Mental Health Needs of Call Centre Staff: A Multi-Method Investigation

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Preface

The research presented within this thesis was undertaken as part of a PhD programme which was funded by and carried out under the auspices of Cardiff Metropolitan University, and is based on data collected between 2013 and 2015. I was responsible for research design, data collection, analysis, interpretation and representation, and for the writing of the thesis. My supervisory team supported this process, providing challenge at each stage of the programme of work and reviewing the written thesis in order to prepare it for publication. They also provided practical support, in particular, facilitating access to equipment, training and assistance from post-graduate students in Physiology, which enabled me to collect physiological data as part of Study 3. The programme of research was carried out in collaboration with the call centre of a government executive agency in South Wales. Managers at the call centre provided support for carrying out the studies, in particular, by providing access to participants, communicating information on the research to participants via email and manager communications, hosting surveys using internal software, and supporting the arrangements for interviews and health assessments to be carried out on the call centre site.

Acknowledgements

Abstract

Call centre staff experience high levels of stress and associated poor mental health. The aim of this research was to develop an in-depth understanding of the mental health needs of staff in a call centre using a multi-method approach, underpinned by the DRIVE model of workplace stress and health. Study 1 was a longitudinal questionnaire-based study of mental health and its predictors. Results partially supported the DRIVE model, finding that individual differences strongly predicted mental health both cross-sectionally and longitudinally, suggesting that individual-level interventions may be beneficial. The impact of job demands and resources on mental health was less clear, with inconsistent results across time points. Study 2 explored the effect of demands and resources in more depth using daily diaries and interviews and found that high daily demands and low resources predicted poorer mental health-related outcomes in all staff. Commonly reported demands included the pace of work and lack of breaks, difficult customers and performance targets, while commonly reported resources included colleague and manager support. These findings imply that primary interventions to address demands and resources may be useful to all staff and could be tailored to workplace-specific demands and resources. Study 3 explored the physical health correlates of mental health outcomes. No significant correlations were found between physical and mental health in the call centre, suggesting that no physical health outcomes need to be addressed as standard when developing mental health support. Study 4 evaluated the existing support offered by the call centre. While a range of support services and facilities were available, low levels of awareness, the location of services and a lack of organisational support were barriers to their access. Support could be improved by increasing the effectiveness of communication strategies and accessibility of services and developing an organisational culture that is supportive of mental health.

Chapter 1: Introduction

1.1 Overview of the chapter

This chapter introduces the thesis, with a short overview of the importance of studying mental health at work (Section 1.2) and, specifically, call centre staff (Section 1.3). Section 1.4 outlines the research request, which was received from a UK government executive agency and informed the aim of the research within this thesis. Finally, Section 1.5 provides an outline of the following chapters of the thesis.

1.2 Mental health at work

Mental ill health (including depression and anxiety disorders) is one of the most common reasons for absence from work in the UK, accounting for an estimated 15.9 million days of absence per year (ONS, 2021). In 2017, a review of mental health and employers, commissioned by the UK government, reported that 15% of the workforce met the criteria for an existing mental illness and that around 300,000 people a year lost their job due to mental ill health (Stevenson & Farmer, 2017). Organisations are becoming increasingly aware of the need to provide their staff with support for mental health, with a recent survey of UK employers finding that the majority of organisations offer mental health interventions such as counselling and employee assistance programmes (CIPD, 2021). The relationship between the work environment and employee mental health and wellbeing has been the subject of a large body of research. For example, the seminal Whitehall II study followed a cohort of civil servants for over thirty years in order to understand and explain differences in health. They found that a wide range of psychosocial

risk factors in the workplace predicted mental health and wellbeing outcomes, including work demands, low levels of control, low levels of support at work, effort-reward imbalance, overcommitment, working hours and injustice (e.g., Ferrie et al., 2006; Kuper et al., 2002; North et al., 1996; Stansfeld et al., 1999; Steptoe et al., 2004). The Whitehall study findings regarding the negative effects of psychosocial risks on mental health have largely been confirmed within an extensive body of research across a range of psychosocial factors and working environments (see de Groene et al., 2018; Harvey et al., 2017; Theorell et al., 2015 for reviews of the evidence).

1.3 Mental health of call centre staff

Employment in call and contact centres in the UK has risen in the past two decades with the industry currently employing in excess of 800,000 people across more than 6000 call centres (ContactBabel, 2021a). ContactBabel estimated that this represents more than four percent of the working population in the UK. Some researchers and commentators on the rise of the call centre industry have viewed this type of workplace as providing a poor-quality working environment for its staff. They have been variously described as 'new sweatshops' (Fernie & Metcalfe, 1998); the new 'dark satanic mills' (in a reference to Blake's description of the dirty and dangerous factories of the early industrial revolution; Taylor & Bain, 1999); a workplace version of the Panopticon (a prison designed to allow prisoners to be observed without them knowing whether they are being watched; Fernie & Metcalfe, 1998); and providing evidence of the increasing Taylorisation of non-manual work (i.e. the mechanisation, monitoring and measurement of outputs as originally applied to manufacturing; Bain et al., 2002). However, others have challenged this view of call centre work as inevitably being of low quality and

mechanistic, arguing that skilled workers are increasingly providing advice and consultation by telephone (Thompson & Callaghan, 2002). Several studies comparing mental health across industries have highlighted lower than average mental health in call centre staff, including low levels of psychological wellbeing and high levels of job-related anxiety and depression and have related this to a number of psychosocial factors within the call centre environment (e.g., Holdsworth & Cartwright, 2003; Johnson et al., 2005; Sprigg et al., 2003). However, while call centre staff have been identified as being at high risk of mental health problems, they have received little research attention in comparison to other groups of workers identified as high risk (e.g., teachers and nurses).

