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MASTERS RESEARCH REPORT

Comparative case studies of shift workers: resilience and related outcomes

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Declaration

A research project carried submitted in partial fulfilment of the requirements for the degree of BA Masters in Industrial Psychology in the Faculty of Humanities, University of the Witwatersrand, 2009.

I declare that this research is my own, unaided work. It has not been submitted before for any other degree or examination at this or any other university.

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Lauren Huntington Date

Title

Comparative case studies of shift workers: resilience and related outcomes

Abstract

A comparative case study is presented that provides relational and descriptive evidence to suggest unique cases of shift work. The cases, namely hospitality and call centre, are similar in terms of person specification and low levels of core job characteristics which makes for a viable comparison. The call centre context is a distinctive case due to electronic performance monitoring which is suggested as a factor contributing to different relationships between variables in this context. The growing prevalence of call centres and shift work both nationally and internationally creates the need for scrupulous examination of the impacts of this type of work on employees. The outcomes examined in these contexts include loneliness, fatigue as well as symptoms of anxiety and depression. Resilience is examined as a relational variable as it has been found to be an enduring personality variable that serves as a counterweight to negative environmental forces acting upon well-being. Specifically, relationships between resilience and outcome variables are compared across contexts. The findings suggest that in call centre shift work resilience most strongly predicts fatigue, followed by loneliness and symptoms of anxiety and depression while in hospitality shift work resilience most strongly predicts loneliness, followed by fatigue as well as symptoms of anxiety and depression. However, a statistical difference was not found which may be a factor of small sample size in the call centre (n=40) and hospitality (n=50) contexts. Motivations for working shifts and shift patterns were not significantly different across contexts and these factors are explored in depth using descriptive evidence. It was also found that some demographic factors had a significant but small impact on the main variables.

Dedications

To Professor James Fisher. So long and thanks for all the fish.

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I'd like to acknowledge my supervisor, Fiona Donald, for all her valuable input and patience in this process. I'd also like to extend my thanks to Peter Fridjon who provided me with a crucial statistical formula.

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Introduction

Shift work is becoming more commonplace due to the growth of industries in which this type of work is inherent as well as the global hypercompetitive market that demands the extension of operational hours. In addition to this high levels of unemployment (26,5%) in South Africa are leading people to seek out forms of employment that may or may not be desirable to them, such as shift work (Statistics South Africa, 2006). It is therefore pertinent for thorough examinations of the effects of these non traditional working patterns on employees in the South African context.

The core of the study is a comparison of two shift work contexts, specifically shift work within the call centre context is compared and contrasted with shift work within the hospitality context. This aspect of the study is novel in that it presents a new point of comparison that provides insight that shift vs. non-shift work comparisons are unable to provide. Studies of this established nature have not been able to capture the myriad of environments that constitute the realm of shift work. The call centre environment is a focus as it is a special instance of shift work due to unique elements of work design that include electronic performance monitoring and scripted responses. It is also becoming a major employment sector both nationally and internationally which makes an investigation of the outcomes of its distinctive work design pertinent. The hospitality industry provides a relevant comparison as it employs from similar skill sets and some similarities in work design exist. One of the crucial differences between the two contexts however is in the timing and monitoring of work. This study aims to investigate if these differences have a substantial impact on the relationships between variables in each of these contexts.

The research also considers descriptive evidence pertaining to pertinent characteristics of shift work within the two contexts. Shift patterns and shift motivations are purposely examined as these are crucial aspects which can be compared to international norms. The research also considers whether any demographic variables have a substantial impact on any of the main variables.

In particular the present study examines selected variables that manifest on a physical, social and psychological level. The primary interference of shift work on the physical level occurs due to disturbances in normal circadian rhythms. The physical level effect examined was therefore fatigue. This variable was operationalised using the Multidimensional Fatigue Inventory that regards fatigue as occurring on many levels. On the social level, shift work disturbs the normal patterns of social interactions outside of the workplace. Loneliness was therefore chosen as a representation for the social effects of shift work. This variable was operationalised using the UCLA Loneliness Scale (Ver.3). There are a myriad of psychological effects pertinent in an examination of shift work. In this study symptoms of anxiety and depression were used as a general indicator of psychological distress. This variable was operationalised using the Symptoms of Anxiety and Depression Scale. The outcome variables presented are therefore fatigue, loneliness as well as symptoms of anxiety and depression.

The present study also examines the concept of resilience and its relation to the above effects. Resilience was chosen as it has been found to be an enduring personality variable that serves as a counterweight to negative environmental forces acting upon well-being. The study presents evidence of a descriptive and relational nature to justify assertions made surrounding the relationships between resilience and the outcome variables.

The report commences with a theoretical and conceptual background chapter that provides the empirical base on which the research has been founded as well as providing the reader with the current status of research within the areas of interest. To conclude the chapter the present research will then be concretised with a statement of aims and research questions. The report proceeds with a methodology chapter which will include all information relevant to participants, procedure, instrumentation, ethical considerations and data analysis. In the final chapter the results are presented. This chapter commences with a summary of the data followed by the results by

research question. The chapter closes with the discussion which highlights limitations as well as directions for future research. In closing, the conclusion will summarise the report.

Chapter 1: Theoretical and Conceptual Background

The theoretical and conceptual background commences with a review of the current state of the body of literature on shift work. This is followed by a theory of job design that will be core in the discussion of the two shift work contexts. The two comparison contexts, the call centre and hospitality industries, are then introduced and examined in some depth. The call centre discussion introduces a model that will form a background from which the outcome variables are discussed. Finally a relational variable, resilience, is introduced.

1.1) Shift Work

Shift work is a system of work where people alternate working periods of time varying from eight to twelve hours across a twenty four hour period. It specifically refers to employees that work on schedules other than the conventional 8 hour shift Monday to Friday within the period of 7am to 6pm.

Monk and Folkhard (1992) define:

> "...any work taken on a regular basis outside that interval [defined arbitrarily defined as the hours between 7:00am and 6:00pm] as shift work and any individual involved in that work as shift workers. Thus including part-timers, full timers, evening shift workers, early morning shift workers as well as the rotating and fixed shift workers..." (p. 2)

Shift work is inherent in certain industries that must be constantly operational to some degree. Examples of these include the hospitality, the transportation, protective and health care industries. In America it is estimated that 45.8% of workers in the leisure and hospitality industry work shifts, 31.5% in transport and utilities, 50.4% in protective services and 27.9% in health care (McMenamin, 2007).

Shift work is becoming more prevalent especially in white collar work despite this element of work design not being necessarily inherent such as those highlighted above (McMenamin, 2007). This change is becoming an industry imperative due to increasing levels of competition and increased globalisation. Increased competition results in organisations being forced to increase levels of productivity with fewer resources (McMenamin, 2007). This may mean extending operations after hours, into the night or over weekends. Globalisation has opened international markets from various time zones. Entering these markets to gain a competitive advantage may mean that a proportion of staff must be dedicated to the service of these clients outside of conventional working hours (McMenamin, 2007). India, for example, is becoming an international leader in the provision of internationally outsourced call-centres (Dicken, 2003). These centres service mainly Europe and America which are both in substantially different time zones (Dicken, 2003). As a result an American caller will often be greeted by a 'good afternoon' by an operator in India where it is the middle of the night (Dicken, 2003). It was estimated in 2003 that 800 Western companies were outsourcing their call centres to India (BBC News, 2003). This increased their competitive advantage by lowering operating costs by 30% - 40% (BBC News, 2003).

The advantages afforded to organisations by shift work may be juxtaposed against the extensive body of research on shift work that has shown consistently its association with negative impacts on the well-being of employees (Costa, 1996). Physical effects have often been a focus of this work due to the instinctive links that exist between disturbances in normal circadian rhythms and physical deterioration (Gold, Rogacz, Bock, Tosteson, Baum, Speizer, & Czeisler, 1992). Some research has also been done into the effects of shift work on psychological well-being and family-work balance (Costa, 1996). Overall, it has been found that shift work tends to undermine individual well-being at both a physiological, psychological and social level (Costa, 1996; Knutsson, 2003). This effect has been shown to become more marked over time and has been used as an explanation for the high turnover and low job satisfaction of individuals working in this pattern (Akerstedt, 1998). Furthermore, a meta-analysis of research has found that shift work is associated with poorer perceived general health, increased injury rates and higher reported illness (Caruso, Hitchcock, Dick, Russo & Schmit, 2004).

These outcomes may also be influenced by the start times of shifts, length of shifts, fixed versus rotating schedules, speed of rotation, direction of rotation, number of hours worked per week, number of consecutive days worked, number of rest days and number of weekends off (Caruso *et al*., 2004). Work shift patterns have exceptional variance and it has been reported that over 10 000 schedules are used worldwide (Caruso *et al*., 2004). Length of shift has been highlighted as an important determinant of well-being at work. Extended shifts have been strongly associated with negative effects. Studies have shown that the 9^{th} to 12^{th} hours of work are associated with lower cognitive functioning, decreased alertness, fatigue and higher incidence of injury (Caruso *et al*., 2004). Other studies have shown that the effect of extended shifts would be compounded by unconventional working hours (Caruso *et al*., 2004). Extended night shifts were found to be associated with the highest rates of fatigue, smoking and alcohol use (Caruso *et al*., 2004). Higher workload and uncomfortable work environments were also found to compound effects of lowered performance and increased employee discomfort (Caruso *et al.*, 2004). Some research has shown that if employees are able to exert control over work schedules, particularly start times, then levels of fatigue decrease with psychological well-being and alertness increasing (Caruso *et al.*, 2004).

Research which has been conducted across disciplines, contexts and time strongly suggests that shift work is undesirable for the employee and yet many adopt this style of work (examples: Agervold, 1976; Costa, 2003; Driscoll, Grunstein & Rogers, 2007; Harma, 1993; Takahashi, Tanigawa, Tachibana, Mutou, Kage, Smith, & Iso, 2005). The reasons people have for working shifts are varied. A survey conducted on 21 762 shift workers in America found that close to half (48%) of shift workers reported that shifts were the nature of the job (McMenamin, 2007). Of the balance of respondents 8.4% worked shifts as it allowed a better arrangement for child or family care, 5.2% were motivated by better pay, 14.7% reported that it allowed time for school, 7.5% reported that they could not get any other job, 9.8% stated that shift work was a personal preference and the remainder had other reasons (McMenamin,

2007). So, despite its association with lower well-being, shift work is prevalent worldwide.

According to the current population survey conducted in America in May 2004 regarding wage-worker's primary job one third of employees had flexible schedules, one fifth work a shift other than the primary daytime shift and a slightly smaller percentage worked at least one shift on weekends (McMenamin, 2007). Six point eight percent (6.8%) worked an evening shift between 2pm and midnight, 3.8% worked irregular shifts dictated by employer needs, 3.1% worked the night shift and 2.7 % worked rotating shifts (McMenamin, 2007). In total 21 million wage-workers worked at least partially outside of the regular daytime shift (McMenamin, 2007).

The International Labour Organisation (ILO) has stated that shift work is on the rise in South Africa and strongly encourages South African organisations to promote shift work by offering higher overtime rates. The ILO states that this will increase productivity thereby reducing poverty, unemployment and eliminate income gaps (International Labour Organisation [ILO], 1996). These recommendations were based on a report that rigid structures within South African organisations persist and working hours are long by international standards (ILO, 1996). The report also found that international organisations were twice as likely as domestic organisations to be operating on shifts (ILO, 1996). Due to recommendations such as these as well as global trends it can be easily inferred that the increase in shift work within South Africa will continue (ILO, 1996). Its growing prevalence, especially in white collar work, makes shift work outcomes a pertinent point of examination within the South African context (McMenamin, 2007).

There has been little focus on the relative impact of differential work environments. All shift work has been seen as being relatively uniform but since shift work can traverse many different occupations and industries it seems pertinent to examine whether any differences exist. It may be that outcomes have variance between

contexts due to the wide-ranging work designs that exist. Further, much of the more recent research on shift work has been on health care professionals (example: Costa, 2003; Jamal & Vishwanath, 1997; Muecke, 2005). This is an exceptional and very specific incidence of shift work which is associated with high levels of professionalism and related work design. This is not reflective of the shift work spectrum which tends to be skewed towards less professional positions (McMenamin, 2007). The focus of this research will therefore be on shift workers in positions that are associated with more generic skill and a different work design features that will now be discussed.

1.2) Work Design

The job characteristics model (JCM) is a well known and supported model of job design with links to outcomes such as motivation and performance in the workplace (Parker, Wall & Cordery, 2001). The JCM was conceptualised by Hackman and Oldham in 1976 and has since been subject to extensive critical review. Fried and Ferris (1987) conducted a meta-analysis of 200 studies which provided strong support for the validity and reliability of the model. Boonzaier, Ficker and Rust (2001) conducted a more recent review of the JCM in the South African context and similar support for the model was found. A very recent study considered data from a large number of modern organisational environments that traversed numerous occupations and occupational levels (DeVaro, Li & Brookshire, 2007). The data, which was nationally representative of the British population, largely supported the JCM's predictions (DeVaro *et al.*, 2007). The JCM is also used as a basis for many current studies within both industrial / organisational psychology and other disciplines (example: De Jonge, Dormann, Janssen, Dollard, Landeweerd & Nijhuis, 2001; Mayrowetz, Murphy, Louis & Smylie, 2007; Thakor & Joshi, 2005).

Hackman and Oldham's JCM identified five core job characteristics namely autonomy, task identity, skill variety, task significance and feedback (Hackman & Oldham, 1976). These characteristics were seen as the determinants of three critical psychological states. Skill variety, task identity and task significance contribute to

'experienced meaningfulness' (Hackman & Oldham, 1976). Autonomy results in 'experienced responsibility' and feedback contributes to 'knowledge of results'. It is then hypothesized that these states are in turn determinants of both psychological and behavioural outcomes as shown below (Hackman & Oldham, 1976).

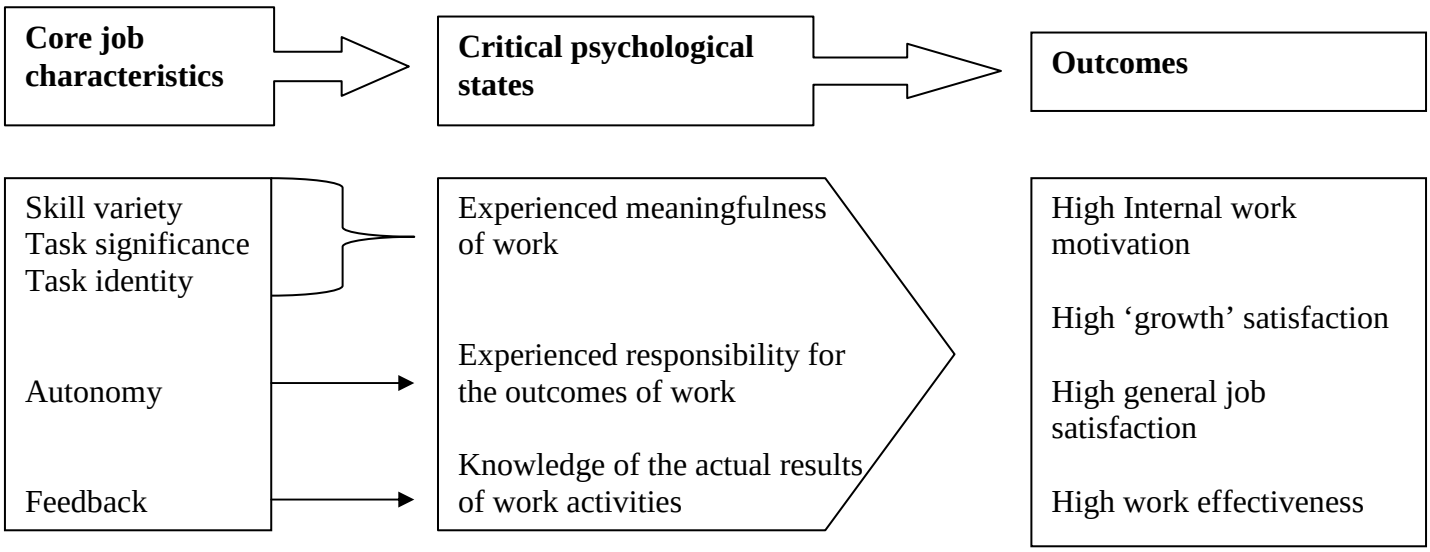


Figure 1: Job characteristics model (Johns & Saks, 2005, pp 180)

The core job characteristics will be the focus of the discussions of work context. As such it is necessary to provide definitions for each. Skill variety is present when a job offers an employee the opportunity to complete a variety of activities using various skill sets (Johns & Saks, 2005). Task significance refers to how the employee perceives their job to impact others (Johns *et al.*, 2005). Task identity is fostered if a job entails completing pieces of work from beginning to end (Johns *et al*., 2005). Autonomy refers to the degree of control an employee has over his or her pace of work, methods for task completion and work design (Johns *et al.*, 2005). Feedback implies that an employee is given accurate and reliable feedback about the effectiveness of his or her work in a constructive manner (Johns *et al.*, 2005). Research has supported the presence of critical psychological states as being significantly positively correlated to psychological outcomes such as job satisfaction and motivation (Fried & Ferris, 1987). However, the evidence for the link between these states and behavioural outcomes, for example to absenteeism and turnover, has been less convincing although the link does exist (Parker *et al*., 2001).

The work contexts to be compared, namely call centres and the hotel industry, both employ shift patterns in order to service the needs of their clients. There are also similarities in the skill requirements of those employed within these contexts as well as their orientation in the service industry which will be elaborated on discussion of each context that follows. Hackman and Oldham's model (1976) provides a further justification for the comparison of these two contexts. The research reviewed has suggested that both industries are low in core job characteristics such as autonomy, task identity, skill variety, task significance and feedback (Holman, 2005; Lee-Ross, 1995). This will be expanded upon in the detailed discussion of each context which follows. While these two industries are suited for comparison there are important differences that may affect how outcomes manifest within each context. In particular, a growing body of evidence suggests that call centres are a unique type of work characterised by electronic performance monitoring and scripted responses (Holman, 2005). This unique combination of monitoring and control, which undermines core job characteristics, has been cited as a rationale for the particular patterns of negative impacts arising from this industry (Holman, 2005).

This research will therefore focus on these two contexts in order to improve understanding of work designs from the spectrum that can be found across shift work contexts. Specifically this research endeavours to further extend the findings on call centre job design by seeing if the effects in this environment are comparable to the effects of working in a similar shift work situation and to what extent they differ.

1.3) Call Centre Context

A call centre is a centralised place of communication that generally deals with large volumes of incoming or outgoing calls on behalf of an organisation. These centres render services such as sales, information provision, technical support and banking (Dicken, 2003). Call centres are becoming a common element of organisations in the financial and service industries and as such have been deemed the 'new form of firm-customer interface' (Dicken, 2003, pp 492). The primary characteristic of call centres is that the main business is mediated by computer and telephone-based technologies

which allow calls to be distributed efficiently to available staff who then communicate with customers telephonically while simultaneously completing electronic processing (Holman, 2005). The typical workstation of a call centre employee is a cubicle and a chair. Their main work tools are a headset and a computer. In general, the entire call centre will be electronically linked and operate with mechanical efficiency. The central mechanism of this efficiency is a technology that allows for effective call distribution and exact recordings of all activities within the call centre (Holman, 2005). This is termed electronic performance monitoring (EPM) (Holman, 2005).

Electronic performance monitoring (EPM) allows managers to have a precise record of every employee action by recording calls, number of calls and call duration (Holman, 2005). This type of technology has allowed a pervasive Tayloristic management philosophy to become prevalent (Mascia, Marx & Arbix, 2000). This is characterised by the division of work outputs in their smallest measurable parts, the distribution of responsibility for outputs evenly to each employee and the monitoring of each employees outputs with automatic efficiency (Holman, 2005). While this is more readily identified within a factory setting this is the essence of the culture EPM has created within call centres (Holman, 2005). Management as a result tends to be reliant upon these quantitative measures and employees tend to be appraised solely on this basis with little consideration given to investment in and optimization of human capital (Holman, 2005).

Models of service delivery exist that split the continuum of investment in human capital and HR incentives into three (Batt & Moynihan, 2002). The low end of the spectrum is referred to as the mass production model which encompasses the Tayloristic patterns that have been mentioned. However, alternative models include a hybrid of ‘middle ground’ models called mass customization. Professional service models occupy the highest end of the continuum. A representation of the continuum is as follows:

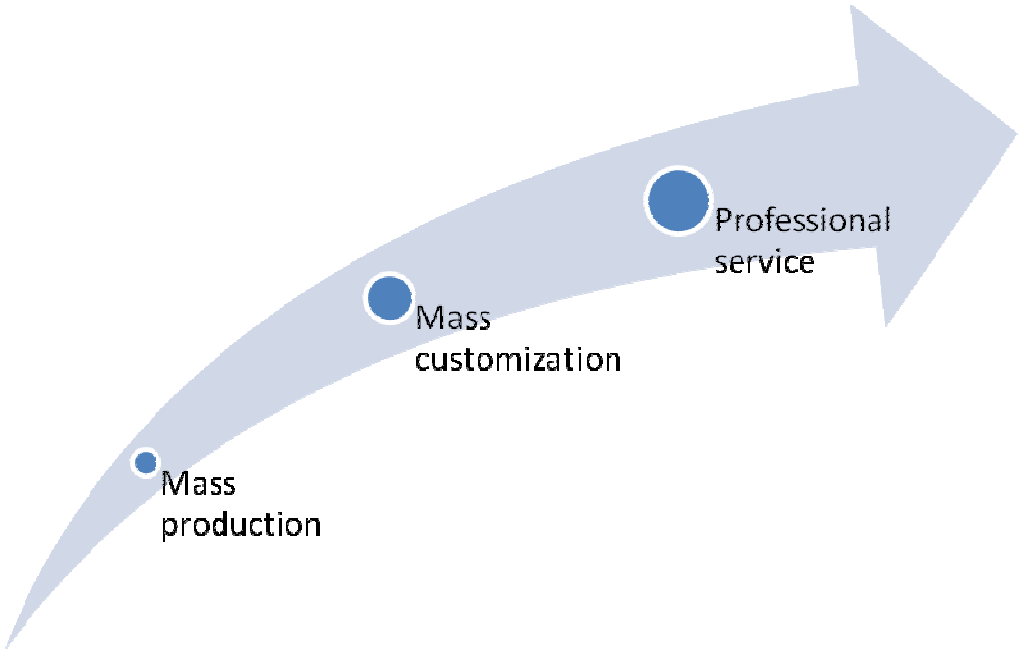


Figure 2: Continuum of models of service delivery

Mass production models generally characterise the factory setting where machine pacing, routinisation, simplification and exact monitoring can be easily adopted (Batt & Moynihan, 2002). Call centres represent an exceptional case in mass production models as this is a unique extension of Tayloristic principles into customer-contact work (Batt & Moynihan, 2002). Mass customization models are a hybrid between mass production models and professional service models in that they aim to compete not only on price but also include provisions for increased service quality and customization to meet customer demands (Batt & Moynihan, 2002). This has been advanced as the most viable alternative to mass production models in the call centre industry. The professional service model advocates the use of technology to complement the human element in work; skill advancement and education; cooperative work design strategies as well as high pay and benefits for employees (Batt & Moynihan, 2002). This is premised on the idea that building quality long-term relationships with clientele will justify a higher premium for the services. The aim of research currently being conducted into the call centre industry is to provide empirical support for the progression from the mass production model prevalent in call centres to the mass customization or professional model.

