?

Q5. What are some of the outcomes of these job demands?

Q6. What is your understanding of the term job control, or decision latitude, as it relates to your job?

Q7. How much decision latitude or job control do you think you have in your job? Please explain your answer.

Q8. What are some of the outcomes from this level of job control/decision latitude?

Q9. What is your definition of the term aggressive driving?

Q10. Are you aggressive towards other drivers while on the job? Please give some examples of aggressive driving.

Q11. What are your reasons for driving aggressively while on the job?

Q12. What are the outcomes from driving in an aggressive manner?

Q13. How does driving aggressively make you feel?

Q14. What is your view on risk-taking while driving on the job?

Q15. What are the reasons for taking risks on the road?

Q16. What do you think are the outcomes from taking risks on the road?

Q17. How does taking risks on the road make you feel?

Q18. Does taking risks on the road change the way you feel about your job? Please explain.

Q19. Think about some situations on the job that made you feel stressed. How did you cope with these stressful situations?

Q20. How do you feel after either pretending that nothing has happened with a troublesome passenger, or yelling at a troublesome passenger, in order to cope?

Q21. What would need to happen for you to cope better with troublesome passengers and stressful traffic situations?

Q22. (The idea of a safety climate was explained to the drivers). Can you tell me what you think are the critical factors to have in a well-functioning safety work environment?

Q23. Are these critical factors in place in your workplace? Why/why not?

Q24. What effect does the lack of safety protocols in your workplace have on your state of mind?

Q25. What would have to change in the Brisbane taxi industry to improve your health and well-being?

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