1.4 Research request and aim of the research

In 2012, Cardiff Metropolitan University was approached by a government executive agency who were experiencing high levels of sickness absence at work, with almost a quarter of the days lost being related to stress and mental illness (23.7%). Their contact centre was highlighted as a specific area where sickness absence rates were high, and stress and mental illnesses were frequent causes of absence. The executive agency aimed to reduce these levels of sickness absence and improve the mental health and wellbeing of their staff, and as a result had been reviewing their workplace policies and support offer. In order to help reach this aim, a partnership was formed between the executive agency and Cardiff Metropolitan University. The aim of the research within this thesis was to develop an in-depth understanding the mental health needs of staff working within the contact centre. This included the extent to which mental health problems were affecting these staff, the impact of the psychosocial work environment and the

support currently on offer. This allowed recommendations for improving the mental health of this group to be made. While the centre is usually referred to by the term 'contact centre' rather than 'call centre' since customers are able to make contact via multiple channels (phone, email or social media), its main function was answering telephone queries and only a very small proportion of staff interacted with customers via any channel other than telephone. To maintain consistency with previous literature and in recognition of the main function of the centre, the term 'call centre', rather than 'contact centre', will be used in this thesis from this point forward.

1.5 Overview of the thesis

The thesis comprises eight chapters, which report on four studies addressing the aim of the research within the thesis. In Chapter 2, the literature review will discuss key theories which are relevant to stress and mental health at work and previous research on the mental health of call centre staff. Following the literature review, this chapter will set out the theoretical framework chosen for the research (the DRIVE model; Mark & Smith, 2008) and the research aim and objectives. Chapter 3 outlines the methodological approach taken, including the philosophical paradigm, the rationale for the chosen methodology and how methodological rigour was considered within the research. A detailed description of the research setting is also included in this chapter. Chapter 4 reports on the methods used for Study 1, a longitudinal study of mental health and its predictors, and reports on levels of mental health within the call centre, the predictors of mental health outcomes both concurrently and over time and a test of the DRIVE model. Chapter 5 outlines the methods and results for Study 2, an in depth daily study of the

mental health of call centre staff, using diaries and follow-up interviews. Chapter 6 reports the methods and results for Study 3, an assessment of the physical health of staff, examining correlations between mental health and physical health outcomes. Chapter 7 describes the methods and results for Study 4, an assessment of the existing support provided for call centre staff. The thesis concludes with Chapter 8, a general discussion of the findings, including an overview of the contribution of the current research to our understanding of the mental health of call centre staff, the strengths and limitations of the research, suggested future research directions, a reflection on undertaking research within the call centre and the practical implications of the research.

Chapter 2: Literature Review

2.1 Introduction

This chapter will review the existing literature relevant to the mental health of call centre staff. First, in Section 2.2, conceptualisations of mental health will be reviewed and the definition of mental health used in the research in this thesis will be outlined. In Section 2.3, theories and models relevant to mental health and wellbeing at work will be critiqued. Section 2.4 will include a review of the current evidence on mental health in call centre staff. The chapter will be concluded in Section 2.5, with the aim and research objectives presented.

2.2 What is mental health?

The conceptualisation of mental health has evolved over time, with older definitions often presenting mental health as synonymous with an absence of mental illness (i.e. diagnosable mental health conditions; Offer & Sabshin, 1966). Since the 1950s and 60s, a growing number of researchers and clinicians have argued that a more positive conceptualisation of mental health was required (Grinker et al., 1962; Jahoda, 1958; Luborsky, 1962), although expert views on the core aspects of mental health still vary (Manwell et al., 2015). Currently, there is no generally accepted definition of mental health (e.g., Galderisi et al., 2015; Huppert & So, 2013; Westerhof & Keyes, 2010), although the conceptualisation of mental health as being closely linked to wellbeing is widely used (WHO, 2004).

2.2.1 Wellbeing and functioning in mental health

One of the best known definitions of mental health comes from the World Health Organisation (WHO, 2004):

Mental health is a state of wellbeing, in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community.

This definition includes two aspects: the first is seeing mental health as equivalent to wellbeing, and the second is seeing mental health as linked to effective functioning, which includes coping and functioning within the workplace and community. The conceptualisation of mental health as synonymous with wellbeing has been developed by a number of researchers (e.g., Keyes, 2005; Slade, 2010), building on a large wellbeing literature base. Whilst wellbeing has been conceptualised in a range of different ways within different fields of study (Dodge et al., 2012), the general study of wellbeing has been associated with the positive psychology field (Seligman, 2011) and has been generally underpinned by one of two perspectives: hedonic and eudaimonic wellbeing (Ryan & Deci, 2001). Hedonic wellbeing relates to human happiness and pleasure and is often measured by subjective wellbeing which comprises both cognitive (life satisfaction) and affective (positive and negative affect) elements (Diener et al., 1999). This has been the primary way in which wellbeing has been conceptualised in the academic literature (Ryan & Deci, 2001). In contrast, eudaimonic wellbeing represents personal growth, human potential and the extent to which life is meaningful, as opposed to pleasurable (Ryff & Keyes, 1995). The eudaimonic approach to wellbeing separates wellbeing from happiness, with Waterman (1993), for example, seeing wellbeing as 'living in line with one's deeper values'. More recently, research has increasingly considered hedonia and eudaimonia as complementary perspectives on wellbeing (Huta and Ryan, 2010), and both have