The research conducted, generally within the mass production paradigm has shown that call centre work has pervasive negative effects on employee well-being (Holman, 2005). These effects in combination with an overriding technologically driven work design have perpetuated a reputation for call centres as being ‘assembly lines in the head’ and ‘electronic sweatshops’ (Taylor & Bain, 1999). The underlying theme being expressed is that the technology dictates the subsequent work design rather than a predetermined person-centred work design adopting a compatible technology (Holman, 2005). This results in undermined core job characteristics which, in combination with other factors, have been highlighted as influential on low levels of job satisfaction and commitment within the call centre context (Hackman & Oldham, 1976). This has resulted in the majority of call centres experiencing exceptionally high levels of turnover (Holman, 2005).

Call centres have become a major employment sector both locally and internationally. Estimates in the European Union, the USA and Australia place 1% - 3% of the working population in this sector (Holman, 2005). Representatives from 30 countries attended the inaugural contact centre global forum in Cannes in 2007 and it was reported by the forum director, Christina Wood, that more than 6 million people worldwide are employed in this industry, with 80 percent of the contact between firms and their customers occurring through call centres (Khuzwayo, 2007). The Dimension Data's Global Contact Centre Benchmarking Report 2007, which polled 403 contact centres located across 42 countries, estimated 6.5 million contact centre seats worldwide, translating to an investment of $33 billion (R243.2 billion) (Motsoeneng, 2007). In South Africa in 2007 it was estimated that there were 70 000 to 80 000 in-house call centre operator seats and over 10 000 international seats (Anderson, 2007). In 2007 The International Marketing council of South Africa posted estimates from independent analysts Datamonitor of 939 call centres in South Africa for 2008, almost double the number of 494 in 2003 (South Africa.info, 2007). In 2005, according to an Ion Group poll, South Africa was ranked ahead of India, Mexico and the Philippines as top UK companies' ideal offshore location (South Africa.info, 2007). Investment in this area has been sizable, for example in February 2006 leading UK telecoms firm

TalkTalk announced plans to spend R200-million setting up two call centres in Cape Town and Johannesburg (South Africa.info, 2007). Call centres have become a significant source of employment for South Africans. Former deputy president Phumzile Mlambo-Ngcuka said business process outsourcing (BPO) investments had already created 5 000 jobs in South Africa and has the potential to create 100 000 more jobs by 2009 (Mochiko, 2006). This has warranted investigation into the effects of the distinctive work design that has been associated with negative impacts on the wellbeing of operators (Holman, 2002).

The following model created by Miller and Fisher (2005) was developed to try and provide a framework for understanding the complex web of relationships that lead to individual outcomes in the call centre environment:

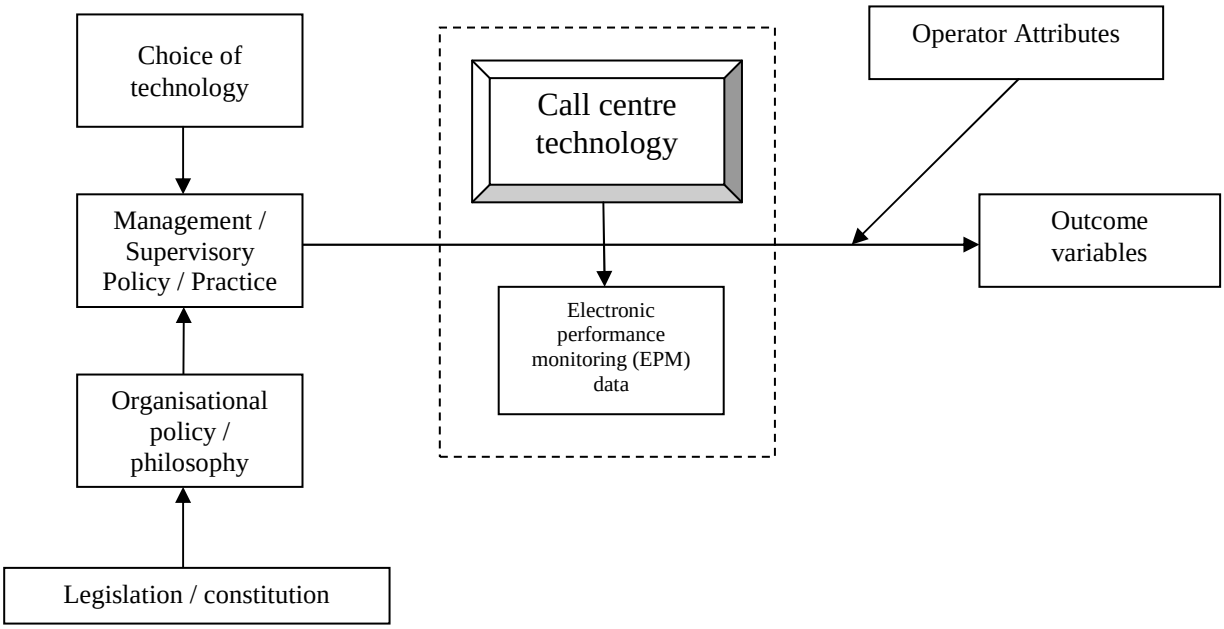


Figure 3: A model of inputs and outcomes in a call centre (Miller & Fisher, 2005, pp241)

The choice of technology encompasses the process through which call centre technologies are selected, purchased and implemented (Miller & Fisher, 2005). This includes the timing, method and persons involved. Management's practices influence the manner in which EPM data is utilised, training is conducted, the degree to which support is offered, the staff development as well as selection and induction practices (Miller & Fisher, 2005). The broader organisational policy and philosophy influence staff well-being, staff development and compensation procedures (Miller & Fisher, 2005). Legislation and constitutions have been highlighted as a strong, external force acting upon organisational policy (Miller & Fisher, 2005).

In South Africa there is no specific legislation governing call centre work rather it is covered under a constitution that has been upheld as a superior exemplar of advanced democratic achievement. This constitution embodies the rights of all individuals that include the right for respect and protection of dignity, the right to freedom of speech and expression as well as the right to an environment which is not detrimental to his or her wellbeing (Bendix, 2005). There has not however been a fully concretized incorporation of some of these principles into labour legislation such as the Labour Relations Act (66 of 1995), The Basic Conditions of Employment Act (75 of 1997) and The Occupational Health and Safety Act (85 of 1993) (Bendix, 2005). This legislation is aimed at creating safe physical working environments but does not incorporate clauses for the prevention of psychological strains that can result from repetitive, monotonous and tedious work. The resultant shortfall of this is evident in the proliferation of mass production models of work, which were discussed earlier, that are evident in call centre work design despite an innate contradiction with the constitution.

Sweden is an example of an advanced democracy, which has refined its labour legislation to embody all of the principles apparent in the constitution. In an extensive chapter dealing specifically with the working environment, some of the following principles are outlined (Swedish Work and Environment Authority, 2007). Firstly, there is encouragement of achieving a person-technology fit through provisions that

ensure technology is not be implemented in any way that is detrimental to the employee (Swedish Work and Environment Authority, 2007). Secondly, there is firm discouragement of closely controlled or restrictive work (Swedish Work and Environment Authority, 2007). Thirdly, there is provision for employees to be actively involved in their own work design and lastly there is provision for active employee development by the employer organisation (Swedish Work and Environment Authority, 2007). This illustrates that in more advanced economic enclaves of the world the call centre phenomenon is far more regulated so as to minimize its harmful impact on employees and is further encouraged to institutionalize broader employee development and facilitate a progression from the mass production model.

It can be seen that this model sets at its core the electronic performance monitoring system which has been highlighted as a pivotal determinant of the subsequent work design and outcomes. Further, it can be seen that the eventual outcomes of the work design are moderated by individual operator attributes. A discussion of outcome variables and operator attributes follows after a brief review of the comparison context.

1.4) Hospitality Industry Context

Research within the hospitality industry has been comparatively insular. The research to date can be classified as being from a natural and physical sciences approach, from a hospitality management approach or from a hospitality studies approach (Taylor & Edgar, 1996). The natural and physical sciences approach focuses on the tangible elements of the industry such as equipment design and food science (Taylor & Edgar, 1996). This has become a largely dormant approach to enquiry within the industry. The other two approaches are grounded in the social sciences and are concerned with broader organisational issues. The hospitality management approach focuses specifically on the distinctive characteristics of the industry and their relation to management practices (Taylor & Edgar, 1996). The hospitality studies approach is less insular in its approach and draws in interdisciplinary research for broader

organisational strategy recommendations (Taylor & Edgar, 1996). The current state of this research is said to have hospitality management at its core with hospitality studies becoming a broader area of study (Taylor & Edgar, 1996).

The progression of some underlying principles that have guided the course of hospitality research can be seen in the following table:

Table 1: Key contributions to hospitality subject development (Morrison & Gorman, 2008, pp 216)

Author	**Contribution**
Cassee (1983)	Emphasises the interrelatedness of the hospitality industry with the outside world.
Slattery (1983)	Advocates the application of existing social science theory to hospitality management.
Wood (1988)	Argues for sociological approaches to the study of hospitality management.
Litteljohn (1990)	Allows for an approach to hospitality industry research that draws on the social sciences.
Jones (1998)	Recognises a need for multi-disciplinary and the difficulty in achieving it.
Airey and Tribe (2000)	Point to the preoccupation with the world of work rather than the many disciplines or fields of enquiry that help explain hospitality.
Lashley *et al*. (2007)	Identify a contemporary willingness of the academic community to extend the conception of the hospitality subject boundaries, and associate this process as positive for the subject development and its consequent academic standing.

It can be seen that there has been no agreement of unifying principles within hospitality research through its history. So, while there has been a proliferation of research within this industry there is little unification of evidence for the creation of hospitality versions of theories (Taylor & Edgar, 1996). Following, there is no specific model available to understand the interconnected relationships that lead to outcomes in the hospitality industry. This may be because unlike in the call centre industry the work is not standardized and monitored to a degree that makes the experience of the context reasonably universal across employees. The industry employs people with a myriad of skills sets for a variety of positions (Baum, 1996). Further, there are more horizontal organisational levels (Hoque, 1999). Work design and perceptions of work design would have more variance within this context than within a call centre context (Hoque, 1999). In order for the contexts to become comparable only employees from the higher end of the skills spectrum within the hospitality industry would be required. These are semi-skilled positions that require a high level of literacy, the ability to communicate with guests, computer skills and interpersonal skills (Leslie, 1991).

There are further similarities between the call centre and hospitality industry besides required skill-sets. A study of 163 hotel workers using Hackman and Oldham's job characteristics model showed generally that the core job characteristics of autonomy and skill variety were relatively low (Lee-Ross, 1995). These are both commonly cited characteristics of the call centre context. Autonomy is low as workers have little control over job design, call timing, workspace and communication may be partially scripted (Holman, 2005). Skill variety is low as call centre work is often repetitive and monotonous (Holman, 2005). The hospitality industry also suffers similarly to the call centre industry from the problem of exceptionally high turnover (Holman, 2005; Iverson & Deery, 1997). These factors add to the suitability of the hospitality context as a comparison context.

It should also be noted that like call centres, hotels employ a significant number of people in South Africa and the numbers are steadily rising (Statistic South Africa,

2007). In a survey conducted by Statistic SA it was found that 45 886 were employed by hotels in December 2007 (Statistic South Africa, 2007). 41 377 were employed full time, 3103 were employed part-time in the morning and 1404 worked unspecified hours (Statistic South Africa, 2007). The tourism trade, of which the hotel industry is an integral part, not only contributes significantly to the GDP but is also growing steadily within South Africa (South Africa.info, 2008). In 2007 tourism contributed R159.6 billion and created 941 000 jobs both directly and indirectly (South Africa.info, 2008). In the first seven months of 2008 almost 5.5 million foreign tourists visited South Africa, a 7.8% increase over the 5.1 million foreign tourists who visited the country in the same period in 2007 (South Africa.info, 2008).

Unlike the call centre industry legislation has been specifically created to regulate the hospitality industry. Working hours, wages and other basic conditions of employment for workers in the hospitality industry in South Africa are governed under the Basic Conditions of Employment Act, No 75, of 1997 by the Sectoral Determination 14: Hospitality Sector (Government Gazette, 2007). According to this determination employees in the hospitality industry can only work to a maximum of 45 hours per week of ordinary working hours (Government Gazette, 2007). Any one shift may not exceed nine hours if an employee works five days or less or eight hours if an employee works more than five days in any week (Government Gazette, 2007). Any work over and above the 45 hours per week constitutes overtime for which one and a half times the employees wage must be paid (Government Gazette, 2007). Overtime is limited to a maximum of 10 hours per week and an employee may not work a shift longer than 12 hours on any given day (Government Gazette, 2007).

This discussion of the two contexts has highlighted the common elements between the call centre and hospitality industries that make them comparable. Emphasis has also been placed on important differences that may lead to dissimilar patterns of outcomes emerging within each context.

1.5) Outcome Variables

Outcomes may manifest as either individual or organisational variables (Fisher *et al*., 2005). Organisational outcome variables include organisational climate and organisational culture (Fisher *et al*., 2005). Individual outcome variables may include organisational commitment, job demands, job stress, job satisfaction, life satisfaction, self esteem, mood, anger, propensity to leave, work-family conflict and family-work conflict (Fisher *et al.*, 2005). The results of previous research have suggested that the effects of shift work as well as work designs low in core job characteristics have negative effects on employee well-being (Holman, 2005). Previous research has further suggested that the insidious nature of irregular work design means the effects become evident on three levels: the physical, the psychological and the social level (Costa, 1996).

1.5.1) Physical level - fatigue

Fatigue is a largely subjective experience which has led to a wide variety of conceptualisations (Dittner, Wessley & Brown, 2004). It is most commonly made distinct from other concepts such as tiredness and sleepiness with reference to the degree and persistence (Dittner *et al*., 2004). Furthermore, fatigue is generally conceptualised as being caused by factors other than excessive expenditure of physical energy (Dittner *et al*., 2004). Dittner, Wessley & Brown (2004) define fatigue as:

> ‘extreme of persistent tiredness, weakness or exhaustion – mental, physical or both.’ (p.157)

Surveys have shown that fatigue is a common condition in the general population. A British survey found that 10.2% of men and 10.6% of women had suffered from fatigue for a period of at least a month (Pawlikowska, Chalder, Hirsch, Wallace, Wright & Wessely, 1994). Another study found that 24% of the general population in

the U.S. had suffered from fatigue for a period of at least two weeks (Fukuda, Straus, Hickie, Sharpe, Dobbins & Komaroff, 1994). Despite the prevalence little is understood about the construct's phenomenology, epidemiology and aetiology (Dittner *et al*., 2004). The study of fatigue has been concentrated in the medical field as a side effect of prolonged illnesses such as cancer and neurological diseases much as multiple sclerosis and Parkinson's (Dittner *et al*., 2004). Psychological research has focused on fatigue as a side effect of depression and there is an increasing body of literature dedicated to fatigue in caregivers (Dittner *et al.*, 2004). While there is sporadic reference to fatigue in the workplace as a cause of accidents there seems to be little individualised investigation of the construct in a workplace setting. There has been some investigation into fatigue levels of shift workers. This is due to the intuitive links that between disturbances of the natural sleep circadian rhythms and fatigue (Gold *et al*., 1992). Again, this research has generally focused on medical personnel, more specifically nursing staff.

Fatigue can be classified into a number of categories including prolonged and chronic. Prolonged fatigue is defined as fatigue persisting for over a month (Funkunda *et al*., 1994). Chronic fatigue is defined as fatigue persisting in excess of six months (Funkunda *et al*., 1994). Fatigue may also be result in medical conditions including chronic fatigue syndrome (CFS) and idiopathic chronic fatigue (Funkunda *et al*., 1994). CFS is a debilitating and extended experience of fatigue that is generally associated with impaired concentration, musculoskeletal pain, sleep disturbances and weakened short term memory (Dittner *et al.*, 2004; Funkunda *et al.*, 1994).

There are a number of conditions that must be met for fatigue to be classified as CFS (Funkunda *et al.*, 1994). The first condition is that an extended period of fatigue marked by a distinct onset must have occurred that cannot be explained by a co-occurring medical conditions (Funkunda *et al*., 1994). Secondly, the condition must not be as a result of excessive exertion and should not be lessened by rest. Thirdly, the condition should be having substantial effects on the physical, occupational, social or personal activities of the sufferer (Funkunda *et al*., 1994). Finally, the condition

should be co-occurring with a minimum of four associated symptoms such as headaches of a new type, pattern, or severity; unrefreshing sleep; and postexertional malaise (Funkunda *et al.*, 1994). Despite a growing recognition of the prevalence of this condition there are few medical diagnostic tools and scientifically tested treatments available for CFS (Funkunda *et al.*, 1994).

Any other type of fatigue that is clinically evaluated and unexplained but does not meet all the criteria for CFS is referred to as idiopathic chronic fatigue (Funkunda *et al.*, 1994). The following diagram illustrated the dispersion of fatigue within the general population:

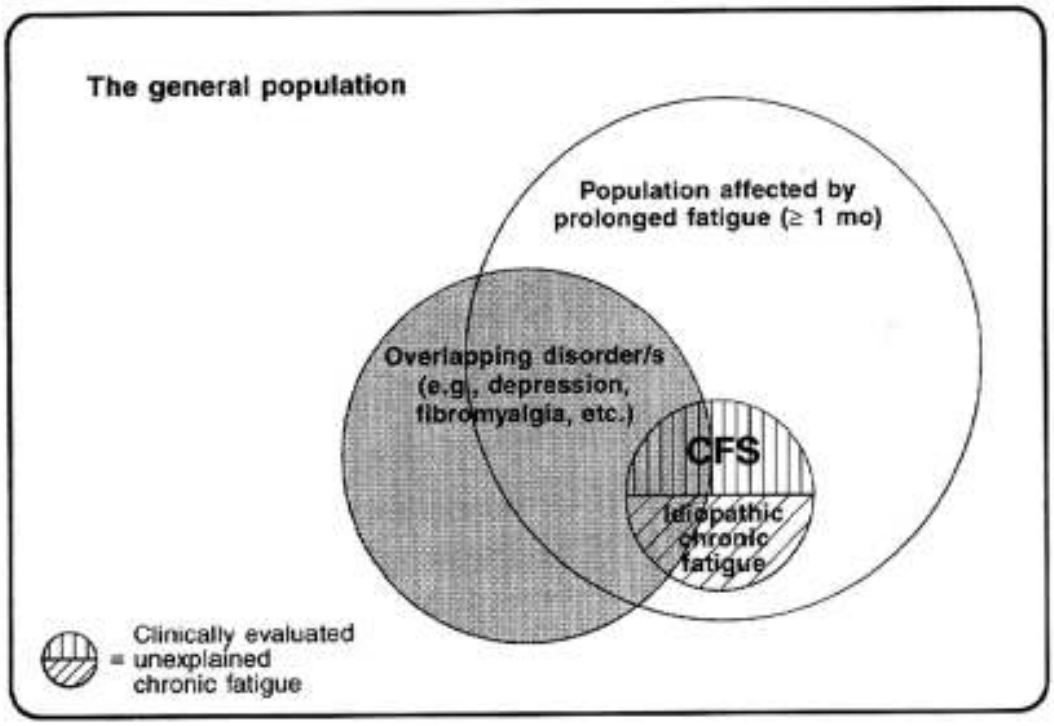


Figure 4: A conceptual framework of abnormally fatigued populations, including those with the chronic fatigue syndrome (CFS) and overlapping disorders

(Fukuda *et al.*, 1994, p 955)

Fatigue has been generally been considered to be a 'normal' outcome of work. However, the recognition that a prolonged experience is classifiable as a medical condition with associated co-morbidities shows the outcome to be of greater gravity. Fatigue that could result from a work situation can be seen as a multidimensional concept consisting of general fatigue, physical fatigue, reduced activity, reduced motivation and mental fatigue (Smets, Garssen, Bonke & De Haes, 1995). General fatigue is a diffuse feeling of persistent tiredness, physical fatigue refers to the psychosomatic as well as biological elements of the outcome, reduced activity refers to associated behavioural changes, reduced motivation refers to lowered drive and mental fatigue encompasses problem-solving impairment and mental sluggishness Smets *et al*., 1995).

There is little evidence to show that specific demographic variables have a strong relationship with fatigue (Bültmann, Kant, Kasl, Schröer, Swaen & van den Brandt, 2002). A study conducted on 348 patients found that few differences existed in the experience of CFS between genders (Buchwald, Pearlman, Kith & Schmaling, 1994). The prevalence of general fatigue has also not found to be significantly different across gender (Lee, Chien & Chen, 2007). While there is a volume of literature dedicated to the study of fatigue in old age, other studies have found that general fatigue actually tends to decrease with age before 50 (Tibblin, Bengtsson, Furunes & Lapidus, 1990). It has also been found that occurrence of fatigue is spread across cultures (Jason, Richman, Rademaker, Jordan, Plioplys, Taylor, McCready, Huang & Plioplys, 1999). A study of 28 673 adults found that higher incidence of CFS was reported among minority groups and those with lower levels of education or occupational status (Jason *et al.*, 1999).

There is however some evidence to suggest that personal lifestyle and work factors are impactful on levels of fatigue (Bültmann *et al.*, 2002) Lifestyle factors that have been found to be predictors of fatigue include amount of sleep, sleep quality, exercise and diet (Bültmann *et al.*; Lee *et al.*, 2007). Poor mental health and high work demands have also been suggested as strong predictors of fatigue (Hardy, Shapiro &

Borrill, 1997). A study of 12 095 workers found that significant differences exist in the prevalence of fatigue according to work schedule (Jansen, van Amelsvoort, Kristensen, van den Brandt & Kant, 2003). It was found that 28.6% of workers in three-shift patterns, 23.7% of workers in five-shift patterns and 19.1% of workers in irregular shift patterns suffered from fatigue (Jansen et al., 2003). This was as opposed to the 18.1% of day workers suffered that from fatigue (Jansen et al., 2003).

1.5.2) Psychological level – symptoms of anxiety and depression

General psychological distress can be expressed as symptoms of anxiety and symptoms of depression. Anxiety and depression are the two of the most prevalent mental health problems worldwide (Santrock, 2003). Anxiety is defined as 'a diffuse, vague, highly unpleasant feeling of fear and apprehension' (Santrock, 2003, 527) while depression can be defined as persistent feelings of sadness, hopelessness and dejection. While anxiety and depression are often comorbid it can be seen that they are distinct concepts (McClanahan & Antonuccio, 2004).

Forsyth, Kelly, Fuse and Karekki (2004) define anxiety as:

> 'a future orientated mood state, involving anxious apprehension, worry, heightened and sustained activity of the sympathetic nervous system and wide-ranging autonomic symptoms (e.g. increased muscle tension and chest tightness).' (p. 94)

Anxiety disorders are the most prevalent group of mental afflictions affecting the general population (Forsyth *et al*., 2004). It has been estimated that 19.1 million adults in the United States are affected each year (Forsyth *et al*., 2004). Anxiety has both been found to result in loss of productivity at work, high absenteeism and turnover (Forsyth *et al.*, 2004). In the United States it has been estimated that anxiety

disorders cost organisations approximately $256 per employee per year (Forsyth *et al.*, 2004). When this is considered in combination with the estimate of anxiety disorder prevalence rate of 16% in the U.S. workforce it can be seen that the costs to organisations and society are tremendous (Forsyth *et al*., 2004). Over and above economic concerns there is much evidence to suggest that anxiety is negatively correlated with well-being. The evidence suggests that personal suffering, interpersonal suffering and reduced quality of life are all associated with anxiety disorders (Forsyth *et al*., 2004).