been found to predict positive outcomes such as improved physical health and positive affect (Ryan & Deci, 2001). This has led to a greater focus on integrated conceptualisations of wellbeing with a focus on the concept of 'flourishing' (e.g., Seligman, 2011). Butler and Kern (2016) defined flourishing as, "a dynamic optimal state of psychosocial functioning that arises from functioning well across multiple psychosocial domains" (p. 2), with the reference to 'multiple psychosocial domains' highlighting its focus on integrating a number of wellbeing concepts. One influential integrated model of wellbeing, the PERMA model (Seligman, 2011) incorporates 5 concepts: positive emotion (including happiness and life satisfaction), engagement (being absorbed in an activity and experiencing 'flow'; which is a state of complete immersion where the individual loses awareness of time passing), relationships (social connectedness, integration with a society or community, feeling cared for by others and cultivating positive relationships with others), meaning (including a sense of purpose and direction and feeling part of something bigger than oneself) and accomplishments (including a sense of success and mastery). An alternative understanding of flourishing presents it as combining hedonic and eudaimonic aspects of wellbeing (e.g., Huppert & So, 2013; Keyes, 2010). While these conceptualisations vary, flourishing can be seen as multifaceted, having affective, cognitive and functional aspects.

Galderisi et al. (2015) have criticised the view of mental health as closely aligned with wellbeing, arguing that the focus on positive feelings and optimal functioning is unhelpful and may create unrealistic expectations, since people in good mental health are likely to experience a range of emotions, including negative emotions, particularly in relation to difficult life experiences. In addition, they suggested that

the focus on functioning, particularly the WHO's (2004) suggestion that good mental health means being able to work productively, may be unrealistic for some people, including older people and those in poor physical health. Keyes (2007) has claimed that only 20 percent of adults can be described as 'flourishing' (i.e. experiencing positive mental health), although the cut off points which were set to define the 'flourishing' and 'languishing' categories appear to be somewhat arbitrary. This use of arbitrary cut off points to separate those who are flourishing from those who are languishing may be unhelpful in suggesting that mental health is something that individuals either 'have' or 'do not have', rather than being a more dynamic state of being which exists on a continuum. If positive mental health is a state which is only achieved by a small number of people, Galderisi et al.'s (2015) criticism of the conceptualisation of mental health as wellbeing seems justified. However, many researchers have conceptualised positive mental health as a continuum, rather than as a category (e.g., Keyes, 2005), which may help to address this criticism, since it allows positive mental health to be seen as dynamic and contextual, rather than an idealised state of being.

2.2.2 Mental health as continua

Mental health and mental illness have often been viewed as sitting on a continuum. For example, Huppert and So (2013) suggested that common mental disorders such as anxiety and depression and positive mental health (which they see as synonymous with flourishing and comprised of hedonic and eudaimonic wellbeing) can be seen as sitting at opposite ends of a spectrum. In contrast, Keyes (2005) has suggested that positive mental health and mental illness should be conceptualised as two related but distinct dimensions, each existing on a continuum (termed the two continua model). He conceptualised positive mental

health in a similar way to Huppert and So (2013), with those who are high in both hedonic and eudaimonic wellbeing seen as 'flourishing' and those who are low in both seen as 'languishing'. In contrast, he suggested that mental illness should be seen as related to the negative symptoms that make up diagnosable mental illnesses, using established clinical criteria. Empirical evidence tends to support the two factor model over the bipolar scale, with a review of the evidence finding consistent support for the two factor model (Iasiello et al., 2020). For example, confirmatory factor analysis on measures of mental illness and positive mental health has consistently found that a two factor solution is a better fit than a single factor. These findings have been replicated across Western and non-Western countries, in clinical and non-clinical populations and across the lifespan, suggesting they are robust. Understanding mental illness and positive mental health as sitting on separate continua allows for a more complex understanding of mental health than a one factor model and helps to address Galderisi et al.'s (2015) criticism that equating mental health with wellbeing implies that negative emotions and experiences should not be part of the experience of those in good mental health. For example, the two continuua model implies that individuals experiencing mental illness are still able to experience high levels of positive mental health, and, indeed, empirical evidence has confirmed that this is the case (Iasiello et al., 2020). In practice, distinguishing between positive mental health and mental illness outcomes may help to target interventions for different groups. Westerhof and Keyes (2010) compared the mental health and illness of older and younger adults, and found that older adults had lower levels of mental illness but similar positive mental health compared to younger adults. This suggests that, in this case, interventions to address mental illness could be targeted at younger

adults, while interventions to improve positive mental health could be beneficial to all age groups.

2.2.3 Mental health and cultural meanings

Vaillant (2012) has highlighted that the conceptualisation of mental health cannot be separated from cultural contexts and meanings, since what is deemed healthy in one culture may be seen as unhealthy in another. This suggests that a cross-cultural and value free definition of mental health may not be possible. Galderisi et al. (2015) tried to address this issue in their definition on mental health which references "individuals [using] their abilities in harmony with universal values of society" (pp. 231-232), which raises questions about what these universal values may be. They acknowledge the difficulty of identifying cross-cultural values, but suggest that some values are largely shared, "such as respect and care for oneself and other living beings; recognition of connectedness between people; respect for the environment; respect for one's own and others' freedom" (p. 232). It is not clear how they came to the conclusion that these values are shared across cultures, and the assumption that they are seems problematic. In an international qualitative survey of mental health experts regarding the definition of mental health (Manwell et al., 2015), experts highlighted the number of competing paradigms and complexity of mental health as barriers to developing an all-encompassing definition. This suggests that any definition of mental health needs to take into account its complexity and multifactorial nature, as well as the cultural context, and, consequently, research on mental health needs to consider the population being studied and the difficulties of cross-cultural comparisons. The Public Health Agency of Canada (2006, p. 2) have put forward a definition of mental health

which proposes that mental health is multi-dimensional, including the key concepts of wellbeing and functioning across a range of domains, and highlights the importance of culture in understanding mental health:

> Mental health is the capacity of each and all of us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face. It is a positive sense of emotional and spiritual well-being that respects the importance of culture, equity, social justice, interconnections and personal dignity.

This definition incorporates many of the key concepts identified as important within this chapter, however, does not include any distinction between mental illness and positive mental health or recognise that these factors exist on continua.

2.2.4 Definition of mental health and distinction from wellbeing

Within the present study, the conceptualisation of mental health draws on the literature summarised in this section, which suggests that mental health incorporates aspects of wellbeing and functioning, exists on two continua (mental illness and positive mental health; Keyes, 2005) and must be understood within its cultural context. Therefore, the following definition of mental health is put forward:

> Mental health is a dynamic state of wellbeing, incorporating cognitive, affective and functional aspects. It incorporates two related but distinct aspects, each existing on a continuum: the first being mental illness, which relates to the negative symptoms that make up diagnosable mental illnesses, and the second being positive mental health, which can be equated with

'flourishing'. Mental health is not a static or idealised state and can incorporate a range of emotional experiences and cultural meanings.

While mental health is seen as a state of wellbeing, it should be noted that this does not suggest that mental health is synonymous with wellbeing. The conceptualisation of wellbeing within positive psychology has been discussed earlier in this section, however, within occupational health psychology, the study of wellbeing at work has developed out of the literature on workplace stress and health (e.g., see Häusser, et al., 2010). This literature has traditionally focused on the relationships between workplace factors (e.g., job demands and control; Karasek, 1979) and stress-related health outcomes (e.g., cardiovascular disease; Theorell & Karasek, 1996). Cooper (2009) argued that bringing together the literature on stress and its negative health outcomes with the positive psychology focus of traditional wellbeing research is pivotal in improving the wellbeing of society, resulting in a broader conceptualisation of wellbeing within this literature. As a result, the term 'wellbeing' has been used to refer to a range of outcomes which incorporate stress-related outcomes and more traditional wellbeing outcomes, including subjective wellbeing, job satisfaction, engagement, anxiety, depression, stress and burnout (e.g., de Jonge et al., 2000; Häusser et al., 2010; Schaufeli et al., 2008). Within this thesis, wellbeing is conceptualised in line with the occupational health psychology tradition and, as such, is considered to be a broad category, which can incorporate a range of positive and negative outcomes. This may include mental health (both mental illness and positive mental health) as well as a wider set of positive and negative outcomes, such as job satisfaction and stress.

2.2.5 Workplace stress and its relationship to mental health

Given the central role of stress in the development of mental illness, as well as in the theories and models which will be reviewed in the next section, it is important to consider what is meant by this term and how it relates to mental health. The term 'stress' has a variety of meanings within a number of research disciplines as well as within everyday language. Defining stress is, therefore, not straightforward. Contemporary conceptualisations position stress as a complex interaction between the person and the environment. Cox and Griffiths (2010) distinguished between two slightly different approaches within these contemporary theories: interactional models, which focus more on the structural aspects of the situation and less on the individual; and transactional models, which place more emphasis on the cognitive appraisals and coping of individuals in relation to their specific context. The importance of both cognitive appraisals and coping in understanding the stress process have been widely supported in research (e.g., Bakker & Sanz-Vergel, 2013; Crocker et al., 2015; Smith, 2021). Therefore, within this thesis, stress is conceptualised in line with the transactional approach, which sees stress as a process (Cox & Griffiths, 2010) with these cognitive and perceptual processes at its core. Within this process, antecedent factors (i.e. stressors) are experienced within the work environment. The individual appraises these stressors and where they are seen as threatening their wellbeing or exceeding their ability to cope, this may lead to a number of negative behavioural, physiological and emotional responses and, in the longer term, may lead to poor mental and physical health, as well as negative organisational outcomes, such as sickness absence and poor performance.

In practice, workplace stress has been defined and measured in numerous ways, with estimated prevalence rates varying across surveys and depending on the case definition used (Houdmont et al., 2010). A key reason for this is the lack of a consistent case definition of workplace stress across studies. The UK Health and Safety Executive commissioned a piece of research which looked at the feasibility of developing a single case definition for workplace stress, which could be used in research as well as in legal processes, including litigation and compensation (Cox et al., 2006). The authors concluded that it was not possible to develop a single case definition for use in all situations due to the complexity of workplace stress. However, they did set out a case definition framework, informed by the transactional approach, with a process within which the experience of workplace stress can be understood. This process includes five elements: 1) self-reported workplace stress, 2) evidence of unreasonable exposure to workplace psychosocial hazards, 3) mental ill health, 4) work behaviour being affected by ill health (i.e. sickness absence or seeking health care), and 5) an absence of confounding individual differences or circumstances. All five of these criteria should be considered when assessing whether an individual is experiencing workplace stress. The presence of potentially confounding factors does not rule out stress caseness, but the evidence for the stress being work related should be weighed against other potential causal explanations. This definition of a case of workplace stress highlights the close relationship between workplace stress and mental health in the workplace, with mental illness making up one aspect of a case of work-related stress. Including measures of all five criteria in studies of mental health at work may help in understanding the processes through which mental illnesses or positive mental health may develop. Both the case definition of stress

outlined here, and the transactional approach to stress, align with the theoretical framework adopted in the research within this thesis, the DRIVE model (Mark & Smith, 2008), which will be described in the next section.