McClanahan and Antonuccio (2004) summarise the American Psychological Society definition of depression as follows:

> '…depression is manifested by a depressed mood most of the day (emotional impairment), markedly diminished interest or pleasure in all or most activities of the day (behavioural withdrawal), a significant weight loss or gain (physical symptoms), insomnia or hyposomnia, psychomotor agitation or retardation, fatigue or loss of energy, diminished ability to concentrate or indecisiveness, or recurrent thoughts of death.' (p.133)

It has been estimated that between 3% and 13% of the general population in the U.S suffer from unipolar depression (McClanahan & Antonuccio, 2004). This translates to approximately 11 million adults in the U.S. alone and cost the U.S. economy $44 billion per year (McClanahan & Antonuccio, 2004). Furthermore the World Health Organisation considers depression to be the most rife psychiatric disorder and projects it to become the second most considerable cause of disease burden by 2020 (McClanahan & Antonuccio, 2004). The effects of depression on the workplace are evident on many levels. Firstly on the cognitive level an employee may become indecisive, leave projects unfinished and go unnoticed (McClanahan & Antonuccio, 2004). On an emotional level an employee may become irritable, lose interest in work and underperform (McClanahan & Antonuccio, 2004). The behavioural level would

be characterised by loss of interest in activities and tasks. Finally, on the physical level an employee may become easily tired, agitated, sluggish and begin over or under eating (McClanahan & Antonuccio, 2004).

It can therefore be seen that both anxiety and depression are prevalent in the organisational setting and these phenomena have effects on both the individual and organisational level. This is best summarised in the following model:

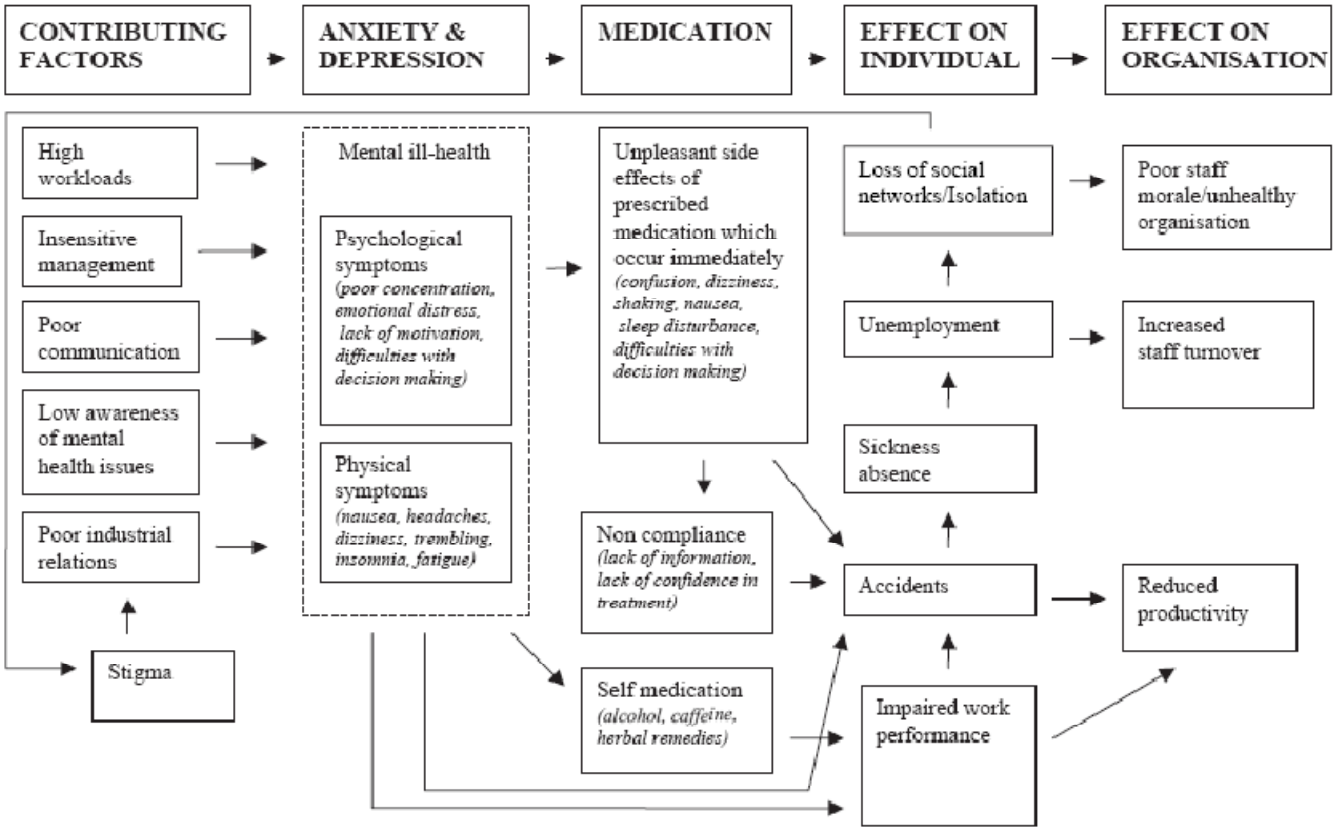


Figure 5: Schematic model of the factors contributing to anxiety and depression and the impact of these conditions on work

(Haslam, Atkinson, Brown & Haslam, 2005, p.214)

It is pertinent to note that the contributing factors fall largely into the category of low core job characteristics. These include high workloads, insensitive management, poor communication and poor industrial relations (Haslam *et al*., 2005). For example poor communication undermines feedback which in turn undermines work satisfaction and effectiveness according to Hackman and Oldham's model (Hackman & Oldham,

1976). Furthermore, many of the contributing factors shown in the above model have also been highlighted in the discussion of the two shift work contexts. It can therefore be seen that there is an empirical base for the investigation of the constructs of anxiety and depression in the shift work, more specifically in call centre and hospitality contexts.

1.5.3) Social level - loneliness

The research on loneliness only proliferated in the 1980s when it was recognised as a unique psychological phenomenon rather than encompassed within issues such as anxiety or depression (McWhirter, 1990). It has been found that 10% of the general adult population consider loneliness to be a serious personal problem (McWhirter, 1990). The research has generally been focused within counselling psychology and there is a need to conduct research outside of the clinical setting (McWhirter, 1990). Firstly, a definition of the construct is provided.

Loneliness is a unique psychological phenomenon which is characterised by a state of distress often accompanied by feelings of sadness, anxiety and marginality (McWhirter, 1990). It is important to note that loneliness is not synonymous with being alone (McWhirter, 1990). Rather it is the perceived quality of relationships and relationship interactions that determines whether an individual experiences loneliness (McWhirter, 1990). As an example, it can be inferred that simply because an employee is surrounded by other people at work they may still be lonely if they feel that their social interactions outside of work are of a poor quality, especially if these are perceived as more significant. Loneliness occurs when an individual lacks emotional intimacy and a sense of integration with others (McWhirter, 1990). A definition of loneliness provided by Rook (1984) states that:

> ‘Loneliness is defined as an enduring condition of emotional distress that arises when a person feels estranged from, misunderstood, or rejected by others and/or lacks appropriate social partners for desired activities, particularly activities that provide a sense of social integration and opportunities for emotional intimacy.’ (p.1391)

The taxonomy for loneliness provides three specific categories: chronic loneliness, transient loneliness and situational loneliness (McWhirter, 1990). Chronic loneliness results from a psychological predisposition and is strongly associated with a crippling lack of social skills (McWhirter, 1990). Transient loneliness is a fleeting time of distress that is experienced by most people (McWhirter, 1990). Situational loneliness results from a disruption in relationships patterns and is the focus of the present study (McWhirter, 1990). Due to shift work cycles people may find themselves more isolated from their family and friends which may results in situational loneliness. Loneliness in this case may be a function of a practical difficulty in maintaining normal social and family relations rather than a function of premorbid predisposition or occasional experience (Costa, 1996).

While there have been no causal connections firmly established loneliness has a strong correlation with a number of other variables on the physical and psychological level. On the psychological level correlations of between .38 and .71 have been found between depression and loneliness (McWhirter, 1990). While it was initially presumed that loneliness was simply a symptom of depression it is now considered to be a unique and co-morbid variable of the same causal origins (McWhirter, 1990). An example of a point of departure of the constructs is provided by Bragg (1979) who argues that depression is more allied with inner anger and the non-social while loneliness is allied with few proactive attempts in the social realm. Anxiety has also been found to be related to loneliness (McWhirter, 1990). Research has linked suicide and suicide ideation with loneliness. It is believed that the isolation that accompanies loneliness is a primary cause of potential and actual suicidal events (McWhirter,1990). Loneliness often accompanies the decline associated with

substance abuse such as alcoholism (McWhirter, 1990). Other correlates include increased incidence of self-criticism, boredom, restlessness, unhappiness, lower self-esteem, external locus of control, higher sensitivity to rejection, less assertiveness, higher introversion and lower affiliation tendencies (McWhirter, 1990).

It has been speculated that manifestations of loneliness occur on the physical level. In his book, *The Lonely Heart: The Medical Consequences of Loneliness,* Lynch (1977) states that the purpose of his book was to:

> '…document the fact that reflected in our hearts there is a biological basis for our need to form loving human relationships. If we fail to fulfil that need our health is in peril.' (p.1)

Lynch's assertions were tentative and based mainly on heart disease research and speculative links with national data that polled marital status i.e. single, divorced or widowed (Lynch, 1977). His claims were a precursor to more rigorous research that has added support to the premise. Current research has found that loneliness is associated with higher cardiac contractility and cardiac output as well as lower total peripheral resistance **(**Cacioppo, Hawkley, Crawford, Ernst, Burleson, Kowalewski, Malarkey, Van Cauter & Berntson, 2002; Hawkley, Burleson, Berntson & Cacioppo, 2003). Furthermore loneliness has been associated with poorer sleep quality (Cacioppo *et al*., 2002). The combination of increased cardiovascular activation and sleep dysfunction has been highlighted as a mechanism for the creation of predisease conditions (Cacioppo *et al.*, 2002). It has also been found that over the long term social isolation predicts morbidity or mortality from cancer, cardiovascular and a host of other diseases (Hawkley, 2003). While the mechanisms between the social and biological world are poorly understood there is empirical support to suggest that loneliness may be a link between epidemiological and biological levels of analysis (Hawkley, 2003).

There are a number of demographic variables that are considered salient in the literature regarding loneliness. In particular marital status and age have been a focus (Mullins, Elston, Gutkowski, 1996; Pinquart, 2003). It has been has found that married persons do generally tend to be less lonely than unmarried persons (Mullins *at al.*, 1996; Peters & Liefbroer, 1997; Pinquart, 2003). These results have formed part of a consistent theme that traverses cultures. Diener, Gohm, Suh and Oishi (2003) found that in a study of 59,169 persons across 42 nations that marital status was associated with higher reported affective well-being with cultural variables only slightly influencing the strength of the relationship. A large volume of literature is also dedicated to the issue of aging and increased loneliness. It is important to note that these studies tend to focus solely on the era of old age and often considers those with disabilities (Fees, Martin & Poon, 1999; Mullins *et al*., 1996; Weeks, 1994). Therefore, while cross sectional studies have confirmed that loneliness does tend to increase with age, further investigation of the results has shown that age is simply a covariate of loneliness (Jylha, 2004). The underlying cause of the relationship is the deteriorating physical condition and social integration that tends to be associated with old age (Jylha, 2004). In recent literature the pervasive negative effects on well-being of unemployment has proliferated (Creed & Reynolds, 2001). This is relevant as some of this literature has highlighted social isolation and loneliness as outcomes of unemployment (Creed & Reynolds, 2001).

It has been found that loneliness correlates with specific personality traits such as social inhibition and less endurance (McWhirter, 1990). While this research has been conducted mainly on alcoholics it does provide some evidence that links loneliness to the construct of resilience that will be discussed shortly (McWhirter, 1990). There is a need to extend the links between personality factors and loneliness as well as to extend research findings from the clinical setting to the broader population (McWhirter, 1990).

1.6) Employee Attributes

There are a myriad of employee attributes that may influence the relationship between work design and outcome variables to different degrees. These include age; gender; education; tenure; family size and type; other work experiences; individual differences such as personality, work locus of control and intelligence; leisure and health habits; work hours and travel time to work (Miller & Fisher, 2005).

Personality traits have been found to be particularly influential within the person-situation-behaviour triad (Cervone, 2005). These traits have been found to be stable across time and have strong predictive value within a variety of contexts including organisations (Smith & Smith, 2005). The objective of personality research is to gain insight into which individual variations in personality have the most significant relationships with the person-behaviour triad (Cervone, 2005). The outcome variables that have been discussed include loneliness, fatigue as well as symptoms of anxiety and depression. These can be summated as perceptions of negative states. Characteristic patterns of perception, thought, emotion and behaviour in response to an environmental stimulus constitutes an investigation into the personality construct (Funder, 2001). In particular resilience is considered to be a personality trait of great salience in buffering negative environmental forces so that perceptions of negative states occur to a lesser degree.

1.6.1) Resilience

Resilience has been highlighted as a component of the personality construct that is of particular interest in the organisational setting where the ability to tolerate high job demands becomes a salient point of interest in processes such as selection, performance management and career development (Friborg, Barlaug, Martinussen, Rosenvinge & Hjemdal, 2005). The term ‘resilience’ is used widely in numerous disciplines such as physics, psychology, engineering, computing and ecology. It is therefore useful to narrow its definition to the current application:

> ‘Resilience is the set of skills and behaviours needed to be successful in the midst of a fast-paced and continuously changing work environment. It is the same set of skills that helps prevent work related mental illness’ (GlaxoSmithKline, 2007).

Research into resilience within psychology originated with investigations into severe schizophrenia as a result of observation that certain individuals were innately more able to adapt to the condition than others (Luthar, Cicchetti & Becker, 2000). While the construct itself was not conceptualised there was reference to states of ‘premorbid social competence’ which would later fall into the conceptualisation of resilience (Luthar *et al*., 2000). Research then proliferated in the investigation of children who has been exposed to great adversity. These included studies of socially disadvantaged children who had been exposed to related risks as well as children who had been subject to parental mental illness, maltreatment, chronic illness and catastrophic life events (Luthar *et al*., 2000). This early research labelled resilient children as ‘invulnerable’ (Luthar *et al*., 2000). In the following years the conceptualisation grew more dynamic recognising that a resilient predisposition was subject to a developmental progression where new vulnerabilities or strengths emerge with changing life circumstances (Luthar *et al*., 2000).

Most recently resilience has been conceptualised as a personality variable that has been suggested as a predictor of a person’s ability to tolerate negative outcomes (Luthar *et al*., 2000). Resilience is seen both as a dynamic process within individuals in response to adverse environmental states and an enduring personality trait. Trait theory would state that resilience is fostered from a genetic basis, termed temperament, which is then altered by environmental factors (Wortman, Loftus & Weaver, 1999). The resultant intensity of resilience would be a stable, enduring quality. The intensity would only be evident when the individual is exposed to negative environmental stimuli and their behaviour patterns, thoughts and emotions would be expressed analogously with their underlying predisposition. A more

contemporary approach to resilience views it as a dynamic process of rearrangement within the individual in the face of adversity (Luthar *et al.*, 2000). This approach can be seen as fitting with the recognition of the salience of personality architecture. This refers to underlying mechanisms through which personality becomes explicit (Cervone, 2005). It can therefore be seen that there is a synergetic coexistence of the process and trait approach to resilience.

Friborg, Barlaug, Martinussen, Rosenving and Hjemdal (2005) recently offered a unique conceptualisation of resilience to support their creation of an instrument designed to measure this construct. This conceptualisation moves away from the clinical approach that has been typical in order to be applicable to the general population. Six underlying elements of resilience, revealed through factor analysis, constitute their conceptualisation. The elements are personal strength, social competence, structured style, family cohesion and social resources (Friborg *et al*., 2005). Personal strength refers to an innate sense of personal competence and potency that enables individuals to adapt, react and avoid efficiently in response to negative environmental forces (Friborg *et al.*, 2005). Social competence refers to flexibility and ease in social networks (Friborg *et al*., 2005). Structured style refers to a personal predisposition to react with persistence, organisation and efficiency despite the circumstance (Friborg *et al.*, 2005). Family cohesion refers to the strength, solidarity and support offered by family bonds (Friborg *et al*., 2005). Social resources refers to the quality of interpersonal connection that act as support systems (Friborg *et al.*, 2005). These underlying characteristics are congruent with conceptualisations to date and are unified under the ability to tolerate negative environmental forces.

This conceptualisation has been validated against the Big 5 measure of personality (Friborg *et al.*, 2005). Resilience has been found to be significantly correlated with emotional stability, extraversion, openness, conscientiousness and agreeableness (Friborg *et al*., 2005). On the basis of this, studies have been conducted to type people using the Big 5 into well-adjusted (resilient) groups and more vulnerable groups (Friborg *et al*., 2005). This is significant in the South African context as, despite

criticisms, the five factor model of personality has a large base of empirical support that suggests cross cultural applicability of this conceptualisation (McCrae and Costa, 1997).

1.7) Aims

The theoretical and conceptual background has raised issues related to shift work and job design in the call centre as well as hospitality industry contexts. It has briefly introduced negative possible outcomes related to well-being that may result in employees on a physical, psychological and social level. It also introduced the concept of resilience that has been proposed as an employee attribute that acts as a counterweight to these negative outcomes.

It is the main aim of this research to investigate the relationship between the employee attribute and outcome variables to assess whether this relationship is significantly different between a call centre and hospitality industry context. The secondary aims include comparing the shift work norms of the contexts in this study to those of international studies and investigating if any demographic variables have a significant impact on any of the main variables. The following model for the research has been derived from the Miller and Fisher call centre (2005) model that was discussed previously and is grounded in the theory and findings that have been covered:

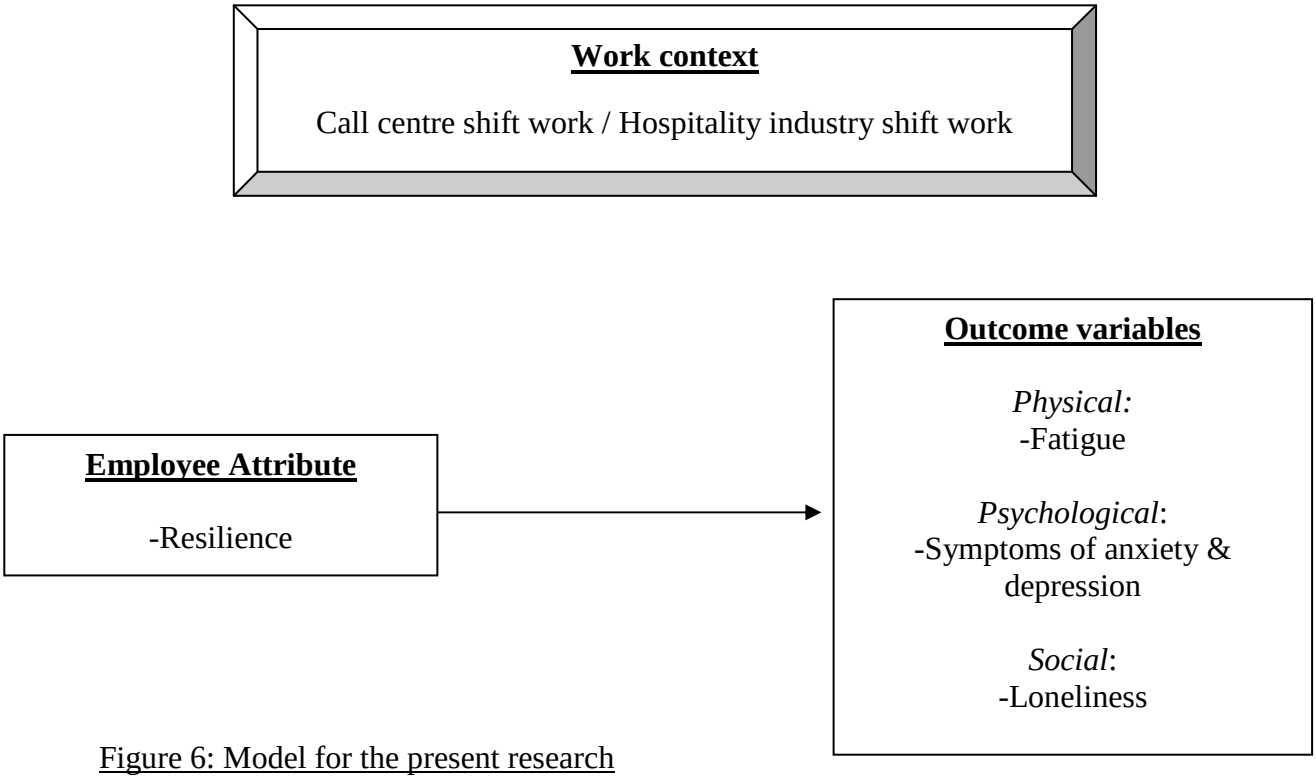


Figure 6: Model for the present research

Work context in this study is dichotomous either being call centre or hospitality. The job characteristics of each of these contexts have been described using evidence from previous studies that have highlighted similarities as well as important differences. The main variables are the outcome variables which are fatigue, symptoms of anxiety and depression as well as loneliness. The relational variable, proposed as a positive counterweight, is resilience. The aims can be concretized as follows:

- To investigate whether the relationship between the operator attribute and outcome variables is different according context.
- To investigate the characteristics of shift work in the two contexts using descriptive and relational evidence
- To investigate whether any demographic variables are significantly related to either resilience or the outcome variables.

These three aims have been rendered into three main research questions.

1.8) Research questions

Research question 1: Is there a difference in the relationship between resilience and the outcome variables across the contexts?

1A: What are the relationships between resilience and the outcome variables in each context?

1B: Is there a significant difference in the relationships between resilience and the outcome variables across the contexts?

Research question 2: What characterises shift work in these contexts?

2A: What do shift work patterns in the two contexts look like?

2B: What are people's motivations for working shifts in these contexts?

Research question 3: Do any demographic variables have a significant relationship with any of the main variables?

3A: Do any demographic variables have a significant relationship with resilience?

3B: Do any demographic variables have any relationship with the outcome variables?

Chapter 2: Methodology

The overall research design in the present study is quantitative, non-experimental and cross-sectional. The following chapter consists of a thorough depiction of the sample, the procedure and key components of the analysis. The chapter commences by introducing the sample and providing a detailed demographic breakdown. The procedure section then makes explicit the method used in data collection with special attention given to the issue of low response rates that emerges. The measuring instruments are introduced and described then consideration is given to the ethical issues of concern and how these were addressed. The technique and manner in which the data was prepared and analysed is then discussed.

2.1) Sample

The participants are 90 volunteers who work shifts. The participants have been sourced from two different contexts. The first context is the call centre context which is the focus of the research in which 40 (44%) of the participants are employed. The second context was the comparison context which is distinct from the call centre in terms of industry but somewhat similar in terms of work design as discussed in the theoretical and conceptual background. The second context is the hospitality industry where 50 (56%) of the participants are employed.

Two call centres have been surveyed for the present study that are both part of an overarching holding group that is a major provider of outsourced call centres in South Africa. Call centre A provides services to a cellular company in South Africa and call centre B provides services to international clients. Call centre A is operational from the early hours to late in the evening and all the operators are on a shift work pattern which is common for the particular city as well as for this industry that must be operational 24 hours a day. Call centre B works its shift patterns in order to cater for the needs of international clients in different time zones. Both call centres are operational at night and early morning although their peak periods are different depending whether they were catering to local or international time zones. Twelve

hotels in South Africa have been surveyed. The hotels where employees have been surveyed are all high end hotels either hold a four or five star rating.