2.3 Theories and models of workplace stress and health

A number of models and theories have been used to describe or explain mental health at work. Some of the most influential and widely used will be reviewed here. Most of these models and theories (with the exception of the Demands-Resources model [Demerouti et al., 2001] and the DRIVE model [Mark & Smith, 2008]) were originally developed as theories of stress. However, given their widespread use in underpinning the research that has attempted to predict mental health, they will be considered within this section. These include the theories which have been most widely tested in research: the Demands-Control Model (Karasek, 1979); and its extension, the Demands-Control-Support Model (Johnson & Hall, 1988); the Effort-Reward Imbalance Model (Siegrist, 1996); the Job Demands-Resources Model (Demerouti et al., 2001); and one theory which has been influential in how researchers conceptualise stress, although it is not widely tested in workplace research - the Cognitive-Motivational-Relational Theory (Lazarus, 1991). Consideration will then be given to one more holistic model: the DRIVE model (Mark & Smith, 2008), which was chosen as the theoretical framework for the current research.

2.3.1 Demands-Control (Support) Model

One of the most well-known and widely used theories of workplace stress is the Demands-Control Model (Karasek, 1979), which proposes that a combination of

high job demands and low job control leads to psychological (or mental) strain. Job demands are seen as pressures relating to the job being carried out (e.g., time pressure and difficult work), and job control or decision latitude is seen as the amount of control an individual has over work tasks and behaviours. The model distinguishes between job strain, which is defined as a "derived composite measure…[that] occurs when job demands are high and job decision latitude is low" (Karasek, 1979, p. 287) and mental strain, which is seen as a wellbeing related outcome. Jobs where demands are high and control is low (high strain jobs) are seen as posing a high risk to health. These effects may be additive or multiplicative (i.e. there may be an interaction between demands and control; Häusser et al., 2010). Researchers using this model have suggested a 'buffer' hypothesis, in which control buffers the effect of high demands on health (van der Doef & Maes, 1999). The Demands-Control model was later extended to include social support as an additional factor, and became known as the Demands-Control-Support or Iso-Strain model (Johnson & Hall, 1988). Within this model, the combination of high levels of demands, low levels of control and low levels of social support (iso-strain) are all seen as leading to the most negative health outcomes, with another buffer hypothesis associated with this model suggesting that support buffers the effects of high strain conditions (high demands and low control) on psychological strain, reducing the likelihood that it will lead to negative health outcomes. This hypothesis suggests that there is a three way interaction between demands, control and support, with Johnson and Hall (1988) predicting that high levels of control buffer high demands most effectively where support is also high.

The Demands-Control and Demands-Control-Support models have been widely tested, with consistent evidence that shows high strain conditions (high demands and low control) and iso-strain (high demands, low control and low support) are associated with lower mental health (Häusser et al., 2010). There is consistent evidence of additive effects in both cross-sectional and longitudinal studies, particularly those with larger sample sizes. However, less evidence has been found for the buffer hypothesis (Luchman & González-Morales, 2013). This inconsistent support for the buffer hypothesis has led some researchers to question the validity of the model, which presupposes that demands, control and support interact, rather than being independent predictors of health and wellbeing (e.g., Beehr et al., 2000).

These models remain influential within the literature, due to their simplicity and ability to predict health and wellbeing outcomes. However, they have been criticised for being overly simplistic, with a focus on a very narrow set of workplace variables (Mark & Smith, 2008). Karasek's definitions of demands and control have sometimes been viewed as excessively narrow, focusing specifically on job tasks within certain roles and not taking into account the wider work context (Cox et al., 2000). Despite this, the way that demands and control have been conceptualised within the literature has varied (Kain & Jex, 2010). For example, the literature has included a variety of measures of demands, such as workload, physical exertion and exposure to hazards, while control has been measured via autonomy, decision-making latitude and scheduling control, among other concepts (Kain and Jex, 2010). This may suggest that standardised measures of demands

and control need to be carefully designed in order to be broad enough to fully encapsulate these concepts across a range of job types (Williams, 2014).

An additional conceptual issue can be identified within the literature in relation to the concepts of job strain and psychological strain. Karasek (1979) clearly defined job strain as a combination of work factors and as an independent variable, while he saw psychological strain as an outcome variable, resulting from job strain. Studies using this model often do not make a clear distinction between job strain and psychological strain. In fact, job strain is often assumed to be synonymous with stress and used as a dependent variable (e.g., Boini et al., 2013). As such, it has often been measured as a proxy for stress or wellbeing in workplace research (e.g., Croidieu et al., 2008). The use of the job strain construct as a dependent variable seems conceptually problematic as it conflates cause (workplace factors) with effect (mental health and wellbeing outcomes).

A final criticism of the job demands control support model is that, with its workplace focus, the model does not account for individual differences that may explain variance in health and wellbeing or may mediate or moderate responses to workplace demands (Kain & Jex, 2010; Mark & Smith, 2008). Some studies have measured individual differences in conjunction with the job Demands-Control-Support model (see Kain & Jex, 2010, for a review) and found that individual differences can influence how individuals respond to workplace factors. For example, individuals with a proactive personality (i.e. a tendency to show initiative, take action and persevere with problems), were found to make more effective use of autonomy at work but experienced more negative effects when perceived

control was low (Parker & Sprigg, 1999). In a similar way, individuals with higher self-efficacy were found to make better use of control at work and, therefore, were more likely to experience a buffering effect of control on high demands in relation to wellbeing (Salanova et al., 2002). These findings suggest that individual differences may moderate the relationships between demand and control, and, as such, appear to be a key omission in explaining how demands and control at work impact health and wellbeing outcomes.

2.3.2 Effort Reward Imbalance

A second highly influential model of workplace stress is Siegrist's (1996) Effort-Reward Imbalance model. Like the Demands-Control-Support model, it can be categorised as a 'balance' model of stress, where stress is seen as arising from an imbalance between the positive and negative aspects of the workplace. This model proposes that the effort an individual puts into work is part of a reciprocal social contract and needs to be matched by appropriate rewards. Where there is a mismatch between the effort exerted and the rewards gained, stress and poor mental health are hypothesised to be the likely result. According to this model, effort can be intrinsic (i.e. arising from the individual's motivation) or extrinsic (arising from aspects of the work environment). Compared to Karasek's (1979) approach, this theory places a greater emphasis on the influence of the individual by including intrinsic effort. The concept of intrinsic effort includes the possibility for over-commitment, which is a tendency for some individuals to make excessive effort or have unrealistic expectations about what they are able to achieve.

There is good evidence to support Siegrist's (1996) hypothesis that high effort and low reward conditions will lead to stress and poor mental health and wellbeing. For example, studies have found that high effort and low reward conditions are associated with a higher risk of depression (e.g., Bonde, 2008; Wang et al., 2010) and higher risk of burnout (e.g., Bakker et al., 2000; Dai et al., 2008). Nevertheless, while the Effort-Reward Imbalance model is successful in predicting wellbeing outcomes using a small number of variables, it has been criticised for being overly simplistic since it includes only a few work-related variables, with inadequate consideration of individual differences (Mark & Smith, 2008). The Effort-Reward Imbalance model has often been used in conjunction with the Demands-Support-Control model since some studies have found evidence that they better predict outcomes in combination than when considered in isolation (e.g., de Jonge et al., 2000). This may lend some support to the criticisms of both models that they are too narrow and simplistic (e.g., Mark & Smith, 2008). A further criticism relates to the use of the ratio between effort and rewards, calculated as ratio of a total effort score to a total reward score. When both effort and reward are high, the ratio between them will be approximately 1 and when both effort and reward are low, the ration between them will be approximately 1. This implies that working in a high effort and high reward condition is equivalent to working in a low effort and low reward condition - an assumption which some critics have called into question (Kompier, 2003).

2.3.3 HSE Management Standards

The HSE Management Standards is an approach to work-related stress which was developed by the UK Government's Health and Safety Executive (HSE), which is

responsible for regulating health and safety at work in the UK (Mackay et al., 2004). The standards set out six key areas of work which are associated with negative health and wellbeing outcomes and poor productivity when not adequately managed. The six areas are demands (e.g., workload), control (i.e. the extent to which individuals have a say in the way they carry out their work), support (including support from the organisation, line manager and colleagues), relationships (e.g., promoting positive work practices to avoid conflict and addressing unacceptable behaviour such as bullying), role (i.e. the extent to which workers understand their work role and whether they have conflicting roles) and change (i.e. the management and communication of organisational change). This was not developed as a theoretical model, but is a set of good practice standards to assist organisations in the UK to identify and address psychosocial hazards which may affect their workers (Mackay et al., 2004). The six management standards have been found to be related to a number of work-related health and wellbeing outcomes including perceived work stress (e.g., Houdmont et al., 2012), intentions to quit (Allisey et al., 2014), job satisfaction, job related anxiety, depression and near misses (Kerr et al., 2009). Benchmark data is available so that organisations can compare the stress levels within their organisation to that of other UK organisations (Cousins et al., 2004). The HSE Management Standards assumes that their six key areas of measurement are indicative of work-related stress, however, they do not suggest measuring perceived stress in conjunction with the six areas. Although research has shown that these areas are predictive of perceived work stress, their measurement does not give an indication of the prevalence of work-related stress within an organisation. Some researchers have combined their measurement with the measurement of stress and found significant correlations between exposure to psychosocial hazards and stress (e.g.,

Houdmont et al., 2012). However, this is not consistent across studies and this failure to measure perceptions of stress consistently is a key limitation of the approach.

The management standards approach has been criticised for being too generic. For example, it is not tailored to specific professions, so may miss job-specific demands (Bartram et al., 2009) and generic benchmark data may not be appropriate for high stress occupations such as the police (Houdmont et al., 2012). Houdmont et al. suggested the use of occupation-specific benchmark data to allow a more appropriate comparison for these high stress groups. The model, in its current form, lacks the flexibility to include measurement of job-specific demands, although it has been used in combination with other measures (see Brookes et al., 2013).

The management standards approach has been widely used in UK organisations. However, little is known about how it has been used to develop or target interventions within the organisations that have adopted it (Brookes et al., 2013). One study that did attempt this was by De Sio et al. (2018), who identified problem areas for women in demographic sub-analyses which were not apparent in overall analysis of their data. They argued that sub-analyses for different demographic groups should be carried out by organisations in order to ensure that problems are identified and to enable targeting of interventions. Given the lack of consideration of individual characteristics as standard within the model as well as the failure to include specific outcomes as part of the model, it appears that more holistic models of mental health and wellbeing at work are required.