2.1.1) Demographic breakdown

In terms of personal demographics the sample consisted of 36 men (41%) and 52 women (60%). Two participants did not indicate their gender. The average age of participants was 26 years with a range of 19 to 60 years and a standard deviation of 6.40. Nine participants did not indicate their age. Thirty four participants (38%) indicated English as their home language, 15 participants (17%) indicated Xhosa as their home language, two participants (2%) indicated Afrikaans as their home language, 25 participants (28%) indicated Zulu as their home language and 13 participants (15%) indicated other. When these 13 participants specified their home language two participants indicated Korean and the remainder specified African languages such as Venda and Sotho. One participant did not indicate his / her home language. 36 (40%) participants indicated their highest level of education to be high school, 48 (53%) indicated their highest level of education to be a diploma and six (7%) indicated their highest level of education to be a degree.

In terms of family commitments 20 (22%) participants indicated they were married, 68 (76%) indicated they were unmarried and two (2%) indicated they were divorced. Of the participants 54 (60%) had no dependants, 17 (19%) had one dependant, 6 (7%) had two dependants, seven (8%) had three dependants, four (4%) had four dependants, one (1%) had five dependants and one (1%) had nine dependants.

In terms of work related demographics, the average tenure of participants was 19 months with a range of one month to six and a half years and a standard deviation of 14.50 months. Twelve participants did not indicate their tenure. Thirty three participants (38%) indicated that they had been unemployed prior to taking their current job. Four participants did not indicate whether or not they had been

unemployed prior to taking their current job. Of those that had been unemployed the average time of unemployment was 6.5 months ranging from of one month to nine years and two months with a standard deviation of 17.07 months. Seven participants did not specify their length of unemployment prior to taking their current job. Thirty six (45%) of the participants reported a salary of under R60 000 per annum, 34 (43%) participants reported a salary of between R60 000 - R100 000, 5 (6%) participants reported a salary of R100 000 – R140 000, 2 (3%) participants reported a salary of R140 000 – R180 000 and 2 (3%) participants reported a salary of over R180 000. Eleven participants did not indicate their annual salary bracket.

It can be seen that there was a wide range of salaries. The 12% of participants that reported a salary of greater than R100 000 per annum were from more senior or speciality positions within the hospitality context. There was great variance in the 50 participants from the hotel industry context's job titles. A few examples include 'banqueting co-ordinator', 'night duty manager', 'butler', 'receptionist', 'housekeeper' and 'food and beverage manager.' The 40 participants from the call centre context all indicated their job titles as being 'call centre agent.'

No significant differences were found between interval scaled demographics between the call centre and hospitality context when a two independent sample t-test was conducted. This includes age, dependants, tenure and length of unemployment prior to taking current position. No significant differences were found between the nominal demographic variable with two groups using a Wilcoxon test. This includes gender and whether or not a participant was unemployed prior to taking their current position. There were also no significant differences found between contexts on the nominal demographic variables with more than two groups using a Kruskal-Wallis test. This includes education, marital status, home language and salary bracket. A demographic breakdown by context can be found in appendix five.

2.2) Procedure

Organisations were telephonically or electronically asked for access by the researcher. The organisation was provided with information about the research as per appendix 2. Once formal access had been granted the researcher provided management with either the electronic or paper version of the questionnaire. The electronic version was emailed to all employees by a member of management with a request for participation that emphasised the voluntary nature of the study. Questionnaires were completed by employees at their individual computers and then emailed directly back to the researcher. The organisation was not given access to the list of persons who had completed the questionnaire. In order to further protect the confidentiality of these participants the original emails were deleted once data had been captured. In some organisations not all employees had access to computers which necessitated the use of paper questionnaires. These were distributed by a member of management to employees. Those who chose to complete the questionnaire returned it without any names to a sealed box or envelope. Completed questionnaires were collected by the researcher or sent via mail when collection was outside of Johannesburg.

The covering sheet of the questionnaire, which was the same on both the electronic and paper versions, indicated the purpose of the research to participants (see appendix 3). It further emphasised the voluntary nature of participation and made it clear to participants that their responses were strictly confidential. The covering letter also made it clear that individual feedback would not be provided and that results would be available on request in 2009.

Reminders were circulated at the various organisations on approximately a weekly basis. Data collection time spans varied between organisations from two to six weeks. Generally the data collection continued for around three weeks after which time responses dwindled to zero. Once the study was completed the individual electronic questionnaires were deleted and paper copies destroyed. Only a password protected electronic copy of the compiled results were kept by the researcher and the supervisor.

2.2.1) Procedure specific to call centres

In call centre A all call centre operators had access to email and therefore the questionnaire was distributed electronically. In call centre B this was not possible as most operators did not have access to an email facility and therefore paper copies were made available to those who showed a willingness to participate in the study. The following table specifies the response rates for each of the call centre and it is evident that response rates were low.

Table 2: Response rates for call centre context

Organisation	**City**	**Completed**	**Eligible employees**	**Method**	**Sent out**	**Response rate**
Call centre A*	Durban	20	±200	Email	±200	10%
Call centre B*	Cape Town	20	±200	Paper	200	10%
TOTAL		40			400	10%

* Part of the same overarching holding group

2.2.2) Procedure specific to hotels

In most cases paper copies were distributed to staff who showed a willingness to participate in the study. In some cases staff had regular access to email so an electronic copy of the questionnaire was used. The following table shows the exact response rates for each of the hotels. It can be seen the hotel context also had particularly low response rates.

Table 3: Response rates for the hospitality industry context

Organisation	**City**	**Completed**	**Eligible employees**	**Method**	**Sent out**	**Response rate**
Hotel A *	JHB	6	± 20	Paper	20	30%
Hotel B *	JHB	1	± 60	Paper	60	1.67%
Hotel C *	JHB	3	± 60	Paper Email	60	5%
Hotel D	JHB	9	± 170	Paper	170	5.29%
Hotel E *	Durban	2	± 60	Email	60	3.33%
Hotel F *	JHB	4	± 20	Email	20	20%
Hotel G	JHB	4	± 60	Paper	60	6.67%
Hotel H	JHB	12	± 60	Paper	60	20%
Hotel I	JHB	6	± 20	Paper	20	30%
Hotel J	JHB	3	± 30	Email	30	10%
Hotel K	North West	0	± 260	Email	260	0%
Hotel L*	JHB	0	± 30	Paper	30	0%
TOTAL		50			645	6.2%

* Hotels belonging to the same chain

2.2.3) Low response rates

While there its little agreement among authorities on what constitutes a good response rate Shipmann (1997) asserts than between 20% and 30% can be considered average in social research. There are a number of factors that contributed to low response rates in this study.

Email vs. paper distribution. There were lower response rates when email was used. Research has suggested that email is becoming a progressively less effective way of distributing questionnaires (Sheehan, 2006). It has been found that not only are response rates lower but there are also higher incidences of incomplete questionnaires returned via email (Paolo, Bonaminio, Gibson, Partridge & Kallail,

2000). Response rates using this method are increased with person to person contact however this was not possible as email was used to gain access to cities outside of Johannesburg (Cook, Heath & Thompson, 2000). In this study 61 (68%) returned questionnaires were in paper format and 29 (32%) were returned electronically.

Distance. The researcher was stationed in Johannesburg and data collection was carried out in Durban, Cape Town and Johannesburg. This meant that the researcher was further removed from a large part of the process and unable to make any personal contact with a large portion of the sample which may have helped to increase response rates (Dey, 1997). Generally, only contact via emails that were forwarded by mangers was possible as organisations were unwilling to allow any further access to information such as private telephone extensions for employees or information regarding individual's shift patterns which would have allowed for follow up calls or visits.

Trend of lower response rates. There is evidence of response rates having progressively lowered over time. A study conducted by the American Council on Education and the Cooperative Institutional Research Program completed a longitudinal study on the response rates of students from 1960 to 1991 (Dey, 1997). The found a steep decline with response rates in 1991 being approximately 21% in contrast to the early 1960's where an average response rates of 58% was evident (Dey, 1997). Organisations are also increasingly conducting internal surveys. Employees often feel bombarded by too many surveys and will not take the time to complete a voluntary survey.

Nature of the sample. The sample was drawn from an extremely specific area of the working population and therefore the size of the population was dramatically decreased. Furthermore there were tense employee – management relations at many of the involved organisations (Holman, 2005; Nankervis, 1991). Shift workers tend to be unionised and the union representatives vehemently discourage employees from

completing any surveys that are seen to be serving the interests of management (Nankervis, 1991). Shift work itself is prevalent in contexts where work is in perpetual motion. These employees were often simply too busy to complete the questionnaires and informed the researcher that they felt overwhelmed at the idea of taking anything extra to do home as they said they were simply 'too busy' or 'too tired.' This further emphasises the importance of empirically examining these contexts as it seems by the low response rates that well-being is an issue and that often management-employee relations are poor.

Low response rates are problematic as it may be that the subset of the population about which data is gathered (respondants) may differ in some way from the larger population (non-respondants) about which inferences are made (Dey, 1997). It has however been suggested that this effect is more pronounced on individual variables but the relationships between variables tend not to be significantly biased (Dey, 1997). Therefore correlations and regressions are suitable statistical methods to gain meaningful results from samples with low response rates (Dey, 1997).

2.3) Measuring Instruments (See Appendix 4)

2.3.1) Demographic Questionnaire

A demographic questionnaire was included as part of the questionnaire so that the sample could be adequately described and in some cases to determine if these variables had an effect on the overall results. Firstly personal demographics were collected including gender, age, home language, family commitments and level of education. Then demographics related to the job situation were collected including job title, tenure in current organisation, employment history, yearly salary and a description of shift work patterns as well as a description of the primary motivations for working shifts.

2.3.2) Resilience

In order to measure this variable the Resilience Scale for Adults (RSA) developed by Friborg, Barlaug, Martinussen, Rosenvinge and Hjemdal (2005) was used. The scale consists of 33 items rated on a 5-point likert type scale with a negative and positive anchor at each end of the scale (Friborg *et al.*, 2005). Sixteen items are reverse scored namely items 1, 3, 6, 8, 9, 11, 13, 15, 17, 19, 22, 24, 28, 30, 31 and 33. A high overall score is an indicator of high resilience and a low overall score is an indicator of low resilience (Friborg *et al*., 2005). Examples of items from the RSA are:

My goals for the future are… unclear □ □ □ □ □ well thought out

The bonds among my friends are… weak □ □ □ □ □ strong

I get support from… friends/family members □ □ □ □ □ no one*

*example of a reverse scored item

Internal reliability has been shown for the RSA with Cronbach's alphas ranging from 0.67 - 0.79 (Friborg *et al*., 2005). A reason for these moderate reliabilities may be the unequal item loadings and a small number of items on each subscale (Friborg *et al*., 2005). However, when estimated using a structural equations method the internal consistency was found to be high (Friborg *et al*., 2005). The RSA has been tested for convergent and divergent validity by comparing it to Big-5 personality, cognitive ability and social intelligence measures (Friborg *et al*., 2005). Convergent validity was shown with a resilient profile correlating strongly with a well adjusted personality profile as defined by the Big Five and social intelligence measures. (Friborg *et al*., 2005) Further, each of the subscales was found to have a relationship with specific personality or social intelligence trait (Friborg *et al*., 2005). Resilience was shown to have no relation to cognitive abilities which showed discriminant validity (Friborg *et al*., 2005). This particular scale has been developed recently and has not been used in the South African context. The participants all had a minimum of a matric qualification and it can therefore be stated that their levels of literacy were appropriate for the scale. Also, the RSA has strong convergent validity with the Big Five

personality measure, which has been validated in various contexts including South Africa. Therefore the RSA is a justifiable measure in this context.

The RSA consists of five subscales namely personal strength, social competence, structured style, family cohesion & social resources (Friborg *et al*., 2005). Personal strength correlated with the Big Five Personality measure for emotion stability and it consists of six items measuring perception of the self and four items measuring perceptions of the future (Friborg *et al*., 2005). Social competence, measured using six items, correlated positively with the Big Five measure of extraversion and agreeableness as well as the social intelligence measure of social skills (Friborg *et al.*, 2005). Structured style, measured using four items, was related to the Big Five personality measure for conscientiousness (Friborg *et al*., 2005). Family cohesion and social resources were also found to be related to personality (Friborg *et al.*, 2005).

2.3.3) Fatigue

The Multidimensional Fatigue Inventory (MFI) is a widely used scale that was developed by Smets, Garssen, Bonke and De Haes (1995). It consists of 20 items that are rated on a 7-point likert type scale (Smets *et al*., 1995). Twelve of the items are reverse scored namely items 2, 4, 5, 9, 10, 13, 14, 15, 16, 17, 18 and 19. Responses are anchored towards either 'yes, that is true' or 'no, that is not true.' Examples of items from the MFI are:

5. Thinking requires effort	Yes that it true □ □ □ □ □ No that is not true*
9. I dread having to do things.	Yes, that is true □ □ □ □ □ No, that is not true*
12. I am rested.	Yes, that is true □ □ □ □ □ No, that is not true

*example reverse scored items

The MFI consists of five subscales each consisting of four items namely general fatigue, physical fatigue, reduced activity, reduced motivation and mental fatigue (Smets *et al*., 1995). The scale has shown a good overall reliability with a Cronbach's Alpha of 0.84 (Smets *et al*., 1995). In other studies the internal consistency and test-retest reliability of the subscales has been found to be good (general fatigue r=.83, physical fatigue r=.87, reduced activity r=.84, reduced motivation r=.80 and mental fatigue r=.74) (Dittner *et al.*, 2004). It has been suggested for use when investigating the phenomenology, severity and impact of fatigue in a general medical sample, however it has been validated using a student sample showing its applicability outside of the medical arena (Dittner *et al*., 2004). This scale has been used limitedly in the South African context (example: Stucki, Cieza, Michel, Stucki, Bentley, Culebras, Tufik, Kotchabhakdi, Tachibana & Ustun, 2008). The literacy levels of the participants are once again concurrent with the demands of the scale making it appropriate for the study.

2.3.4) Symptoms of Anxiety and Depression

The Personal Disturbance Scale (DSSI/sAD) was developed by Bedford, Foulds and Sheffield in 1976. It looks at generalised psychological distress by measuring symptoms of anxiety and depression. The scale consists of 14 items in total with seven items measuring symptoms of anxiety and seven items measuring symptoms of depression (Bedford *et al*., 1976). Symptoms are presented to the respondent and they are asked to rate their recent symptomology i.e. if they have had this symptom within the last month on a scale of 0 = no, 1 = a little, 2=a lot or 3 = unbearably (Bowling, 1997). None of the items are reverse scored. Examples of items from the DSSI/sAD are:

3. Recently I have been breathless or had a pounding of my heart (anxiety)

12. Recently I have lost interest in just about everything (depression)

The average Cronbach's alpha reported was 0.88 over a number of studies where this scale was used (Bedford, Grant, de Pauw & Deary, 1999). It has also been proved to be valid, reliable and useful in a range of settings (Bedford et al, 1999). The literacy levels of the participants are once again concurrent with the demands of the scale making it appropriate for the study.

2.3.5) Loneliness

The UCLA Loneliness scale (version 3) was developed by Russell in 1996 and was based on earlier versions of the scale. This revised scale consists of 20 items that are rated as how often they are felt with 1=never, 2=rarely, 3=sometimes and 4=always. Nine items are reverse scored namely items 1, 5, 6, 9, 10, 15, 16, 19 and 20. Higher scores indicate higher degrees of loneliness. Examples of items include:

2. How often do you feel that you lack companionship?

11. How often do you feel left out?

16. How often do you feel that there are people who really understand you? *

*example of a reverse scored item

Reliability has been shown in terms of both internal consistency (coefficient alphas range from .89 to .94) and test-retest reliability over a one year period (r=.73) (Russell, 1996). Convergent validity has been shown with the scales positive correlations with scores from other loneliness scales. The scales association with measures of health and well-being support its construct validity (Russell, 1996). The literacy levels of the participants are once again concurrent with the demands of the scale making it appropriate for the study.

2.3.6) Scale Reliabilities

The internal reliabilities for all the complete scales were acceptable as they were greater than 0.7 (Table 4) (Murphy & Davidshofer, 1998). This shows that the all items were tapping into the same construct. The alphas of each item for each scale were considered to check for problematic items (Murphy & Davidshofer, 1998). No such items were found and each item in each scale contributed well to overall reliability. A point of consideration is the very high alpha associated with the SAD. This does suggest that there may be a lack of variance in the scale with items being somewhat repetitive (Murphy & Davidshofer, 1998). This is also likely a function of the shorter length of the scale (Murphy & Davidshofer, 1998). The internal reliabilities for some of the subscales, especially the MFI, were below 0.7 which is not adequate in order to prove reliability (Murphy & Davidshofer, 1998). These low reliabilities were associated with subscales that had only four items and therefore this result can be expected (Murphy & Davidshofer, 1998). Due to this only entire scales were used in the statistical procedures. The internal reliability of each of the scales and subscales were calculated as follows:

Table 4: Internal reliabilities of scales and subscales

SCALE **Subscale**	**Number of items**	**Cronbach's alpha (standardised)**
RSA	**33**	**0.83**
Personal strength / perception of self	6	0.58
Personal strength / perception of future	4	0.75
Structured style	4	0.65
Social competence	6	0.67
Family cohesion	6	0.81
Social resources	7	0.77
MFI	**20**	**0.73**
General fatigue	4	0.25
Physical fatigue	4	0.49
Reduced activity	4	0.49
Reduced motivation	4	0.59
Mental fatigue	4	0.57
UCLA Loneliness (Ver. 3)	**20**	**0.85**
SAD	**14**	**0.93**
Symptoms of anxiety	7	0.86
Symptoms of depression	7	0.89
General psychological distress	12	0.92

2.4) Ethical Considerations

Before pursuing this research, approval from the ethics committee of the University of the Witwatersrand and permission from the organisations was procured (appendix 1). In order to ensure that participants were protected questionnaires were distributed with a covering letter explaining the purpose and procedure of the research as well furnishing participants with the details of the researcher. It was clearly indicated that participation was strictly voluntary and that non-participation would not lead to any unfavourable outcomes. It was clearly stated in this covering letter that submission of the questionnaire is taken as consent and subsequent withdrawal is not be possible. The covering letter also indicated that results are made available on an individual basis but a summary of results will be made available to the organisation for internal posting. In order to ensure confidentiality all questionnaires clearly stated that the participant is not to provide their name or any other identifying marks. Anonymity is therefore ensured except when electronic copies are returned due to possible personalised email addresses. However as these copies are only viewed by the researcher so that confidentiality could be ensured. On completion of the study the original questionnaires are destroyed. A password protected electronic copy of the compiled results is kept by the researcher and supervisor. The researcher and supervisor are aware of the identities of the participating organisations. These details will be kept confidential by the researcher and supervisor and have not been published.

2.5) Data Analysis

The data analysis commenced with a data preparation which consisted of substitutions for missing values, data cleaning and the testing of parametric assumptions. The data analysis outlines the statistical procedures relating to each research question.

2.5.1) Data Preparation

Substitutions for missing data. There was a total of 7830 values in the dataset excluding demographic variables. There was a total of 28 missing values that were substituted with the item average (0.36% of the data). In general averages remained the same after substitutions had been made. The most an average was changed was by 0.01. The following table is a breakdown of the where the substitutions were made:

Table 5: Substitutions

Item	**Average**	**Substituted value**	**Number of substitutions**
Resilience Scale for Adults (RSA)			
RSA 2	3.98	4	2
RSA 3	1.7	2	1
RSA 4	3.94	4	2
RSA 7	4.13	4	2
RSA 17	1.98	2	1
RSA 27	4.30	4	1
RSA 28	1.48	2 & 3	2
RSA30	1.64	2, 3 & 3	3
RSA 32	4.25	4	1
Multidimensional Fatigue Inventory (MFI)			
MFI 3	2.33	2	1
MFI 7	1.90	2	2
MFI 8	1.88	2	1
MFI 11	1.83	2	1
MFI 19	3.24	3	1
UCLA Loneliness scale (Ver.3)			
Loneliness 6	3.07	3	1
Loneliness 10	3.21	3	1
Loneliness20	3.35	3	1
Symptoms of anxiety and depression scale (SAD)			
SAD 7	0.66	1	1
SAD 8	0.72	0 & 1	2
SAD 12	0.69	1	1
TOTAL			*28*

Data cleaning. In order to check for errors, frequencies and cross-tabulations were performed. These revealed no apparent errors in the dataset.

Parametric vs. non parametric tests. In order to establish whether the use of parametric or non-parametric tests is appropriate the following three assumptions must be considered (Howell, 2004):

1. Random, independent sampling

This assumption has been met as there was an equal chance of each member of the population becoming part of the sample as questionnaires were made available to all employees within each organisation. There is independence as there is no interrelation between people in the sample and each person constitutes a discrete entity (Huck, 2004).

2. Scales of measure

The RSA, MFI, UCLA Loneliness (Ver. 3) and SAD are all on interval scales. The work context has been defined as a dichotomous variable. In terms of the demographic variables gender, home language, salary, marital status, level of education, shift pattern and motivation for working shifts are all on ordinal scales. The remainder of the demographic variables i.e. age, tenure and length of unemployment are on interval scales. This has implications as to which statistical analyses are appropriate with parametric tests only being applicable to interval scaled data (Howell, 2004). Therefore parametric tests are appropriate for the analysis of the resilience, fatigue, loneliness as well as symptoms of anxiety and depression data.

3. Normality

While the central limit theorem does state that a sample exceeding 30 tends towards normality it is imperative to make systematic investigation in order to be able to conclude whether the use of parametric or non-parametric test is appropriate (Howell, 2004). The data for the main variables had the following characteristics:

Table 6: Normality of distributions of main variables

	Resilience	**Fatigue**	**Loneliness**	**Symptoms of anxiety and depression**
Skewness	Slightly skewed right (0.28)	Not skewed (0.13)	Somewhat skewed left (-0.49)	Skewed extremely to the right (0.99)
Kurtosis	Extremely leptokurtic (4.17)	Somewhat platykurtic (-0.59)	Somewhat platykurtic (-0.43)	Acceptable kurtosis (0.26)
Kolmogorov-Smirnov	Significant $p = 0.11$	Significant $p = 0.07$	Not significant $p = 0.06$	Significant $p < 0.01$
Decision	Non-parametric tests / Parametric tests	Non-parametric tests / Parametric tests	Parametric tests	Non-parametric tests

Resilience, loneliness and fatigue all tend towards a normal pattern. This can be inferred because the data is generally not skewed and kurtosis is acceptable as these figures are close to zero indicating a normal distribution. Importantly, the Kolmogorov-Smirnov test is significant at a 5% level of significance for each of these datasets which indicates normality (Howell, 2004). It can be concluded therefore that all the assumptions for parametric testing have been met adequately met for

resilience, loneliness and fatigue. The assumptions of normality for symptoms of anxiety and depression have not been fully met as the normality assumption cannot be made. This is due to an extreme right skewing that is likely the cause of the Kolmogorov-Smirnov test being not significant (Howell, 2004). Results pertaining to this variable will therefore be interpreted more conservatively.

2.5.2) Data analysis

Once the data was prepared the following procedures were conducted to address each research question:

Research question 1: Is there a difference in the relationship between resilience and the outcome variables across the contexts?