2.3.4 Cognitive-Motivational-Relational Theory

Another influential theory of stress is the Cognitive-Motivational-Relational Theory (CMRT) of emotions, put forward by Lazarus (1991), which built on his earlier Transactional Theory of Stress (Lazarus & Folkman, 1984). This is a general transactional model of stress and emotion and is not specific to the workplace. CMRT suggests that stress depends upon the transaction between the individual and their environment, with appraisals (i.e. the way in which the individual interprets and makes judgements about environmental demands) and coping (defined as "cognitive and behavioural efforts to manage [reduce, minimise, master, or tolerate] the internal and external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources"; Folkman et al., 1986, p. 572) influencing the emotional response. Stress within this model is seen as arising when the demands encountered in the environment are appraised as exceeding the individual's resources and threatening their wellbeing. The model proposes two stages to the appraisal process. Primary appraisal is the initial judgement of whether an event or encounter should be seen as irrelevant to wellbeing, benign-positive (suggesting a positive outcome) or stressful (associated with threat, harm or loss). Where a situation is appraised as potentially stressful, secondary appraisal takes place, whereby the individual evaluates what they can do to avoid or mitigate the potential harm and evaluates their perceived coping resources. Within this perspective, Lazarus identifies two types of coping: problem-focused coping (using rational problem solving) and emotion-focused coping (focused on regulating distressing emotions). Some researchers have investigated more distinct types of coping, such as seeking social support, self-blame, wishful thinking, and avoidance (e.g., Mark & Smith, 2012a). Where the

individual evaluates the situation as exceeding their ability to cope, Lazarus (1991) suggests that this will lead to negative emotional and behavioural responses.

CMRT has been influential in stress research since it represents the contemporary view of stress as a transaction between the individual and the environment and describes cognitive processes which explain how stress arises through this person-environment transaction (Cox & Griffiths, 2010). The theory gives important roles to both the work situation and subjective evaluations of the individual and, as such, accounts for the premise that some jobs are generally more stressful than others, but also allows for individual differences in the responses to job demands. However, the theory has not been as widely used in workplace research as many of the other popular models, since its complexity makes it difficult to test quantitatively in practice. There are some studies which have found support for aspects of the theory in predicting psychological and emotional symptoms (Dewe, 1991; Folkman et al., 1986) and it has been widely supported in studies of stress, coping and emotion in sporting populations (e.g., Campo et al., 2012; Crocker et al., 2015), although the full model has only been tested in a few studies (e.g., Neil et al., 2011). Some organisational research has focused on the coping aspect of the theory and has found that the type of coping used can predict a range of outcomes including depression (Zeidner, 1994) and job satisfaction (Welbourne et al., 2007). There has been some criticism of the concept of coping within CMRT and how it is defined, since it is unclear whether it is a process, a behaviour, an individual trait or a reaction to a specific situation, which makes it more difficult to operationalise within studies (e.g., Cox & Ferguson, 1991). However, it is the complexity of the theory which is the main

barrier to it being tested quantitatively and, therefore, has informed a scant amount of research within the workplace literature (Cox & Griffiths, 2010). Even in fields where the theory has been more widely used (notably, in relation to the experience of stress and emotion in sport), the full model has rarely been tested (Campo et al., 2012). This suggests that more parsimonious and simpler models may be preferable in practice (Mark & Smith, 2008).

2.3.5 Job Demands-Resources Model

The Job Demands-Resources model was first put forward in the early 2000s (Demerouti et al., 2001) and was later revised by Schaufeli and Bakker (2004). It has become one of the most popular models of workplace wellbeing. The model was originally devised as a model of burnout, and hypothesises that burnout leads to impaired health. Therefore, it has been viewed as a relevant model of health and wellbeing at work and has been used to predict a range of wellbeing outcomes (Bakker & Demerouti, 2017). The model is another example of a 'balance' model which looks at the balance of positive and negative work factors, in this case, demands and resources, and their impact on wellbeing outcomes. The inclusion of both positive and negative work factors is a strength, since they have been found to be independently predictive of wellbeing (Smith et al., 2011).

The Job Demands-Resources model includes two parallel processes: the health impairment process and the motivational process. The health impairment process arises where work demands are excessive and sustained. This is hypothesised to lead to exhaustion, strain and burnout. The revised model adds other health problems as an additional outcome, seeing exhaustion and burnout as mediators

of the relationship between demands and other health outcomes (Schaufeli & Bakker, 2004). The motivational process is linked to job resources, in that when job resources are inadequate, disengagement is hypothesised to follow. The revised model suggests that engagement mediates the relationship between job resources and work performance, that is, that inadequate job resources leads to disengagement which then results in a deterioration in work performance. The model also predicts an interaction effect, where job resources buffer the negative effects of demands on exhaustion and burnout.

Within this model, both demands and resources are conceptualised very broadly, with demands being defined as "those physical, social or organizational aspects of the job that require sustained physical or mental effort and are, therefore, associated with certain physiological and psychological costs (e.g., exhaustion)" (Demerouti et al., 2001, p. 501). This is in contrast to the narrow definition of demands as task-related within the Demands-Control model (Karasek, 1979). For clarity, within the remainder of this thesis, the narrow conceptualisation of demands will be referred to as task-related demands, whereas the broader definition will be referred to as job demands. Resources are defined by Demerouti et al. (2001, p. 501) as:

> Those physical, psychological, social or organizational aspects
> of the job that may do any of the following: (a) be functional in
> achieving work goals; (b) reduce job demands at the associated
> physiological and psychological costs; (c) stimulate personal
> growth and development.