1A: What are the relationships between resilience and the outcome variables in each context?

In order to assess whether a relationship existed between resilience and the outcomes variables i.e. fatigue, loneliness and symptoms of anxiety and depression Pearson's correlations were calculated in both call centre and hospitality context. The correlations indicate both the strength and direction of the association between two variables. A negative value indicates large values of one variable are associated with small values of another variable while a positive value indicates that large values of one variable are associated with large values of another variable (Howell, 2004). The strength of the association is interpreted using the guidelines provided by Cohen (1992). A correlation between 0 and 0.3 is weak, between 0.3 and 0.5 is moderate, between 0.5 and 0.7 is strong with over 0.7 being very strong.

In order to further investigate the relationship between resilience and the outcome variables three simple linear regression models were created for each context. The regression imposes directionality on the data and can be used as a predictive tool (Howell, 2004). It can also be used to assess direction and strength of a proposed relationship (Howell, 2004). The following three regressions were performed in both call centre and hospitality context:

Resilience → Fatigue

Resilience → Loneliness

Resilience → Symptoms of anxiety and depression

It should be noted that the sample size for a regression should meet the criteria of being ten times the number of variables (Rosenthal & Rosnow, 1991). In this case the sample size required for a regression would be 40 (4 variables x 10). Therefore, in all the cases the sample size criterion has been met. The direction of the relationship was interpreted as with the Pearson's correlation. Cohen's D was calculated to assess the effect size i.e. the strength of the relationship and this value was interpreted using the same Cohen (1992) guidelines as above. Cohen's D represents the amount of variance in the one variable that can be explained by the variance in the other. It should be noted that this will be presented as a percentage as is conventional.

1B: Is there a significant difference in the relationships between resilience and the outcome variables across the contexts?

Two independent sample t-tests were performed to see if there were any significant differences in the levels of resilience, fatigue, loneliness or symptoms of anxiety and depression between the two contexts. The corresponding Pearson correlation pairs as calculated for research question 1A were then compared statistically. The z-values derived from this calculation were tested at a 5% level of significance to ascertain whether a significant difference existed in the relationships between the two contexts (Rosenthal & Rosnow, 1991). Any z-value less than the critical value of 1.645 or greater than the critical z-value of -1.645 indicated that there was no significant

difference in the correlation pair therefore no significant difference in the relationships between the variables across the two contexts (Rosenthal & Rosnow, 1991).

Research question 2: What characterises shift work in these contexts?

2A: What do shift work patterns in the two contexts look like?

Descriptive data was collected and categorised in order to ascertain the main categories of shift work and provide some insight into the variance within each category.

2B: What are people's motivations for working shifts in these contexts?

Descriptive data was collected and categorised in order to ascertain the main categories of motivations for working shifts and provide some insight into the variance within each category.

Research question 3: Do any demographic variables have a significant relationship with any of the main variables?

3A: Do any demographic variables have a significant relationship with resilience?

Correlations for interval variables, t-tests for dichotomous variables and ANOVAs for grouped variables were performed to see if any significant relationships exist between any of the biographical factors and resilience.

3B: Do any demographic variables have any relationship with the outcome variables?

Correlations for interval variables, t-tests for dichotomous variables and ANOVAs for grouped variables were performed to see if any significant relationships exist between any of the biographical factors and the outcome variables.

Chapter 3: Results

This chapter provides a compilation of the results from the study as outlined in the methodology chapter. Firstly, a summary of the quantitative data relating to the resilience, fatigue, loneliness as well as symptoms of anxiety and depression variables is provided. The results for each research question posited by the study are then examined. This is followed by the discussion of the results which contextualises and interprets the statistical and descriptive evidence. This discussion will also highlight the limitations of the research and highlight future directions for research within this area.

3.1) Summary of the Data

The following tables provide summary statistics for each of the main variables. It is evident that there is a relatively high mean for the resilience variable (133.27) with some degree of spread. This indicated a general trend in the data to fall in the upper quartiles meaning generally higher reported resilience (Table 7). Both the fatigue (46.93) and loneliness (41.32) variables have a centred mean with a reasonable degree of spread. This spread indicates a more centred dataset (Table 8 & Table 9). The data for the symptoms of anxiety and depression variable had a mean (6.47) in the lower quartiles indicating that in general there were fewer symptoms of anxiety and depression reported (Table 10). The summary statistics for subscales are also provided below but it should be noted that as previously mentioned these are purely for descriptive purposes as internal reliabilities did not allow for statistical comparisons.

The descriptive statistics for the RSA scale were as follows:

Table 7: Summary of resilience scores (n = 90)

RSA	**Mean of total score**	**Standard Deviation**	**Average on the 5-point scale (1-5)**	**Minimum**	**Maximum**
Personal strength / perception of self (6 items)	23.87 (30)	4.04	3.98	17	30
Personal strength / perception of future (4 items)	16.18 (20)	3.68	4.05	4	20
Structured style (4 items)	14.97 (20)	3.72	3.74	4	20
Social competence (6 items)	23.74 (30)	4.47	3.97	6	30
Family cohesion (6 items)	24.04 (30)	5.00	4.01	11	30
Social resources (7 items)	30.47 (35)	4.25	4.35	18	35
Total resilience scale for adults (33 items)	**133.27 (165)**	**14.98**	**4.04**	**96**	**165**
Total resilience scale for adults in call centres (33 items)	***131.33 (165)***	***16.00***	***4.00***	***98***	***165***
Total resilience scale for adults in hospitality context (33 items)	***134.38 (165)***	***14.18***	***4.07***	***96***	***165***

High score = high resilience

Low score = low resilience

The descriptive statistics for the MFI scale were as follows:

Table 8: Summary of fatigue scores (n = 90)

MFI	**Mean of total score**	**Standard Deviation**	**Average on the 5-point scale (1-5)**	**Minimum**	**Maximum**
General fatigue (4 items)	9.90 (20)	3.09	2.48	4	16
Physical fatigue (4 items)	8.84 (20)	3.26	2.21	4	17
Reduced activity (4 items)	8.61 (20)	3.27	2.15	4	16
Reduced motivation (4 items)	10.77 (20)	2.44	2.69	4	18
Mental fatigue (4 items)	8.81 (20)	3.15	2.20	4	18
Total multidimensional fatigue inventory scale (20 items)	**46.93 (100)**	**10.31**	**2.35**	**24**	**72**
Total multidimensional fatigue inventory scale in call centres (20 items)	***47.73 (100)***	***10.87***	***2.39***	***24***	***72***
Total multidimensional fatigue inventory scale in hospitality context (20 items)	***46.30 (100)***	***9.92***	***2.32***	***31***	***68***

High score = high fatigue

Low score = low fatigue

The descriptive statistics for the UCLA Loneliness (Ver. 3) scale were as follows:

Table 9: Summary of loneliness scores (n = 90)

	Mean of total score	**Standard Deviation**	**Average on the 4-point scale (1-4)**	**Minimum**	**Maximum**
Total UCLA Loneliness (Ver. 3) (20 items)	**41.32 (80)**	**8.34**	**2.07**	**23**	**64**
Total UCLA Loneliness (Ver. 3) in call centres (20 items)	***41.0 (80)***	***8.43***	***2.05***	***23***	***64***
Total UCLA Loneliness (Ver. 3) in hospitality context (20 items)	***41.26 (80)***	***8.36***	***2.063***	***25***	***56***

High score = high loneliness

Low score = low loneliness

The descriptive statistics for the SAD scale were as follows:

Table 10: summary of symptoms of anxiety and depression scores (n = 90)

SAD	**Mean of total score**	**Standard Deviation**	**Average on the 4-point scale (0-3)**	**Minimum**	**Maximum**
Symptoms of anxiety (7 items)	6.47 (21)	5.02	0.92	0	20
Symptoms of depression (7 items)	4.94 (21)	5.24	0.71	0	20
General psychological distress (12 items)	9.44 (36)	8.46	0.79	0	33
Total symptoms of anxiety and depression scale (14 items)	**11.41 (42)**	**9.80**	**0.82**	**0**	**38**
Total symptoms of anxiety and depression scale (14 items) in call centre	***10.10 (42)***	***8.87***	***0.72***	***0***	***35***
Total symptoms of anxiety and depression scale (14 items) in hospitality context	***12.46 (42)***	***10.46***	***0.89***	***0***	***38***

High score = high symptoms of anxiety and depression
Low score = low symptoms of anxiety and depression

Summary of the data by context can be found in appendix five.

3.2) Results by Research Question

The outlined statistical analyses used to investigate the research questions have been performed using SAS Enterprise Guide 3.0 (SAS Institute Inc, 2004). The following results correspond to the previous numbering of the stated research questions. It should be noted that due to the low response rates reported earlier statistics that consider the relationships between variables rather than the differences between groups have been focused on. This is because relationships have been shown not to be as strongly affected by low response rates.

3.2.1) Research question 1: Is there a difference in the relationship between resilience and the outcome variables across the contexts?

1A: What are the relationships between resilience and the outcome variables in each context?

Call Centre Context

Correlations. Pearson's correlations were performed to assess the relationships between variables within the call centre context (Table11). It was found that all correlations barring that between loneliness and symptoms of anxiety and depression were significant. The correlations between each of the outcome variables and resilience were negative. This implies that larger values of resilience are associated with smaller values of the outcome variables. The correlations between outcome variables were positive which shows that larger values of one outcome variable are associated with larger values of another outcome variable.

Table 11: Correlations between variables in call centre context (n=40)

	Pearson correlation coefficients *P-value*			
	Resilience	**Fatigue**	**Loneliness**	**Symptoms of anxiety and depression**
Resilience	1.00	-	-	-
Fatigue	-0.52 *0.005**	1.00	-	-
Loneliness	-0.37 *0.01**	0.30 *0.05***	1.00	-
Symptoms of anxiety and depression	-0.36 *0.02***	0.31 *0.05***	0.25 *0.12*	1.00

Significant at α=0.01*
Significant at α=0.05**

Regressions. In order to further investigate the relationship between resilience and the outcome variables a linear regression models were created utilising the call centre context data (Table 12). The relationship was found to be negative which implies that large values of resilience are associated with small values of negative well-being outcomes and small values of resilience are associated with large values of

negative well-being outcomes. The amount of variance in outcomes explained is represented by R^2. This value indicates the percentage of variation in the outcome variable that can be explained by variation in resilience. Kline (1994) states that an effect size of 0 to 10% is considered weak, an effect size of 10% to 25% is considered moderate, an effect size of 25% to 50% is considered strong and an effect size greater than 50% is considered to be very strong.

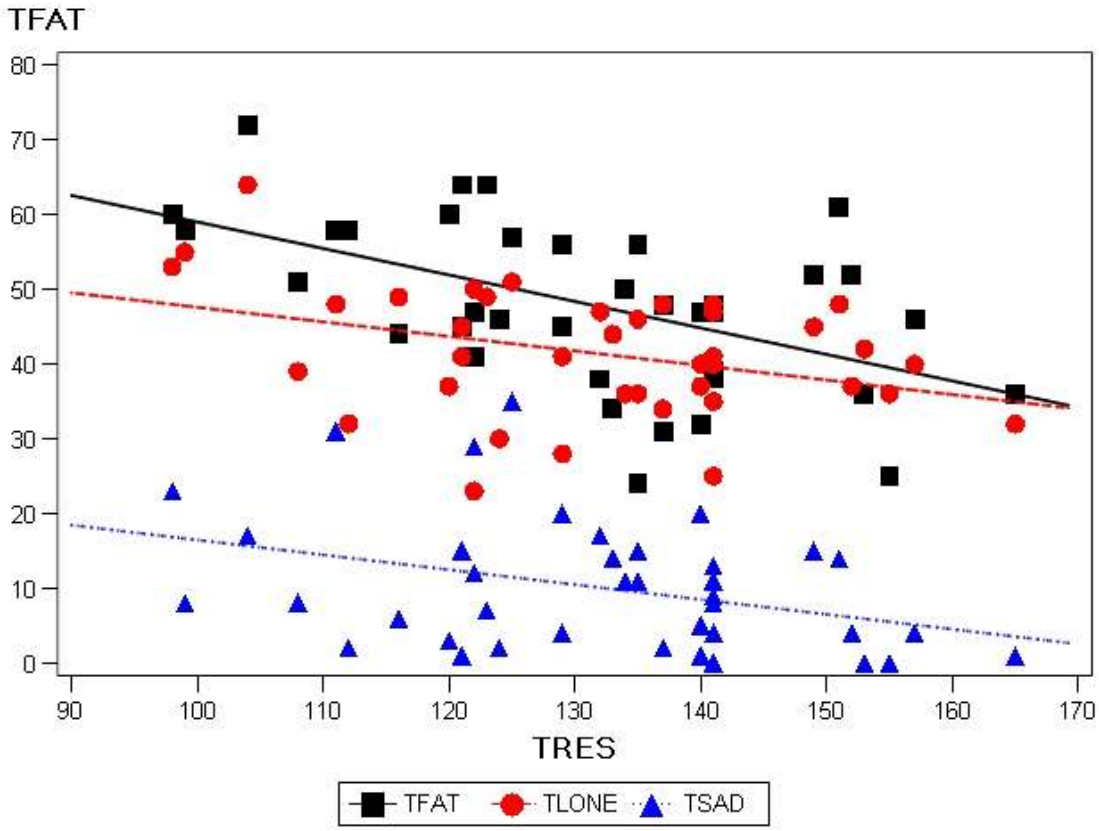
Table 12: Regression of resilience (IV) against each outcome variable (DV) in call centre context (n = 40)

Outcome variables	**f-value** ***p-value***	**Regression equation**	**R^2**
Fatigue	$F_{(1,38)} = 14.25$ *0.0005**	Fatigue = 168.57 – -0.77 (Resilience) + $Є_i$	27%
Loneliness	$F_{(1,38)} = 6.02$ *<.0189**	Loneliness = 160.93 – 0.70 (Resilience) + $Є_i$	14%
Symptoms of anxiety and depression (SAD)	$F_{(1,38)} = 5.62$ *0.0230***	SAD = 138.41 – 0.65 (Resilience) + $Є_i$	13%

*Significant at α=0.01**

*Significant at α=0.05***

The following diagram below is a plot of the three regression equations outlined in Table 12. The diagram is a graphic illustration of the three relationships in the call centre context namely between resilience and fatigue, resilience and loneliness as well as resilience and symptoms of anxiety and depression.



Source: SAS Enterprise guide 3.0

Figure 7: Regression of resilience (IV) against each outcome variable (DV) in call centre context (n = 40)

Hospitality Context

Correlations. Pearson's correlations were performed to assess the relationships between variables within the hospitality context (Table 13). It was found that all correlations were significant. The correlations between each of the outcome variables and resilience were negative. This implies that larger values of resilience are associated with smaller values of the outcome variables. The correlations between

outcome variables were positive which shows that larger values of one outcome variable are associated with larger values of another outcome variable.

Table 13: Correlations between variables in hospitality context (n=50)

	Pearson correlation coefficients *P-value*			
	Resilience	**Fatigue**	**Loneliness**	**Symptoms of anxiety and depression**
Resilience	1.00	-	-	-
Fatigue	-0.38 *0.006**	1.00	-	-
Loneliness	-0.50 *0.0002**	0.43 *0.002**	1.00	-
Symptoms of anxiety and depression	-0.30 *0.03***	0.48 *0.0004**	0.42 *0.002**	1.00

Significant at α=0.01*

Significant at α=0.05**

Regressions. In order to further investigate the relationship between resilience and the outcome variables a linear regression models were created utilising the hospitality context data (Table 14). The relationship was found to be negative which implies that large values of resilience are associated with small values of negative well-being outcomes and small values of resilience are associated with large values of negative well-being outcomes. The amount of variance in outcomes explained is represented by R^2. This value indicates the percentage of variation in the outcome variable that can be explained by variation in resilience. Kline (1994) states that an effect size of 0 to 10% is considered weak, an effect size of 10% to 25% is considered moderate, an effect size of 25% to 50% is considered strong and an effect size greater than 50% is considered to be very strong.

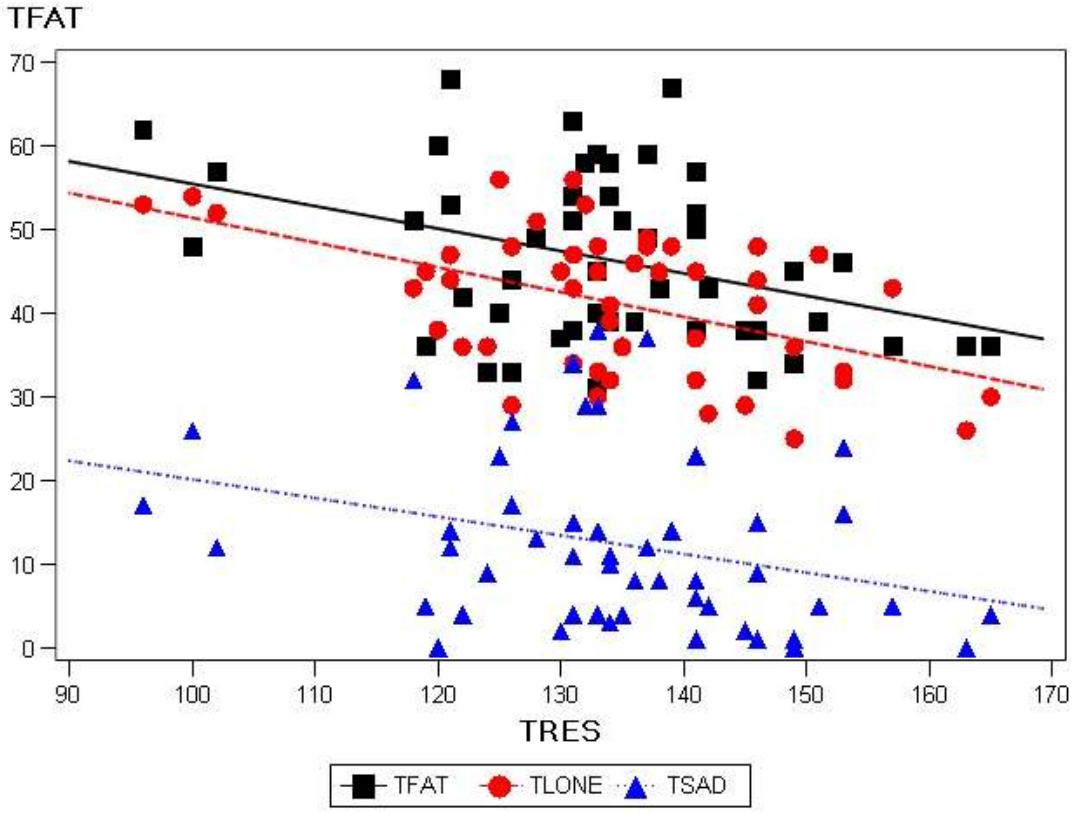
Table 14: Regression of resilience (IV) against each outcome variable (DV) in hospitality context (n = 50)

Outcome variables	**f-value** ***p-value***	**Regression equation**	**R^2**
Fatigue	$F_{(1,48)} = 8.27$ *0.0060**	Fatigue = 159.75 – 0.55 (Resilience) + $Є_i$	15%
Loneliness	$F_{(1,48)} = 16.24$ *0.0002**	Loneliness = 169.58 – 0.85 (Resilience) + $Є_i$	25%
Symptoms of anxiety and depression (SAD)	$F_{(1,48)} = 4.84$ *0.0327***	SAD = 139.49 – 0.41 (Resilience) + $Є_i$	9%

Significant at α=0.01*

Significant at α=0.05**

The following diagram below is a plot of the three regression equations outlined in Table 14. The diagram is a graphic illustration of the three relationships in the hospitality context namely between resilience and fatigue, resilience and loneliness as well as resilience and symptoms of anxiety and depression.



Source: SAS Enterprise Guide 3.0

Figure 8: Regression of resilience (IV) against each outcome variable (DV) in hospitality context (n = 50)

Summary. The correlations performed as per Table 11 revealed that resilience had a much stronger association with fatigue (-0.58) than with loneliness (-.037) or symptoms of anxiety and depression (-0.37) in the call centre context (Cohen, 1992). In the hospitality context as per Table 13 it was found that resilience had a much stronger association with loneliness (-0.50) than with fatigue (-0.38) or symptoms of anxiety and depression (-0.30) (Cohen, 1992).

The regressions revealed a similar pattern when considering the relative percentages of variance in resilience explained by fatigue, loneliness as well as symptoms of anxiety and depression. These percentages of variance explained were interpreted using the guidelines of Rosenthal & Rosnow (1991). In the call centre context

resilience most strongly predicted fatigue (27%), followed by loneliness (14%) then symptoms of anxiety and depression (13%) (Table 12). Resilience was found to be a moderate to strong predictor of fatigue and a moderate predictor of loneliness as well as symptoms of anxiety and depression (Rosenthal & Rosnow, 1991). In the hospitality context resilience most strongly predicted loneliness (25%), followed by fatigue (15%) and then symptoms of anxiety and depression (9%) (Table 14). Resilience was found to be a strong predictor of loneliness, a moderate predictor of fatigue and a weak predictor of symptoms of anxiety and depression (Rosenthal & Rosnow, 1991).

1B: Is there a significant difference in the relationships between resilience and the outcome variables across the contexts?

T-tests. The two independent sample t-tests performed revealed no significant differences in the levels of either resilience, fatigue, loneliness or symptoms of anxiety and depression across the contexts.

Correlation comparisons. Correlations were compared across contexts by first concluding a z transformation of each correlation and then statistically comparing these z values.

The formula for the z transformation for correlations within the hospitality context was as follows:

$$Zr_h = \tfrac{1}{2} \{ln\,(1+r_h) - ln\,(1-r_h)\}$$

The formula for the z transformation for correlations within the call centre context was as follows:

$$Zr_c = \tfrac{1}{2} \{ln\,(1+r_c) - ln\,(1-r_c)\}$$

The formula used to statistically compare the correlations from the hospitality context to the correlations within the call centre context was as follows:

$$Z = \frac{Zr_h - Zr_c}{\sqrt{\frac{1}{n_h-3} + \frac{1}{n_c-3}}}$$

When the correlations between each main variable were compared statistically across contexts the z-values were not significant at a 5% level of significance (Table 15). This suggests that there were no significant differences between the correlations found in the call centre context and the correlations found in the hospitality context. The following Table presents the z-values for each pair of compared correlations:

Table 15: z-values for correlations comparison across contexts

	z-values			
	Resilience	**Fatigue**	**Loneliness**	**Symptoms of anxiety and depression**
Resilience		-	-	-
Fatigue	0.7984		-	-
Loneliness	-0.7503	0.63305		-
Symptoms of anxiety and depression	-0.28720	0.9044	0.904	

3.2.2) Research question 2: What characterises shift work in these contexts?

2A: What do shift work patterns in the two contexts look like?

As shown by the literature a myriad of shift patterns exist across shift work contexts. The participants from the call centre context were likely to be working a similar shift pattern to those of colleagues within their organisation however these still varied. The hospitality context showed little uniformity in shift patterns within organisations, within the same hotel chain or across similar roles. Participant's responses were classified into the broad categories below.

Morning Shift

Fourteen participants (16%) indicated that they worked a permanent morning shift which included the following patterns:

- 6:00 – 12:00 One day off every 5 days. Saturdays and Sundays off once a month. Weekend shifts often finish later
- 06:30 - 13:00 (Monday to Saturday) & 06:30 - 14:00 (Sundays)
- 5:30 – 12:00 / 6:00 - 12:30. Total shift = 6.5 hours with two 15 minute breaks at 7:00 & 8:45
- 06:30 – 13:00. 4 days a week. Work weekends & holidays.

Day Shift

Seven participants (8%) indicated that they worked a permanent day shift which included the following patterns:

- 08:00 to 14:30. Weekends and holidays
- Day shift plus 2 weekends per month
- 7:00 to 16:00 weekdays and weekends

Night Shift

Twelve participants (13%) indicated they worked a permanent night shift which included the following patterns:

- 17:00 – 23:30
- 22:00 – 7:00

Varied Shifts

Ten participants (11%) indicated that their shifts varied substantially with needs of the business. Their work included long hours and weekends and the patterns were referred to as 'erratic.'

Rotating Shifts

Forty seven participants (52%) of participants worked a schedule of rotating shifts. This was the most dominant shift form which came in a substantial number of variations including:

- Consists of two shifts (6:00 – 15:00 & 15:00 – 23:00)
- Consists of two shifts (6:00 – 14:00 & 14:00- 22:00) rotated weekly
- Consists of two shifts (6:00 – 15:00 & 14:00 – 23:00) 5 days a week
- Consists of two shifts (5:30 – 14:00 & 13:00 – 22:30) with shifts randomly selected, 6 days and 1 weekend off per month
- Consists of two shifts (7:00 – 16:00 & 15:00 – 23:00) with allocated shifts, 5 days working followed by 2 days off
- Consists of two shifts (7:00 – 16:00 & 14:00 – 23:00)
- 2 weeks early (9:00 – 18:00) and 2 weeks late (14:00 – 21:00)
- Consists of three shifts (6:30 – 15:00 & 14:30 – 23:00 weekdays and 10:00 – 19:00 weekends)
- Consists of three shifts (7:00 - 15:00, 10:00 - 19:00 and 15:00- 23:00)
- Consists of three shifts (6:00 – 15:00, 15:00 – 23:00 and 23:00 – 7:00)
- Two shifts (whole day or 15:00 till end of a function)
- Consists of two shifts (9:00 – 18:00 and 11:00 – 20:00)
- 6 days early shift (6:00 – 15:00), two days off, 6 days late shift (15:00 – 23:00) then 2 days off
- Consists of three shifts (9:00 – 18:00, 10:00 – 19:00 and 11:00 – 20:00)
- Consists of three shifts (9:00 – 18:00, 10:00 – 19:00 and 11:00 – 20:00) rotated on a weekly basis. Double shifts may be worked.

The frequencies of responses in each category namely morning, day, night, varied and rotating were compared statistically across the call centre and hospitality context using a Kruskall-Wallis test. No statistical differences were found at a 5% level of significance ($p = 0.11$). Therefore the combined dataset has been presented.

2B: What are people's motivations for working shifts in these contexts?

Participant's responses were classified into the broad categories below.

Economic Motivation

Twenty one participants (24%) indicated that their primary motivation for working shifts was economic. Participants comments included that their primary motivation was 'money because the more hours you work the more you can earn to provide for your family's financial needs especially school and university' and that this was despite the fact that 'working shifts means I cannot have time to fulfil my ambition because when I get home I feel very tired and hopeless due to long working hours.' Many participants referred to an extra 'shift allowance', money for overtime and the pay being more. One participant said that working shifts allowed her to supply a home industry with crafts which gave her extra income.

Allows Time to Pursue Studies

Twenty five participants (29%) indicated that their primary motivation for working shifts was that it allowed them time to pursue further studies. Many said that working shift allowed them time to attend classes, complete assignments or practicals. One participant indicated that 'because of lack of resources you get more money and more time to study when there is enough time after shifts.' Another participant commented that 'I would like to leave the industry some day or as soon as I get my degree and get another job. My current job is too physical and costly emotionally. I do love it but it is tiring.'

Allows Flexibility for Childcare

Four participants (5%) indicated that their primary motivation for working shifts was that it allowed flexibility for childcare. The comments said that it allowed more time with family and increased flexibility for completing household tasks.

Lack of Alternatives

Twenty participants (23%) indicated that they work shifts for lack of alternatives. An example of a comment is:

> 'Working shifts one loses personal freedom, you seldom enjoy the things that life brings and on top of it there is nothing you can do, you have no choice but being controlled by the futures you pursue in your job.' and 'When you work a late shift you get tight. You sleep and when you wake up you prepare yourself for another shift. You can't study while you're tight. I can't save money while I work shifts because during the night I pay extra for transport.'

The comments expressed the fact that often there was often little choice involved and it was simply a function of the industry and a lack of alternate job options that led many people to work shifts.

Other

Eight participants (9%) indicated reasons other than the above categories for working shifts. Comments included 'I don't like working Monday – Friday 8:00 – 17:00 jobs are very boring for me'; 'Shifts allow me to have free time during the week – also you cannot get a job in a hotel that does not involve shifts' and 'I've chosen to work in the hospitality industry because of my passion for hotels and working with people. Don't see myself working in another sector. At the moment I'm working myself up to more convenient shifts.' These responses seem to indicate that shifts can be a personal preference and that dedication to an industry means that shifts may be accepted as an

integral element. It is important to note that a percentage of people feel positively about working shifts even though the percentage is relatively small in this case.

Combination of Factors

Nine participants (10%) indicated a combination of factors that had led them to work shifts. In nearly all of these cases economic reasons featured as a motivation. Other categories combined with the economic motive included time to pursue studies, lack of lack of alternatives and flexibility for childcare.

It should be noted that participants over and above indicating their primary motivation participants often added qualifications such as ‘other than that shifts is not good for me’ or ‘but I had to adjust to shifts which was difficult.’

The frequencies within these categories were compared statistically across the call centre and hospitality context using a Kaskal-Wallis test and no statistical differences were found at a 5% level of significance ($p = 0.70$). Therefore the combined dataset has been presented. Table 16 shows the exact frequency of responses in each motivational category by context.

Table 16: Frequency of responses in each motivational category by context

Frequency	**Call centre**	**Hospitality**
Economic	11	10
Time to pursue studies	13	12
Allows flexibility for childcare	3	1
Lack of alternatives	11	9
Other	0	8
Combination of factors	2	7

3.2.3) Research question 3: Do any demographic variables have a significant relationship with any of the main variables?

3A: Do any demographic variables have a significant relationship with resilience?

Resilience correlated significantly with age, tenure and length of previous unemployment (Table 17). These correlations were all weak and positive (Howell, 2004). This implies that larger values of age, tenure and length of previous unemployment are to some extent associated with larger values of resilience. A t-test showed no significant difference in levels of resilience across gender (Table 18). A t-test also showed no significant difference in resilience between employees who had been unemployed previously to taking their current job and employees who had not been unemployed previously to taking their current job (Table 18). ANOVAs showed that levels of resilience were not significantly different across the grouping for home language, number of dependants, marital status, level of education, salary, shift pattern and motivation for working shifts (Table 19).

3B: Do any demographic variables have any relationship with the outcome variables?

Tenure had significant correlations with fatigue and symptoms of anxiety and depression (Table 17). These correlations, -0.26 and -0.12 respectively, were weak and negative implying that longer tenure is somewhat related to smaller values of fatigue and symptoms of anxiety and depression (Howell, 2004). Length of previous unemployment had significant correlations with loneliness (Table 17). This correlation, -0.11, was weak and negative and implies that longer lengths of unemployment prior to taking the current job were weakly associated with lower levels of loneliness (Howell, 2004). Age showed a significant correlation with fatigue

and loneliness (Table 17). The correlation of age with fatigue, -0.34, was moderate and negative which implies that higher values of age are associated with lower values of fatigue (Howell, 2004). The correlation of age with loneliness, -0.22, was weak which implies that higher values of age are to some extent associated with lower values of loneliness.

No significant differences were found between genders on any of the outcome variables (Table 18). Significant differences were also not present in the outcome variables between employees who had been unemployed previously to taking their current job and employees who had not been unemployed previously to taking their current job (Table 18). Fatigue was found to be significantly affected by shift pattern to some degree (Table 19). Fatigue was found to be higher in employees working rotation and night as compared to those working day shifts (Table 20). The effect was small to medium. Loneliness was also found to be significantly affected by marital status (Table 19). Specifically, loneliness was found to be higher in the unmarried group than in the married group (Table 20). This effect was small to medium (Howell, 2004). No other significant difference were found between home language, number of dependants, marital status, level of education, salary, shift pattern or motivation for working shifts groups on any of the outcome variables (Table 19).

Table 17: Pearson's correlations between interval-scaled demographics and main variables

		MAIN VARIABLES Spearman correlations coefficients *p-value* *Number of observations*			
		Resilience	**Fatigue**	**Loneliness**	**Symptoms of anxiety and depression**
INTERVAL-SCALED DEMOGRAPHIC VARIABLES	**Tenure**	0.233* *p=0.0400* *78*	-0.26* *p=0.0211* *78*	-0.17 *p=0.1330* *78*	-0.12* *p=0.3002* *78*
	Length of unemployment	0.23* *p=0.0380* *83*	-0.04 *p=0.7068* *83*	-0.11* *p=0.3100* *83*	0.005 *p=0.9598* *83*
	Age	0.22* *p=0.0462* *81*	-0.34** *p=0.0017* *81*	-0.22* *p=0.0472* *81*	-0.18 *p=0.1089* *81*

* Weak correlation significant at α=0.05

** Moderate correlation significant at α=0.05

Table 18: T-tests comparing means of dichotomous demographic for each main variable

Main Variables	**Dichotomous Demographics**	**t-value**	**p-value**	**Significance at α=0.05**
Resilience	Gender *(n_1=36, n_2=52)*	$t_{73.6}$=0.94	0.3444	Not significant
	History of unemployment *(n_1=33, n_2=53)*	$t_{65.6}$=0.97	0.3333	Not significant
Fatigue	Gender *(n_1=36, n_2=52)*	$t_{79.9}$=-1.37	0.1754	Not significant
	History of unemployment *(n_1=33, n_2=53)*	$t_{73.2}$=-0.24	0.8135	Not significant
Loneliness	Gender *(n_1=36, n_2=52)*	t_{78}=-0.92	0.3582	Not significant
	History of unemployment *(n_1=33, n_2=53)*	$t_{67.7}$=-0.21	0.8307	Not significant
Symptoms of anxiety and depression	Gender *(n_1=36, n_2=52)*	t_{86} = 0.1323	0.1323	Not significant
	History of unemployment *(n_1=33, n_2=53)*	t_{84}=-0.49	0.6273	Not significant

* Significant at α=0.05

Table 19: ANOVAs comparing levels of grouped variables for each main variable

Main Variables	**Grouped Demographics**	**f-value**	**p-value**	**Significance at α=0.05**
Resilience	Language *(n= 89)*	$f_{4,84}$=0.35	0.8458	Not significant
	Dependants *(n=90)*	$f_{6,83}$=1.48	0.1943	Not significant
	Marital status *(n=90)*	$f_{2,87}$=2.16	0.1212	Not significant
	Education *(n=90)*	$f_{2,87}$=0.78	0.4634	Not significant
	Salary *(n=79)*	$f_{4,74}$=0.33	0.8553	Not significant
	Shift pattern *(n=90)*	$f_{4,85}$=2.42	0.0546	Not significant
	Motivation for working shifts *(n=87)*	$f_{5,81}$=0.42	0.8318	Not significant
Fatigue	Language *(n=89)*	$f_{4,84}$=1.54	0.1981	Not significant
	Dependants *(n=90)*	$f_{6,83}$=1.07	0.3848	Not significant
	Marital status *(n=90)*	$f_{2,87}$=1.80	0.1721	Not significant
	Education *(n=90)*	$f_{2,87}$=0.39	0.6807	Not significant
	Salary *(n=79)*	$f_{4,74}$=0.79	0.5351	Not significant
	Shift pattern *(n=90)*	$f_{4,85}$=2.97	0.0240	Significant *
	Motivation for working shifts *(n=87)*	$f_{5,81}$=1.68	0.1489	Not significant
Loneliness	Language *(n=89)*	$f_{4,84}$=0.16	0.9596	Not significant
	Dependants *(n=90)*	$f_{6,83}$=1.98	0.0783	Not significant
	Marital status *(n=90)*	$f_{2,87}$=4.21	0.0179	Significant*
	Education *(n=90)*	$f_{2,87}$=0.50	0.6083	Not significant
	Salary *(n=79)*	$f_{4,74}$=1.93	0.1140	Not significant
	Shift pattern *(n=90)*	$f_{4,85}$=1.07	0.3762	Not significant
	Motivation for working shifts *(n=87)*	$f_{5,81}$=0.43	0.8275	Not significant

Symptoms of anxiety and depression	Language *(n=89)*	$f_{4,84}$=0.45	0.7755	Not significant
	Dependants *(n=90)*	$f_{6,83}$=0.32	0.9222	Not significant
	Marital status *(n=90)*	$f_{2,87=}$0.36	0.6959	Not significant
	Education *(n=90)*	$f_{2,87}$=2.30	0.1065	Not significant
	Salary *(n=79)*	$f_{4,74}$=0.60	0.6661	Not significant
	Shift pattern *(n=90)*	$f_{4,85}$=1.13	0.3500	Not significant
	Motivation for working shifts *(n=87)*	$f_{5,81}$=0.22	0.9530	Not significant

* See post-hoc (table 20)

*Table 20: Post hoc results for significant ANOVAs comparing levels of grouped variables for each main variable

Main variables	**Grouped variables**	**Group differences**	**Direction**	**Effect size (Cohen's D)**
Fatigue	Shift pattern	Day and rotation	Loneliness higher in rotation	Small effect (0.38)
		Day and night	Loneliness higher in rotation	Small effect (0.26)
Loneliness	Marital status	Married and unmarried	Loneliness higher in unmarried	Small effect (0.37)

3.3) Summary of results

The results presented have shown that the relationship between variables is different across contexts. The correlations and regressions revealed significant and unique patterns of association within each context. Specifically, in the call centre context the strongest association was between resilience and fatigue while in the hospitality context the strongest association was between resilience and loneliness. The weakest association in both contexts was between resilience and symptoms of anxiety and depression. Further analyses however failed to prove any significant differences in the relationships across the two contexts.

The highest motivating factor for working shifts was found to be time to pursue studies. This was followed closely by an economic motivation and the assertion that there was simply a lack of alternatives. A lesser percentage indicated a combination of these factors. A smaller percentage cited other reasons which were more positive for working shifts. A very small percentage indicated that working shifts allowed flexibility for childcare. The most overwhelmingly common shift pattern was rotating shifts whereby employees alternates between earlier and later shifts according to a fixed pattern. Smaller percentages worked fixed early morning, fixed night or completely erratic schedules dictated by business needs. The smallest percentage worked a fixed day shift.

There were a few demographics that were found to be impactful on levels of resilience. These included age, tenure and length of unemployment prior to taking current position. Age, marital status and length of unemployment prior to taking current position were found to have an impact on loneliness. Tenure, age and shift pattern were found to be impactful on fatigue. Tenure was found to be impactful on symptoms of anxiety and depression. The effect of the demographics on the main variables was small but significant in each of these cases.

3.4) Discussion

The results that have been presented provide evidence of a descriptive and relational nature to justify assertions made in the following discussion. These assertions are expanded relative to the empirical evidence presented in the theoretical and conceptual background. Firstly, the unique case for each context will be presented as well as compared and contrasted. Secondly, the descriptive evidence relating to shift patterns and motivations for working shifts will be explored and compared with international samples. Finally, the impact of demographics will be carefully examined and related to the relevant literature.

3.4.1) Shift Work in Call Centres

There is a plethora of mounting evidence which has been covered in the theoretical and conceptual background that suggests a typical call centre environment is innately detrimental to the well-being of employees (examples: Holman, 2002; Holman, 2005; Mascia *et al*, 2000; Miller & Fisher, 2005; Taylor & Bain, 1999). This evidence suggests that the work design is restrictive and the overarching management philosophy tends to have Tayloristic undertones (Mascia *et al*, 2000). Another body of evidence surrounding shift work has projected that shift work is associated with undermined well-being on a physical, social and psychological level (Costa, 2003). This research aims to consolidate these two disparate bodies of evidence with the presentation of relational and descriptive evidence to suggest a unique case in call centre shift work.

The relational evidence presented in this study suggests that a resilient predisposition within operators is able to ward off fatigue to a moderate degree. However, it was found that resilience was markedly less able to predict the ability of operators to offset loneliness as well as symptoms of anxiety and depression. The descriptive evidence suggests that while shifts worked by call centre operators are outside of normal working hours these shifts are usually restricted to a certain number of hours per day varying between five and eight. It seems that more resilient individuals are therefore

more able to adapt their lifestyles around the shifts in order to counter the effects of fatigue. However, this study shows that more resilient individuals employed in this context are not as easily able to counter the effects of loneliness.

The empirical evidence in the call centre context has found that personal interactions at work are oftentimes extremely limited (Holman, 2005). Operators are expected to perpetually answer or make call after call. This *status quo* is maintained using electronic performance monitoring (EPM) which is able to produce exact records of call volumes processed, call durations and call content (Holman, 2005). There is a tendency to emphasize quantity within call centres in the present paradigm leading management to use the EPM data to ensure that employees no not deviate from high call targets (Mascia *et al*, 2000). These targets often force employees to forgo comfort breaks and interpersonal interactions with colleagues under the pressure to perform (Taylor & Bain, 1999). Furthermore, the interaction with the customer is not at a level of interpersonal communication. This can be said as the interaction is electronically mediated and responses from operators are often partially scripted and limited to within strict parameters (Holman, 2005). The overall effect is that operators are socially excluded during working hours. This situation may be exacerbated by shift work patterns that can limit regular time periods of interactions with friends and family.

3.4.2) Shift Work in the Hospitality Industry

The comparison context provided evidence that different patterns of relationships are evident across shift work contexts. Specifically, contrary to the call centre context, resilience had a stronger power of prediction for loneliness than for fatigue or symptoms of anxiety and depression. These results are congruent with the descriptive information gathered pertaining to these contexts. While shifts in the call centre context are a maximum of eight hours and sometimes shorter, the hours in the hospitality industry were found to be far more erratic. Furthermore, many reported working shifts extending longer than eight hours and there were reports of working shifts back to back. It seems therefore justified to state that resilience becomes less

effective as fatigue becomes more intense. However, it was also found that resilience was a better predictor of loneliness. This is evidence that the effects on the social level are more easily mitigated in those individuals with a resilient predisposition working in this context. Unlike, in the call centre context there is more opportunity for social interaction in the hospitality industry. Responses are less scripted and not electronically mediated at the core. Furthermore, interactions between employees are commonplace and are often not only on a social but also on a professional level due to interdependent functions. Therefore a more resilient individual will be more able to counter the effects of limited personal time with family and friends with meaningful social interactions at work.

3.4.3) Characteristics of the Shift Work Contexts

Shift work patterns reported were exceptionally varied and included 24 different set patterns with day, night as well as rotating schedules and erratic schedules also being reported that were dictated by business needs. Overall, 16% reported working a morning shift, 8% a day shift, 13% a night shift, 11% varied shifts and 52% rotating shifts. This is in line with international statistics that report shift patterns as having exceptional variance with over 10 000 schedules being used worldwide the only difference of interest is that a larger majority reported working rotating shifts when compared with American statistics (Caruso *et al*., 2004; McMenamin, 2007). The variety of shift patterns is significant as the outcomes of shift work on well-being are affected by length of shift, starting times of shifts, fixed vs. rotating schedules, frequency of rotation, direction of rotation, number of hours worked per week, number of consecutive days worked, number of rest days and number of weekends off (Caruso *et al*., 2004).

Length of shift is of particular interest when considering shift work patterns as this has been highlighted as an important determinant of well-being at work (Fletcher & Dawson, 1997). The shifts in this study ranged from six to nine hours with an overwhelming majority reporting an eight or nine hour shift. This is in line with norms and legislation within the South African context. Shifts within the South

African context are long by international standards (Horwitz & Smith, 1998). While legislation limits shifts to nine hours formally, in practice shifts often extend beyond this time frame (Bendix, 2005). In this study, especially in the hospitality industry, it was reported that despite having set shifts employees often worked longer hours and employees worked back to back shifts which is expressly contrary to legislation (Bendix, 2005). Length of shift has significant implications, specifically for extended and long shifts which have been associated with lower cognitive functioning, decreased alertness, fatigue, higher incidence of injury and lower reported affective well-being at work (Caruso *et al.*, 2004).

Start times of shifts are important as this determines the degree to which normal circadian rhythms are interfered with by the shift pattern. Studies into sleep patterns have, for example, found that better quality of sleep occurs at night (Fletcher & Dawson, 1997). Sleep occurring during the day tends to be less restful and restorative as it is opposing the natural order (Fletcher & Dawson, 1997). Innate patterns of the release of sleep hormones such as melatonin and cortisol as well as bodily temperature fluctuations are the physiological mechanisms by which the circadian rhythm of sleep is perpetuated (Fletcher & Dawson, 1997). Thus, adaptation to different sleep patterns is difficult and often leads to fatigue in people who disrupt their circadian rhythms for extended periods of time such as those working night shifts (Fletcher & Dawson, 1997). There was evidence in the present study that fatigue was higher in those working rotating and night shifts when compared to those working day shifts. This result is concurrent with the fatigue literature and is a reflection of the greater extent to which these shift patterns interfere with the circadian sleep rhythm (Akerstedt, 1998).

Different shift patterns have advantages and drawbacks which mean that there is no optimal shift work pattern. Rather there are patterns that are more favourable to employee well-being. A ten year review of the literature investigating the effects of night shifts on nurses revealed a consistent pattern of higher adverse psychological and physiological effects when rotating rather than fixed night shift schedules were in

place (Muecke, 2005). Studies of shift systems are however not in full agreement about the merits of fixed over rotating schedules. Some argue that fixed shifts are superior while others argue that a system of rapidly rotating shifts is superior. The literature does, however, consistently find that rotating and night shifts are more detrimental to well-being than other types of shifts (Jamal & Vishwanath, 1997). There is also agreement that night work should be restricted, consecutive rest days are essential, extended workdays (9-12 hours) should be limited to environments where the workload is suitable and no more than seven consecutive days should be worked (Knauth, 1993; Wilkinson, 1992).

The statistics found in this study of motivation for working shifts were drastically different to the results of the survey conducted on 21 762 shift workers in America (McMenamin, 2007). In this study, the largest proportion of respondents reported that working shifts allowed time to pursue studies and this was closely followed by the proportion that were economically motivated and the proportion that reported having a lack of other options. This differs vastly from American statistics that found that the greatest proportion, constituting close to half, reported that shifts were the nature of the job with much smaller proportion reporting they were motivated by time for school, better pay or as they could not get any other job (McMenamin, 2007). The only similar proportions were of those that responded that working shifts allowed a better arrangement for child or family care with these proportions being low (McMenamin, 2007).

These results are reflective both of the broader South African context as well as the specific shift work contexts examined in this study. The high unemployment rates within the country result in people seeking out and remaining in employment that may not be desirable to them. A job's merit often therefore lies solely in its explicit returns rather than implicit value. For some, the economic returns working shift work were greater than that for working non-shift work. For some, the returns allowed them sufficient resources to further their education thus enabling them to be more in demand in an exceptionally competitive job market. For some it was a simple fact that

the return of employment was greater than that of unemployment. It was only a small minority that reported that the arrangement suited them due to personal preference or flexibility for family and child-care.

The characteristics of the work contexts are just as salient in the explanation of these radically different patterns of motivations. The empirical evidence from the theoretical and conceptual background has associated the work contexts in this study with low levels of core job characteristics (Holman, 2005; Lee-Ross, 1995). In particular skill variety, task significance, task identity and autonomy were found to be low in one or both of the contexts (Holman, 2005; Lee-Ross, 1995). When these core job characteristics are low the experienced meaningfulness of work and experienced responsibility for the outcomes of work are undermined (Parker *et al*., 2001). There is some evidence to suggest that the absence of these critical psychological states results in high external job motivation with low job satisfaction (Parker *et al*., 2001). External motivation is derived from monetary rewards as opposed to internal job motivation that results from the presence of core job characteristics (Parker *et al*., 2001). This is congruent with the patterns found in this study and suggests that shift workers within these contexts are not often prompted by internal work motivation, high growth satisfaction and high growth satisfaction to commence or remain in their position.

The spread of results showed that despite high levels of reported resilience in the participants there was still strong evidence of fatigue and loneliness with some evidence of symptoms of anxiety and depression. With the growing prevalence and encouragement of both shift work and call centres as well as the salience of the tourism industry within South Africa this data is discouraging. It suggests that the effects of shift work may be further compounded by poor work design in such a way that well-being is deteriorated on both a physical, social and psychological level.

3.4.4) Effects of Demographics

The negative correlation found between tenure and fatigue as well as between tenure and symptoms of anxiety and depression can be explained by considering the dynamic process of resilience. Investigations into the construct have revealed that with extended exposure to negative environmental forces, those with a more resilient predisposition will be able to undergo a process of rearrangement in order to better cope (Luther *et al*., 2000). In the current study resilience was found to be generally high and therefore the group if individuals were more likely to be adapting to the strains of their context as their tenure increased. Conversely, those that were newer in the job were more likely to report loneliness as well as symptoms of anxiety and depression as they had less opportunity to adapt over time.

Resilience itself may be in turn influenced by environmental factors when a contemporary approach to the construct is used. Resilience is seen to respond and evolve in response to environmental demands fostered from a predisposition (Luther *et al*., 2000). It was found that resilience increased slightly with age, tenure and length of previous unemployment which suggest that these are all forces that require the development of a more resilient personal framework. No other significant demographic effects were found which show that other factors such as gender, marital status, home language, salary and education are not as influential in the development of resilience.

In this study loneliness was found to be higher in unmarried employees than in married employees. This is congruent with the literature where married persons generally tend to be less lonely than unmarried persons (Mullins *et al.*, 1996; Peters & Liefbroer, 1997; Pinquart, 2003). In the present study, as age increased lower levels of loneliness were reported. At first this may seem contradictory with the large volume of literature on loneliness and aging. However, on closer examination it can be found that these studies tend to focus on the era of old age and often focuses on those with disabilities (Fees *et al.*, 1999; Mullins *et al*., 1996; Weeks, 1994). Cross sectional studies has confirmed that loneliness does tend to increase with age but further

investigation of the results has shown that it is not age that is the cause but rather deteriorating physical condition and social integration (Jylha, 2004). Therefore the result found here may simply be related to the previous result in that the older participants were more likely to be married. The generally positive correlation between age and loneliness was not found as the sample was restricted to the working age population. A negative correlation between length of unemployment and loneliness was found. This result suggests that those that had reported longer lengths of unemployment prior to their current position tended to report lower levels of loneliness. The literature on unemployment has suggested pervasive negative effects on well-being and these include social isolation and loneliness (Creed & Reynolds, 2001). Therefore, it seems plausible to infer that upon returning to work the appraisal of being reintegrated into the economically active society represents a greater integration into the wider social society that is being manifested here in lower reported loneliness. The greater the span of unemployment, the greater the magnitude of reintegration is appraised.

It should be noted that the effect sizes found relating to the demographic findings were generally small. This is to be expected as demographics are often a small part of a complex web of causations behind outcomes such as fatigue and loneliness (Dittner et al, 2004; Fletcher & Dawson, 1997; Hardy *et al*, 1997; Hawkley *et al*, 2003; McWhirter, 1990). Conceptual models, for example, a social-support perspective model on loneliness often consider demographics to be indirectly influential with other health, social and economic factors being of a more direct influence (Mullins *et al.*, 1996).

3.5) Limitations

The present study was somewhat limited by the small sample size that was obtained. This resulted in only certain statistical analyses being appropriate. A larger sample size may have allowed for analyses such as structural equation modelling that could have bound all the elements together in a holistic model and tested each path. These kinds of statistics were also not possible due to low response rates. It was therefore

more appropriate focus on relational statistics so the results were not affected by non-response bias. The nature of the study was descriptive and relational therefore no causality can be established but only inferred through empirical support for directionality. The present research was only able to focus on two shift work contexts due to practical constraints. The contexts were chosen as they were similar in terms of person specification but different in terms of work design. They were also chosen as they fall outside of the mainstream literature on shift work which tends to focus in the medical arena. It should be noted that while this comparison was able to gain interesting insights some were specific to these particular instances of shift work.

In terms of the instrumentation used, it should noted that the symptoms of anxiety and depression scale (SAD) did not meet parametric assumptions and was heavily skewed right. Furthermore the internal reliability for this scale was very high at 0.93. This suggests that the scale lacks variation and does therefore not adequately cover the construct (Howell, 2004). In retrospect the skewing of the data and the overly high reliability suggests that this scale is more clinically orientated is not the most appropriate measure for a non-clinical population. This is further supported by the weak results surrounding this aspect of the study. It has therefore been ensured that inferences made purely on the basis of the results obtained from this scale are minimal. The Resilience Scale for Adults (RSA) and the Multidimensional Fatigue Inventory (MFI) both proved statistically reliable. The subscales however had a somewhat low internal reliability and therefore no statistical analyses were performed on the basis of these. Rather they were used for descriptive purposes. Furthermore as there has not yet been an extensive application of the scales within South Africa therefore there were no frames of reference for the results.

3.6) Directions for future research

In order to more fully understand the spectrum of work subsumed within the shift work umbrella it is necessary for more comparative research to better understand the way effects of shift work may compound with other variables such as poor job design. An evaluation of the current body of literature on shift work that has focused so

strongly on health care professionals is needed to find if this is truly a representative sample of all shift workers or if there are substantial differences.

Conclusion

Shift work is becoming more prevalent due to industry growth and economic imperatives. While there is a body of literature that has examined shift work the findings are limiting as there has been an overwhelming focus on health care professionals. This study has contributed to the understanding of shift work by providing two case studies from the continuum of work designs. The contexts chosen are not commonly examined in the literature and therefore provide novel findings and points of comparison. The cases, namely hospitality and call centre, are similar in terms of person specification and low levels of core job characteristics which makes for a viable comparison. However, the call centre context is a distinctive case due to electronic performance monitoring which is suggested as a factor contributing to different relationships between variables in this context. The growing prevalence of call centres and shift work both nationally and internationally creates the need for scrupulous examination of the outcomes of this type of work for employees.

Specifically the outcomes examined are on a physical, social and psychological level. Fatigue represents the physical level as it is the most marked disruption of normal circadian rhythms. Loneliness represents the social level as shift work tends to limit conventional periods of social interaction outside of work. Symptoms of anxiety and depression is a general indicator of psychological distress that may result from negative environmental forces. Resilience is examined as a relational variable to these three outcomes as it has been found to be an enduring personality variable that serves as a counterweight to negative environmental forces acting upon well-being.

The present study compares the relationships between resilience and the three outcome variables across the call centre and hospitality context. The study shows that

the relationships between the variables are markedly different across contexts. In particular, in the call centre context resilience was a much stronger predictor of fatigue than of loneliness or symptoms of anxiety and depression while in the hospitality context resilience was a much stronger predictor of loneliness than of fatigue or symptoms of anxiety and depression. These differences result from unique elements of work design within each industry. The discussion has drawn particular attention to electronic performance monitoring (EPM) within the call centre context and length of shift within the hospitality context. EPM is associated with a management philosophy that values quantity of output over the human element. It is therefore common for operators to forgo pauses in order to meet call targets. The result is that there is limited interpersonal interaction and work with colleagues. Interactions with customers do not present a viable substitute for meaningful social interaction and these exchanges are not only electronically mediated and hurried but are also partially scripted. This is further compounded limited interaction with family and friends due to awkward shift hours. When these factors are considered the patterns of relationships can be understood. There are a number of negative forces acting on the social level within the call centre and as these forces become stronger so a resilient predisposition is less able to counteract the force. Therefore the relationship between resilience and loneliness is not as strong as it is the hospitality context where these forces are not present.

Within the hospitality context, there is much greater frequency and depth of social interaction and work. Therefore resilience is strongly associated with loneliness as this predisposition is more markedly able to diminish the negative environmental force of more restricted social interaction outside of work. In contrast resilience was visibly less predictive of fatigue within the call centre context. In his case there the greater negative forces are acting on the physical level. As these forces become stronger so a resilient predisposition is less able to counteract the force. These forces result from the physical toll of extended and back to back shifts which are associated with impaired physical and cognitive functioning.

The patterns of relationships pertaining to symptoms of anxiety and depression have been interpreted very conservatively as the scale reliability showed an extreme lack of variance and all the assumptions for normality were not met. In retrospect the scale is more clinical in orientation hence the extreme skewing. This also explains its weaker association with resilience across contexts as it is measuring an innate condition rather than general psychological distress resulting from negative environmental forces as was originally proposed.

While there were marked differences in the patterns of relationships across contexts no statistical differences were found. Sample size is an important factor in this results as the formula used to compare the contexts take sample size heavily into account. A much larger sample size would have been necessary to find a significant statistical difference due to the small range of correlations that are characteristic of social sciences research (Shipman, 1997).

Shift patterns were found to have exceptional variance which is in line with international findings. Shift motivations were found to be vastly different to those reported in the Western world. In this study people were most strongly motivated by external factors. This is likely a result of a difficult economic climate that leads people to seek out forms of employment that may not be desirable to them to meet monetary needs. It was also found that some demographic factors had a significant but small impact on the main variables.

Reference List

Agervold, M. (1976). Shiftwork – a critical review, *Scandinavian Journal of Psychology, 17,*181-188.

Akerstedt, T. (1998). Shift work and disturbed sleep/wakefulness. *Sleep Medicine Reviews, 2,* 117 – 128.

Anderson, B. (2007). Call Centres: Hello, South Africa. *FIN weekly*. Johannesburg: Media 24 Ltd.

Batt, R. & Moynihan, L. (2002). The Viability of Alternate Call Centre Production Models. *Human Resource Management Journal, 12,* 14 – 34.

Baum, T. (1996). Unskilled work and the hospitality industry: myth or reality? *International Journal of Hospitality Management, 15,* 207-209.

BBC News. (2003). *Call centres 'bad for India.'* Retrieved June 20, 2008, from BBC News website: http://news.bbc.co.uk/2/hi/south_asia/3292619.stm

Bedford, A., Foulds, G.A. & Sheffield, B.F. (1976). A new personal disturbance scale (DSSI/sAD). *British Journal of Social and Clinical Psychology, 15,* 387 – 394.

Bedford, A., Grant, E., de Pauw, K & Deary, I.J. (1999). The personal disturbance scale (DSSI/sAD): structural cross-validation and proposed short forms. *Personality and Individual Differences, 27,* 251 – 261.

Bendix, S. (2005). Industrial Relations in South Africa (4th Ed.). Lansdowne: Juta.

Boonzaier, B., Ficker, B. & Rust, B. (2001). A review of research on the Job Characteristics Model and the attendant job diagnostic survey. *South African Journal of Business Management, 32,* 11 – 34.

Bragg, M.E. (1979). A comparative study of loneliness and depression. *Dissertation Abstracts International, 39,* 79 – 13710.

Buchwald, D., Pearlman, T., Kith, P. & Schmaling, K. (1994). Gender differences in patients with chronic fatigue syndrome. *Journal of General Internal Medicine, 9,* 397-401.

Bültmann, U., Kant, I., Kasl, S., Schröer, K., Swaen, G. & van den Brandt, P.A. (2002). Lifestyle Factors as Risk Factors for Fatigue and Psychological Distress in the Working Population: Prospective Results From the Maastricht Cohort Study. *Journal of Occupational and Environmental Medicine, 44,* 116-124.

Caruso, C.C., Hitchcock, E.M., Dick, R.B., Russo, J.M. & Schmit, J.M. (2004). Overtime and Extended Work Shifts: Recent Findings on Illnesses, Injuries, and Health Behaviors. Cincinnati: National Institute for Occupational Safety and Health (NIOSH).

Cervone, D. (2005). Personality Architecture: Within-person structures and processes. *Annual Review of Psychology, 56,* 423 – 452.

Cacioppo, J.T., Hawkley, L.C., Crawford, L.E., Ernst, J.M., Burleson, M.H., Kowalewski, R.B., Malarkey, W.B., Van Cauter, E. & Berntson, G.G. (2002). Loneliness and health: potential mechanisms. *Psychosomatic Medicine,* 64, 407-417.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Cook, C. Heath, F & Thompson, R.L. (2000). A meta-analysis of response rates in web or internet based surveys. *Educational and Psychological Measurement, 60,* 821 – 836.

Costa, G. (1996). The impact of shift and night work on health. *Applied Ergonomics*, 27, 9-16.

Costa, G. (2003). Shift work and occupational medicine: an overview, *Occupational Medicine, 53*, 83-88.

Creed, P.A. & Reynolds, J. (2001). Economic deprivation, experiential deprivation and social loneliness in unemployed and employed youth. *Journal of Community & Applied Social Psychology, 11*, 167 – 178.

Diener, E., Gohm, C.L., Suh, E. & Oishi, S. (2003). Similarity of the relations between marital status and subjective well-being across cultures. *Journal of Cross-Cultural Psychology, 31*, 419-436.

De Jonge, J., Dormann, C., Janssen, P.P.M., Dollard, M.F., Landeweerd, J.A. & Nijhuis, F.J.N (2001). Testing reciprocal relationships between job characteristics and psychological well-being: A cross-lagged structural equation model. *Journal of Occupational and Organizational Psychology, 74*, 29-46.

DeVaro, J. Li, R. & Brookshire, D. (2007). Analysing the job characteristics model: new support from a cross-section of establishments. *The International Journal of Human Resource Management, 18*, 986 – 1003.

Dey, E.L. (1997). Working with low survey response rates: the efficacy of weighting adjustments. *Journal in Higher Education, 38*, 215 – 227.

Dicken, P. (2003). *Global shift: reshaping the global economic map in the 21st century*. New York: SAGE.

Dittner, A., Wessely, S.C. & Brown, R.G. (2004). The assessment of fatigue: A practical guide for clinicians and researchers**.** *Journal of Psychosomatic Research, 56*, 157 - 170.

Driscoll, T., Grunstein, R. & Rogers, N. (2007). A systematic review of the neurobehavioural and physiological effects of shiftwork systems**,** Sleep *Medicine Reviews*, 11, 179 –194.

Fees, B.S., Martin, P. & Poon, L.W. (1999). A model of loneliness in older adults. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 54*, 231 – 239.

Fletcher A. & Dawson D. (1997) A predictive model of work-related fatigue based on hours of work. *Journal of Occupational Health and Safety–Australia and New Zealand 13*, 471–485.

Forsyth, J.P., Kelly, M.M., Fuse, T.K. & Karekla, M. (2004). Anxiety. In J.C. Thomas & M. Hersen (Eds.), *Psychopathology in the workplace: Recognition and adaptation* (93 – 117). New York: Brunner-Routledge.

Fried, Y. & Ferris, G.R. (1987). The Validity of the Job Characteristics Model: A review and meta-analysis. *Personnel Psychology, 40*, 287 – 323.

Friborg, O., Barlaug, D., Martinussen, M., Rosenvinge, J.H. & Hjemdal, O. (2005). Resilience in relation to personality and intelligence. *International Journal of Methods in Psychiatric Research, 14*, 29 – 42.

Fukuda, K., Straus, S.E., Hickie, I., Sharpe, M.S., Dobbins, J.G. & Komaroff, A. (1994). The Chronic Fatigue Syndrome: A Comprehensive Approach to Its Definition and Study. *Annals of Internal Medicine, 121*, 953 – 959.

Funder, D.C. (2001). Personality. *Annual Review of Psychology, 52*, 197 – 221.

GlaxoSmithKline. (2007). *Resilience and mental well-being.* Retrieved 23 June, 2008, from: http://www.gsk.com/responsibility/cr_issues/ehs_mf_i_health_programmes.htm.

Gold, D.R., Rogacz, S., Bock, N., Tosteson, T.D., Baum, T.M., Speizer, F.E. & Czeisler, C.A. (1992). Rotating shift work, sleep, and accidents related to sleepiness in hospital nurses. *American Journal of Public Health, 82,* 1011–1014.

Government Gazette, Republic of South Africa, Vol. 503, no.29885. Cape Town, 15 May 2007.

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organisational Behaviour and Human Performance, 16,* 250-279.

Hardy, G.E., Shapiro, D.A., & Borrill, C.S. (1997). Fatigue in the workforce of national health service trusts : Levels of symptomatology and links with minor psychiatric disorder, demographic, occupational and work role factors. *Journal of psychosomatic research, 43,* 83-92.

Harma, M. (1993). Individual differences in tolerance to shiftwork: a review, *Ergonomics,* 36, 101-109.

Haslam, C., Atkinson, S., Brown, S.S. & Haslam, R.A. (2005). Anxiety and depression in the workplace: effects on the individual and organisation (brief report). *Journal of affective disorders, 88,* 209 – 215.

Hawkley, L.C. (2003). Loneliness and pathways to disease. *Brain, Behaviour and Immunity, 17,* 98 – 105.

Hawkley, L.C., Burleson, M.H., Berntson, G.G. & Cacioppo, J.T. (2003). Loneliness in Everyday Life: Cardiovascular Activity, Psychosocial Context, and Health Behaviors. Journal *of Personality and Social Psychology, 85,* 105–120.

Holman, D. (2002). Employee Well-being in Call Centres. *Human Resource Management Journal, 12,* 35 – 50.

Holman, D. (2005). Call Centres. In Holman, D., Wall, T.D., Clegg, C.W., Sparrow, P. & Howard, A. (Eds). *The Essentials of the New Workplace. A Guide to the Human Impact of Modern Working Practices*. New York: John Wiley & Sons Ltd.

Horwitz & Smith (1998). Flexible work practices and human resource management: a comparison of South African and foreign owned companies. *The International Journal of Human Resource Management, 9,* 590 – 607.

Hoque, K. (1999). Human resource management and performance in the UK hotel industry. British Journal of Industrial Relations, 37, 419–443.

Howell, D.C. (2004). *Fundamental Statistics for the Behavioural Sciences (5th ed.).* Belmont: Brooks/Cole.

Huck, S.W. (2004). *Reading Statistics and Research (4th ed.).* Boston: Pearson.

International Labour Organisation (1996). *Unemployment in South Africa is Probably Lower Than Estimated, Says ILO Study*. Retrieved June 30, 2008, from International Labour Organisation website: http://www.ilo.org/global/About_the_ILO/Media_and_public_information/Press_releases/lang--en/WCMS_008073/index.htm.

Iverson, R.D. & Deery, M. (1997). Turnover culture in the hospitality industry. *Human Resource Management, 7,* 71-82.

Jamal, M & Vishwanath, V.B. (1997). Shiftwork, burnout and well-being: a study of Canadian nurses, *International Journal of Stress Management, 4,* 197 – 204.

Jansen, N.W.H., van Amelsvoort, L.G.P.M., Kristensen, T.S., van den Brandt, P.A. & Kant, I.J. (2003). Work schedules and fatigue: a prospective cohort study. *Occupational and Environmental Medicine,* 60, 47 – 65.

Jason, L.A., Richman, J.A., Rademaker, A.W., Jordan, K.M., Plioplys, A.V., Taylor, R.R., McCready, W.., Huang C. & Plioplys, S. (1999). A community-based study of chronic fatigue syndrome. *Archives of Internal Medicine, 159*, 2129-2137.

Johns, G. & Saks, A.M. (2005*). Organizational Behaviour: Understanding and Managing Life at Work.* (6th. ed.). Ontario: Pearson Education.

Jylha, M. (2004). Old age and loneliness: Cross-sectional and longitudinal analyses in the Tampere longitudinal study on aging. *Canadian Journal on Aging, 23*, 157 – 168.

Khuzwayo, W. (2007). SA Call Centres Take on the World. Retrieved, 10 October, 2007, from http://www.busrep.co.za/index.php?fSectionId=561&fArticleId=3803048.

Kline, R. B. (2004). *Beyond Significance Testing: Reforming Data Analysis Methods in Behavioral Research*. Washington, DC, American Psychological Association.

Knauth, P. (1993). The design of shift systems, *Ergonomics*, *36*, 15 – 28.

Knutsson, A. (2003). Health disorders of shift workers, *Occupational Medicine, 52*, 103 – 108.

Lynch, J.J. (1977) *The Lonely Heart: The Medical Consequences of Loneliness.* New York: Basic Books Inc.

Lee, Y., Chien, K. & Chen, H. (2007). Lifestyle Risk Factors Associated with Fatigue in Graduate Students. *Journal of the Formosan Medical Association, 106,* 565-572.

Lee-Ross, D. (1995). Attitudes and work motivation of sub-groups of seasonal hotel workers. *The Service Industries Journal,* 15, 295-313.

Leslie, D. (1991). The hospitality industry: industrial placement and personnel management. *The Service Industries Journal, 11*, 63 – 74.

Litteljohn, D. (1990) Hospitality research: Philosophies and progress. In Teare, R., Moutinho,L. & Morgan, N. (eds), *Managing and Marketing Services in the 1990s.* London: Cassell.

Luthar, S.S., Cicchetti, D., & Becker, B. (2000). The Construct of Resilience: A Critical Evaluation and Guidelines for Future Work. *Child Development, 71*, 543-562.

Mascia, F.L., Marx, R. & Arbix, G. (2000). Old paradigms for new jobs in call centres. *Proceedings of the Human Factors and Ergonomics Society: Annual Meeting,* 543-547.

Mayrowetz, D., Murphy, J., Louis, K.S. & Smylie, M.A. (2007). Distributed Leadership as Work Redesign: Retrofitting the Job Characteristics Model. *Leadership and Policy in Schools, 6*, 69 – 101.

McClanahan, T.M. & Antonuccio, D.O. (2004). Depression. In J.C. Thomas & M. Hersen (Eds.), *Psychopathology in the workplace: Recognition and adaptation* (133-145). New York: Brunner-Routledge.

McCrae RR, Costa PT. Personality trait structure as a human universal. *American Psychologist, 52*, 509-16.

McMenamin, T.M. (2007). A time to work: recent trends in shift work and flexible schedules. *Monthly Labor Review, 130*, 3 – 15.

Miller, K. & Fisher, J. (2005). Scientific management meets information technology: uses and abuses of call centre technology in South Africa. *Proceedings of CybErg 2005. The Fourth International Cyberspace Conference on Ergonomics*. Johannesburg: International Ergonomics Association Press.

Mochiko, T. (2006). *IBM to add 900 jobs at local call centre*. Retrieved, 10 October, 2007, from http://www.busrep.co.za/index.php?fArticleId=3107771.

Monk, T.H. & Folkard, S. (1992). *Making Shift Work Tolerable*. London: Taylor & Francis.

Motsoeneng, T. (2007). *Call centres invest 33bn in service*. Retrieved, 10 October, 2007, from http://www.busrep.co.za/index.php?fSectionId=561&fArticleId=3740972.

Muecke, S. (2005). Effects of rotating night shifts, *Journal of Advanced Nursing, 50,* 433 – 439.

Mullins, L.C., Elston, C.H. & Gutkowski, S.M. (1996). Social determinants of loneliness among older Americans. *Genetic, Social and General Psychology Monographs, 122,* 453 – 473.

Murphy, K. R. & Davidshofer, C.O. (1998). *Psychological Testing: Principles and Applications (5th ed.).* Upper Saddle River, NJ: Prentice Hall.

Nankervis, A. R. (1991). Human Resource Management in the Australian Hotel Industry. *Working Paper No. 79*, September, Faculty of Commerce, University of Western Sydney, Sydney.

Pawlikowska, T., Chalder, T., Hirsch, S.R., Wallace, P., Wright, D.J.M. & Wessely, S.C. (1994). Population based study of fatigue and psychological distress. *British Medical Journal, 308,* 763-766.

Parker, S.K., Wall, T.D., Cordery, J.L. (2001). Future work design research and practice: Towards an elaborated model of work design. *Journal of Occupational and Organizational Psychology,74,* 413 – 441.

Paolo, A.M., Bonaminio, G.A., Gibson, C. Partridge, T. & Kallail, K. (2000). Response rates comparisons of e-mail and mail distributed student evaluations. *Training and learning in medicine, 12,* 81 – 84.

Peters, A. & Liefbroer, A.C. (1997). Beyond marital status: Partner history and well-being in old age. *Journal of marriage and the family, 59,* 687-699.

Pinquart, M. (2003). Loneliness in Married, Widowed, Divorced, and Never-Married Older *Adults Journal of Social and Personal Relationships, 20,* 31-53.

Rook, K.S. (1984). Promoting social bonding: strategies for helping the lonely and socially isolated. *American Psychologist, 39,* 1389 – 1407.

Rosenthal, R. & Rosnow, R.L. (1991). *Essentials of Behavioural Research: Methods and Data Analysis (2nd ed.).* Boston: McGraw-Hill.

Russell, D.W. (1996). UCLA Loneliness scale (Version 3): Reliability, validity and factor structure. *Journal of Personality Assessment, 66,* 20 - 40.

SAS Institute, Inc. (2004). SAS Enterprise Guide (Version 3.0) [Computer Software]. USA: SAS Institute, Inc.

Shehaan, K. B. (2006). Email survey response rates: A review. *Journal of Computer Mediated Interaction, 60*.

Shipman, M. (1997). *The limitations of social research (4th ed.).* Longman: London.

Smets, E.M.A., Garssen, B., Bonke, B. & De Haes, J.C.J.M. (1995). The Multidimensional fatigue inventory (MFI) psychometric qualities of an instrument to assess fatigue. *Journal of Psychosomatic research, 39,* 315 – 325.

Smith, M. & Smith, P. (2005). *Testing people at work: competencies in psychometric testing*. Oxford: Blackwell.

South Africa.info. (2007). *South Africa: Even more fast facts*. Retreived, 10 October, 2007, from http://www.southafrica.info.

South Africa.info. (2008). *Tourist arrivals keeps growing*. Retreived, 15 November, 2008, from http://www.southafrica.info/travel/tourism-041108.htm.

Statistics South Africa. (2006). *Key Indicators*. Retrieved April 2, 2007, from http://www.statssa.gov.za/keyindicators/keyindicators.asp.

Statistics South Africa (2007). *Labour statistics: Employment and salaries and wages: wholesale, retail and motor trade*, P0244.

Stucki, A., Cieza, A., Michel, F., Stucki, G., Bentley, A., Culebras, A., Tufik, S., Kotchabhakdi, N., Tachibana, N., & Ustun, B. (2008). Developing ICF core sets for persons with sleep disorders based on the international classification of functioning,disability and health, *Sleep Medicine*, 9, 191-198.

Swedish Work and Environment Authority. (2007). *The Swedish Work Environment Act*. Retrieved March 27, 2007 from http://www.av.se/inenglish/lawandjustice/workact/chapter02.aspx.

Takahashi, M., Tanigawa, T., Tachibana, N., Mutou, K., Kage, Y., Smith, L. & Iso, H. (2005). Modifying Effects of Perceived Adaptation to Shift Work on Health, Wellbeing, and Alertness on the Job among Nuclear Power Plant Operators, *Industrial Health, 43*, 171-178.

Taylor, P. & Bain, P. (1999). 'An Assembly Line in the Head': Work and Employee Relations in the Call Centre. *Industrial Relations Journal, 30 (2)*, 101 – 117.

Taylor, S. & Edgar, D. (1996). Hospitality research: the emperor's new clothes? *International Journal of Hospitality Management, 15*, 211-227.

Thakor, M.V. & Joshi, A.W (2005). Motivating salesperson customer orientation: insights from the job characteristics model. *Journal of Business Research, 58,* 584 – 592.

Tibblin, G., Bengtsson, C., Furunes, B. & Lapidus, L. (1990). Symptoms by age and sex: the population studies of men and women in Gothenburg, Sweden. *Scandinavian Journal of Primary Health Care, 8,* 9 – 17.

McWhirter, B.T. (1990). Loneliness: A review of current literature, with implications for counselling and research. *Journal of Counselling and Development, 68,* 417 – 422.

Weeks, D.J. (1994). A review of loneliness concepts, with particular reference to old age. *International Journal of Geriatric Psychiatry, 9,* 345-355.

Wilkinson, R.T. (1992). How fast should the night shift rotate? *Ergonomics, 35,* 1425 – 1446.

Wortman, C., Loftus, E. & Weaver, C. (1999). *Psychology. (5th ed.).* Social and Personality Development. Boston: Mcgraw Hill.

Appendices

Appendix 1 – Ethical clearance from University of Witwatersrand

Appendix 1 – Ethical clearance from University of the Witwatersrand

Faculty of Humanities - Postgraduate

Private Bag 3, Wits 2050, South Africa • Tel: +27 11 717 4002/8 • Fax: +27 11 717 4037 • E-mail: Julie.Poyser@wits.ac.za

Student Number: 0309434V

MS L HUNTINGTON
50 Milford Ave
Glendower
EDENVALE
1609

1 August 2008

Dear Ms Huntington

APPROVAL OF PROPOSAL FOR THE DEGREE OF MASTER OF ARTS BY COURSEWORK AND RESEARCH REPORT

I am pleased to be able to advise you that the readers of the Graduate Studies Committee have approved your proposal entitled *"Comparative case studies of shift workers: resilience and related outcomes"* and you have now been admitted to full candidature. I confirm that Ms F Donald has been appointed as your supervisor in the Department of Psychology.

The research report is normally submitted to the Faculty Office by 15 February, if you have started the beginning of the year, and for mid-year the deadline is 15 August. All students are required to RE-REGISTER at the beginning of each year.

You are required to submit 2 bound copies and 2 unbound copies (loose pages) of your research report to the Faculty Office. The 2 bound copies go to the examiners and are retained by them and the 2 corrected unbound copies are eventually sent to Archives and to the Library.

Please note that should you miss the deadline of 15 February or 15 August you will be required to submit an application for extension of time and register for the research report extension. Any candidate who misses the deadline of 15 February will be charged fees for the research report extension.

Kindly keep us informed of any changes of address during the year.

Note: All MA and PhD candidates who intend graduating shortly must meet your ETD requirements at least 6 weeks after completing corrections.

Yours sincerely

Julie Poyser
Postgraduate Division
Faculty of Humanities
Private Bag X3
Wits, 2050
Tel: +27 11 717 4008
Fax:+27 11 717 4037

Appendix 2 – Letter to the organisation

School of Human & Community Development

Psychology
School of Human & Community Development

Private Bag 3, Wits 2050, South Africa. Telephone: +27 11-717-4500/2534. Fax: +27-11-717-4559

To whom it may concern,

***Invitation for Organisational Participation** in Research*

My name is Lauren Huntington. I would like to invite your organisation to participate in a research study I am currently conducting for the purposes of achieving my Masters in Industrial Psychology at the University of the Witwatersrand. My research is focusing on how individual differences in shift workers would influence personal outcomes.

I wish to distribute questionnaires to your employees. These questionnaires can be distributed via email and sent to me once completed or I can distribute paper copies which I will return frequently to collect from a sealed box placed in a convenient location. Participation in this study will be completely voluntary and employee's anonymity will be guaranteed.

Your participation in the study would be greatly appreciated. This research is aimed at broadening the area of research on shift workers. The overall results of this study will be available on request in 2009 by individuals and I will also provide your organisation with a summary of the results.

Should you have any queries or wish to be provided with further information please do not hesitate to contact either myself, or my supervisor Fiona Donald (Fiona.donald@wits.ac.za).

Yours sincerely,

Lauren Huntington
Industrial Psychology Masters Student
University of the Witwatersrand
laurenhunt@mweb.co.za

Appendix 3 – Questionnaire covering letter





Psychology
School of Human & Community Development
Private Bag 3, Wits 2050, South Africa. Telephone: +27 11-717-4500/2/3/4. Fax: +27-11-717-4559

Invitation to Participate in Research

My name is Lauren Huntington I would like to invite you to participate in a research study on shift workers I am currently conducting for the purposes of achieving my Masters in Industrial Psychology at the University of the Witwatersrand.

Participation in this research will involve completing this electronic questionnaire, which should take no longer than 30 minutes. Participation in this study is completely voluntary and your responses are confidential. The choice to complete or not complete the questionnaire will not lead to any disadvantageous outcomes.

If you are willing to participate in the study please complete the following questionnaire as honestly and carefully as possible. Completion of the questionnaire will be regarded as consent to participate in the study. Please email your completed questionnaire directly to me at laurenhunt@mweb.co.za to ensure your confidentiality. Please note that once the results have been compiled these original emails will be deleted to further ensure confidentiality.

Your participation in the study would be greatly appreciated. This research is aimed at broadening the area of research on shift workers. No individual results will be given but the overall results of this study will be available in 2009. These will be made available to your company for display and can also be obtained with an email request. Should you have any queries please do not hesitate to contact either myself, or my supervisor Fiona Donald.

Yours sincerely,

Lauren Huntington
Industrial Psychology Honours Student
laurenhunt@mweb.co.za

Fiona Donald
Lecturer
fiona.donald@wits.ac.za

Appendix 4 – Electronic Questionnaire

Please check the appropriate box by clicking it. *Note*: if you check the incorrect box click again to uncheck the box. Other fields can be filled in by clicking on the appropriate area and typing your response.

This section is collecting biographical data for statistical purposes only:

Gender:
☐ Male ☐ Female

Age

Home Language:
☐ English ☐ Xhosa
☐ Afrikaans ☐ Zulu
☐ Other (Please specify)

Family Commitments:
Number of dependants

Marital Status
☐ Married ☐ Unmarried ☐ Divorced

Level of education:
☐ High School ☐ Diploma ☐ Degree ☐ Other (Please Specify)

This sections is collecting details of your employment for statistical purposes only

Job Title

Tenure (length of employment) in current organisation

Employment History:
Previous Job Title
Were you unemployed before taking this job? ☐ Yes ☐ No
For what length of time?

Current yearly salary:
☐ < R60 0000 ☐ R60 000 – R100 000 ☐ R100 000 – R140 000 ☐ R140 000 – R180 000 ☐ > R180 000

Please describe your shift pattern

Would you consider your primary motivation for working shifts to be one of the following:
☐ Economic (money)
☐ Allows time to pursue studies
☐ Allows for flexibility for child care
☐ Lack of alternatives

Please describe in more in detail your answer to the question above and provide any other reasons you may work shifts

Please check the appropriate box by clicking it. Please select only one box.
***Note*: if you check the incorrect box click again to uncheck the box.**

Please rate your level of agreement with the following statements:

When something unforeseen happens	I always find a solution ☐☐☐☐☐	I often feel bewildered*
My personal problems	are unsolvable ☐☐☐☐☐	I know how to solve
My abilities	I strongly believe in ☐☐☐☐☐	I am uncertain about*
My judgements and decisions	I often doubt ☐☐☐☐☐	I trust completely
In difficult periods I have a tendency to	view everything gloomy ☐☐☐☐☐	find something good that help me thrive
Events in my life that I cannot influence	I manage to come to terms with ☐☐☐☐☐	are a constant source of worry/concern*

My plans for the future are	difficult to accomplish ☐☐☐☐☐	possible to accomplish
My future goals	I know how to accomplish ☐☐☐☐☐	I am unsure how to accomplish*
I feel that my future looks	very promising ☐☐☐☐☐	uncertain*
My goals for the future are	unclear ☐☐☐☐☐	well thought through

I am at my best when I	have a clear goal to strive for ☐☐☐☐☐	can take one day at a time*
When I start on new things/projects	rarely plan ahead, just get on with it ☐☐☐☐☐	I prefer to have a thorough plan
I am good at	organizing my time ☐☐☐☐☐	wasting my time*
Rules and regular routines are	absent in my everyday life ☐☐☐☐☐	simplify my everyday life

I enjoy being	together with other people ☐☐☐☐☐	by myself*
To be flexible in social settings	is not important to me ☐☐☐☐☐	is really important to me
New friendships are something	I make easily ☐☐☐☐☐	I have difficulty making*
Meeting new people is	difficult for me ☐☐☐☐☐	something I am good at
When I am with others	I easily laugh ☐☐☐☐☐	I seldom laugh*
For me, thinking of good topics for conversation is	difficult ☐☐☐☐☐	easy

My family's understanding of what is important in life is	quite different than mine ☐☐☐☐☐	very similar to mine
I feel	very happy with my family ☐☐☐☐☐	very unhappy with my family*
My family is characterized by	disconnection ☐☐☐☐☐	healthy coherence
In difficult periods my family	keeps a positive outlook on the future ☐☐☐☐☐	Views the future as gloomy*
Facing other people, our family acts	unsupportive of one another ☐☐☐☐☐	loyal towards one another
In my family we like	to do things on our own ☐☐☐☐☐	do things together

I can discuss personal issues with	no one ☐☐☐☐☐	friends/family-members
Those who are good at encouraging me are	some close friends/family members ☐☐☐☐☐	nowhere*
The bonds among my friends is	weak ☐☐☐☐☐	strong
When a family member experiences a crisis/emergency	I am informed right away ☐☐☐☐☐	it takes quite a while before I am told*
I get support from	friends/family members ☐☐☐☐☐	No one*
When needed, I have	no one who can help me ☐☐☐☐☐	always someone who can help me
My close friends/family members	appreciate my qualities ☐☐☐☐☐	dislike my qualities*

Please check the appropriate box by clicking it. Please select only one box.
Note: if you check the incorrect box click again to uncheck the box.

Please rate your level of agreement with the following statements:

1.	I feel fit	Yes that it true ☐☐☐☐☐ No that is not true
2.	Physically, I feel only able to do a little	Yes that it true ☐☐☐☐☐ No that is not true*
3.	I feel very active	Yes that it true ☐☐☐☐☐ No that is not true
4.	Am am not up to much	Yes that it true ☐☐☐☐☐ No that is not true*
5.	Thinking requires effort	Yes that it true ☐☐☐☐☐ No that is not true*
6.	I think I do a lot in a day	Yes that it true ☐☐☐☐☐ No that is not true
7.	When I am doing something, I can keep my thoughts on it	Yes that it true ☐☐☐☐☐ No that is not true
8.	Physically, I can take on a lot	Yes that it true ☐☐☐☐☐ No that is not true
9.	I dread having to do things	Yes that it true ☐☐☐☐☐ No that is not true*
10.	I think I do very little in a day	Yes that it true ☐☐☐☐☐ No that is not true*
11.	I can concentrate well	Yes that it true ☐☐☐☐☐ No that is not true
12.	I am rested	Yes that it true ☐☐☐☐☐ No that is not true
13.	It takes a lot of effort to concentrate on things	Yes that it true ☐☐☐☐☐ No that is not true*
14.	Physically, I feel I am in a bad condition	Yes that it true ☐☐☐☐☐ No that is not true*
15.	I have a lot of plans	Yes that it true ☐☐☐☐☐ No that is not true
16.	I tire easily	Yes that it true ☐☐☐☐☐ No that is not true*
17.	I get little done	Yes that it true ☐☐☐☐☐ No that is not true*
18.	I don't feel like doing anything	Yes that it true ☐☐☐☐☐ No that is not true*
19.	My thoughts easily wander	Yes that it true ☐☐☐☐☐ No that is not true*
20.	Physically I feel I am in excellent condition	Yes that it true ☐☐☐☐☐ No that is not true

The following statement davribe how people sometimes feel. For each statement please indicate how often you feel the way described by writing a number in the space provided. Here is an example:
How often do you feel happy?
If you never felt happy you would respond 'never' or if you always felt happy you would respond 'always.'

Select your response from the drop down box next to each question. If you consider the question to not be applicable to you please select the 'not applicable' option.

NEVER	RARELY	SOMETIMES	ALWAYS
1	2	3	4

1.	How often do you feel that you are 'in tune' with the people around you?	<Select> *
2.	How often do you feel that you lack companionship?	<Select>
3.	How often do you feel that there is no-one you can turn to?	<Select>
4.	How often do you feel alone?	<Select>
5.	How often do you feel part of a group of friends?	<Select> *
6.	How often do you feel that you have a lot in common with the people around you?	<Select> *
7.	How often do you feel that you are no longer close to anyone?	<Select>
8.	How often do you feel that your interests and ideas are not shared by those around you?	<Select>
9.	How often do you feel outgoing and friendly?	<Select> *
10.	How often do you feel close to people?	<Select> *
11.	How often do you feel left out?	<Select>
12.	How often do you feel that your relationships with others are not meaningful?	<Select>
13.	How often do you feel that anyone really knows you well?	<Select>
14.	How often do you feel isolated from others?	<Select>
15.	How often do you find that you can find companionship when you want it?	<Select> *
16.	How often do you feel that there are people who really understand you?	<Select> *
17.	How often do you feel shy?	<Select>
18.	How often do you feel that people are around you but not with you?	<Select>
19.	How often do you feel that there are people you can talk to?	<Select> *
20.	How often do you feel that there are people you can turn to?	<Select> *

No	A Little	A Lot	Unbearably
0	1	2	3

1.	Recently I have worried about every little thing	<Select>
2.	Recently I have been so miserable that I have had difficulty with my sleep	<Select>
3.	Recently I have been breathless or had a pounding of my heart	<Select>
4.	Recently I have been so 'worked up' that I couldn't sit still	<Select>
5.	Recently I have been depressed without knowing why	<Select>
6.	Recently I have gone to bed not caring if I never woke up	<Select>
7.	Recently, for no good reason, I have had feelings of panic	<Select>
8.	Recently I have been so low in spirits that I have sat for ages doing absolutely nothing	<Select>
9.	Recently I have had a pain or tense feeling in my neck or head	<Select>
10.	Recently the future has seemed hopeless	<Select>
11.	Recently worrying has kept me awake at night	<Select>
12.	Recently I have lost interest in just about everything	<Select>
13.	Recently I have been so anxious that I couldn't make up my mind about the simplest thing	<Select>
14.	Recently I have been so depressed that I have thought of doing away with myself	<Select>

*Indicates reverse scored items

Appendix 5 – Spread of variables by context

Demographics in the call centre context

Within the call centre context 14 (35%) were male and 26 (65%) were female. Seventeen (42.50%) reported English as their home language, eight (20%) reported Xhosa, 13 (32.50%) reported Zulu and two (5%) reported other. Of the participants from the call centre context nine (22.5%) were married, 30 (75%) were unmarried and one (2.5%) was divorced. 21 (52.5%) reported high school as their highest qualification, 15 (37.5%) reported a diploma and four (10%) reported having a degree. Eighteen (46.15%) of the participants reported having been unemployed before accepting their current position and 21 (53.85%) reported not being previously unemployed. One participant did not indicate whether they had been unemployed before accepting their current position. Less than R60 0000 was earned by 22 (57.89%) of the participants and R60 000 – R100 000 was earned by 16 participants (42.11%). Two participants did not indicate their salary bracket.

Within the call centre context 12 (30%) participants worked a morning shift, one (2.5%) a day shift, seven (17.50) a night shift and 20 (50%) worked rotating shifts. Eleven (27.5%) reported having an economic motivation for working shifts, 13 (32.5%) reported shifts allowed time to pursue studies, three (6.5%) reported that shifts allowed flexibility for childcare, 11 (27.5%) worked shifts due to lack of alternatives and two (5%) reported a combination of factors.

Table 21 summarises the interval scaled demographics and table 22 summarises the spread of the main variables namely resilience, loneliness, fatigue as well as symptoms of anxiety and depression within the call centre context.

Table 21: Spread of interval scaled demographic variables in the call centre context

	Mean	Standard deviation	Range	N
Age	27.38	8.33	20 - 60	40
Dependants	0.98	1.25	0 - 4	40
Tenure (in months)	20.11	13.22	3 - 78	34
Length of unemployment (in months)	8.94	21.41	0 - 110	39

Table 22: Spread of main variables in the call centre context

	Mean	Standard deviation	Range	N
Resilience	131.88	16.00	98 - 165	40
Fatigue	47.73	10.87	24 - 72	40
Loneliness	41.40	8.43	23 - 64	40
Symptoms of anxiety and depression	10.10	8.87	0 - 35	40

Demographics in the hospitality context

Of the participants from the call centre context 22 (45.83%) were male and 26 (54.17%) were female with two not indicating their gender. English was the home language of 17 (34.69%) participants, Xhosa for seven participants (14.29%), Afrikaans for two participants (4.08%), Zulu for 12 (24.49%) participants and 11 (22.45%) participants had another home language. One participant did not report their home language. Eleven (22%) of the participants reported being married, 38 (76%) reported being unmarried and one (2%) reported being divorced. Fifteen (30%) participants indicated their highest level of education as high school, 33 (66%) as a diploma and two (4%) as a degree. Of the participants 15 (31.91%) had been unemployed prior to taking their current position and 32 (68.09%) had not been unemployed. Three participants did not indicate whether they had been unemployed prior to taking their current position. Less than R60 000 annually was earned by 14 (34.15%) participants, R60 000 – R100 000 was earned by 18 (43.9%), R100 000 – R140 000 was earned by 5 (12.2%), R140 00 – R180 000 was earned by two (4.88%) and more than R180 000 was earned by two (4.88%) participants annually. Nine participants did not indicate their salary bracket.

Of the participants in the hospitality context two (4%) worked a morning shift, six (12%) worked a day shift, five (10%) worked a night shift, 10 (20%) worked varying shifts and 27 (54%) worked rotating shifts. Ten (21.28%) reported an economic motivation for working shifts, 12 (25.53%) reported that it allowed time to pursue studies, one (2.13%) reported that it allowed flexibility for childcare, nine (19.15%) indicated a lack of alternatives, eight (17.02%) gave other motivations and seven (14.89%) reported a combination of factors. Three did not report their motivation for working shifts.

Table 23 summarises the interval scaled demographics and table 24 summarises the spread of the main variables namely resilience, loneliness, fatigue as well as symptoms of anxiety and depression within the hospitality context.

Table 23: Spread of interval scaled demographic variables in the hospitality context

	Mean	Standard deviation	Range	N
Age	25.57	4.71	19 - 38	49
Dependants	0.82	1.70	0 - 9	50
Tenure (in months)	17.98	15.50	1 - 60	44
Length of unemployment (in months)	4.39	11.85	0 - 60	44

Table 24: Spread of main variables in the hospitality context

	Mean	Standard deviation	Range	N
Resilience	134.38	14.18	96 - 165	50
Fatigue	46.30	9.92	31 - 68	50
Loneliness	41.26	8.36	25 - 56	50
Symptoms of anxiety and depression	12.46	10.46	0 - 38	50