These very broad definitions result in a flexible model, where researchers can adapt their focus to a range of job types and work environments, selecting those job demands and resources which are relevant to the particular workplace (Bakker & Demerouti, 2007). However, this flexibility has led to the job demands and resources variables being operationalised very differently within different studies (Demerouti & Bakker, 2011). For example, a wide range of specific job demands and resources have been measured across studies (job demands may include heavy lifting or emotional demands, depending on the type of job; Schaufeli & Taris, 2014). In addition, it is not always clear whether a factor should be conceptualised as a demand or a resource. For example, it is not clear whether high levels of responsibility for the outcomes of work should be seen as a demand, since it may place a greater cognitive burden on employees, or as a resource, since it may increase control over work, or whether this depends on the circumstances and perceptions of the employee (Bakker & Demerouti, 2017). Whilst flexibility has been proposed as a strength of the model (Bakker & Demerouti, 2007), it can lead to less specific predictions and also reduces the generalisability of findings. There is little guidance relating to how researchers identify the job demands and resources which are relevant to a particular workplace or job and then conceptualise how they might function within that job. It is, therefore, not clear how the flexibility of the model can be best used (Bakker & Demerouti, 2017). In addition, the model has been criticised for not making specific predictions about the relationships between job demands, resources and outcomes, with different job demands and resources often having different types of relationships that impact outcomes differently (Schaufeli & Taris, 2014). This inconsistency and lack of specificity has led Schaufeli and Taris (2014) to argue that there is no one Job Demands-Resources model, but rather that the model is

heuristic in nature, being a broad conceptual framework, rather than describing relationships between specific concepts.

The Job Demands-Resources model has been widely tested, with strong evidence to support the hypothesised health impairment and motivational processes in both cross sectional and longitudinal studies (see Bakker & Demerouti, 2017; Bakker et al., 2014 and Schaufeli & Taris, 2014 for reviews). However, little evidence of an interaction between job demands and resources has been found (Hu et al., 2011). Despite a number of criticisms, the model is simple, parsimonious, flexible and user friendly, which can account for its popularity. In this way, the model avoids the issues that CMRT has faced due to its complexity, whilst allowing a wider range of predictors of wellbeing to be considered in comparison to the Demands-Control-Support and Effort-Reward Imbalance models, which have been criticised as being overly narrow and simplistic (e.g., Mark & Smith, 2008).

The model, as originally operationalised, mainly focused on workplace factors, not allowing for personal as well as work resources to be included (Demerouti et al., 2001). A number of studies have attempted to include personal resources in the model alongside work resources (e.g., Vink et al., 2011; Xanthopoulou et al., 2009). These studies have included individual differences which are seen as increasing motivation and buffering the negative effects of job demands on wellbeing, and have included factors such as self-efficacy, optimism, and organisation- based self-esteem. Across studies personal resources have been incorporated within the model in very different ways, for example, by looking at direct effects or including personal resources as moderators or mediators

(Schaufeli & Taris, 2014). It is, therefore, currently unclear how personal resources should be incorporated within the model. In addition, a small number of researchers have begun to incorporate personal demands into the model, recognising that individual differences are not always resources (Barbier et al., 2013). Personal demands which have been considered within studies of the Job Demands-Resources model include workaholism, which has been found to increase the risk of poor wellbeing and burnout (Guglielmi et al., 2012; Schaufeli et al., 2009). To date, these have been little researched and, as with personal resources, it is unclear how they should be incorporated within the model (for example, as independent variables, moderators or mediators). The inclusion of individual difference variables addresses some of the criticisms of the Demands-Control-Support model and the Effort-Reward Imbalance model, which focus more heavily on workplace variables (e.g., Mark & Smith, 2008). However, the focus on personal resources seems to assume that individual differences mainly have positive effects on wellbeing and the model rarely takes into account any negative effects of individual differences. A wider range of individual differences could be considered, for example, neuroticism has been found to be related to negative wellbeing and mental health outcomes, including low subjective wellbeing (Deneve & Cooper, 1998), anxiety and depression (Kotov et al., 2010). This suggests that the broader impact of individual difference variables on mental health and wellbeing needs to be considered, as well as a clear conceptualisation of how they should be incorporated within the model.

2.3.6 The DRIVE Model

The DRIVE (Demands, Resources and Individual Effects) model (Mark & Smith,

2008) is a relatively recent model of workplace stress and health which was

developed in response to a number of criticisms discussed in relation to the most

prevalent models and theories. In particular, those models which focused on a

small number of workplace factors (such as the Demands-Control-Support and

Effort-Reward Imbalance models) were seen to be overly simplistic in focus, with a

particular gap in relation to individual differences. In contrast, transactional

theories which accounted for individual differences, such as CMRT (Lazarus,

1991), were seen as too complex to be widely used in research. In creating the

model, Mark and Smith aimed for a 'middle ground' between the overly simplistic

models and the overly complex theories. Two versions of the DRIVE model were

developed by the authors: a simpler and a more complex version. The simpler

DRIVE model is similar in structure to the Demands-Resources model, including

job demands and job resources as categories of variables. The model adds

individual differences as an additional category of variables. These three

categories of variables are seen as contributing to health outcomes, in line with

previous evidence on job demands, resources and individual differences (Bakker

& Demerouti, 2017; Mark & Smith, 2008). Following initial testing, the authors

proposed an enhanced, more complex, version of the model where perceived

stress was seen as partially mediating the relationships between the three

categories of variables (Mark & Smith, 2008) and health outcomes (see Figure 1).

In addition, it proposes six moderation relationships: 1) job resources moderate

the relationship between job demands and stress, 2) job resources moderate the

relationship between job demands and health outcomes, 3) job resources

moderate the relationship between stress and health outcomes, 4) individual

differences moderate the relationship between job demands and stress, 5)

individual differences moderate the relationship between job demands and health

outcomes and 6) individual differences moderate the relationship between stress

and health outcomes. More recently, a third version of the DRIVE model has been

developed for use in research on employee engagement (Margrove & Smith,

2022).
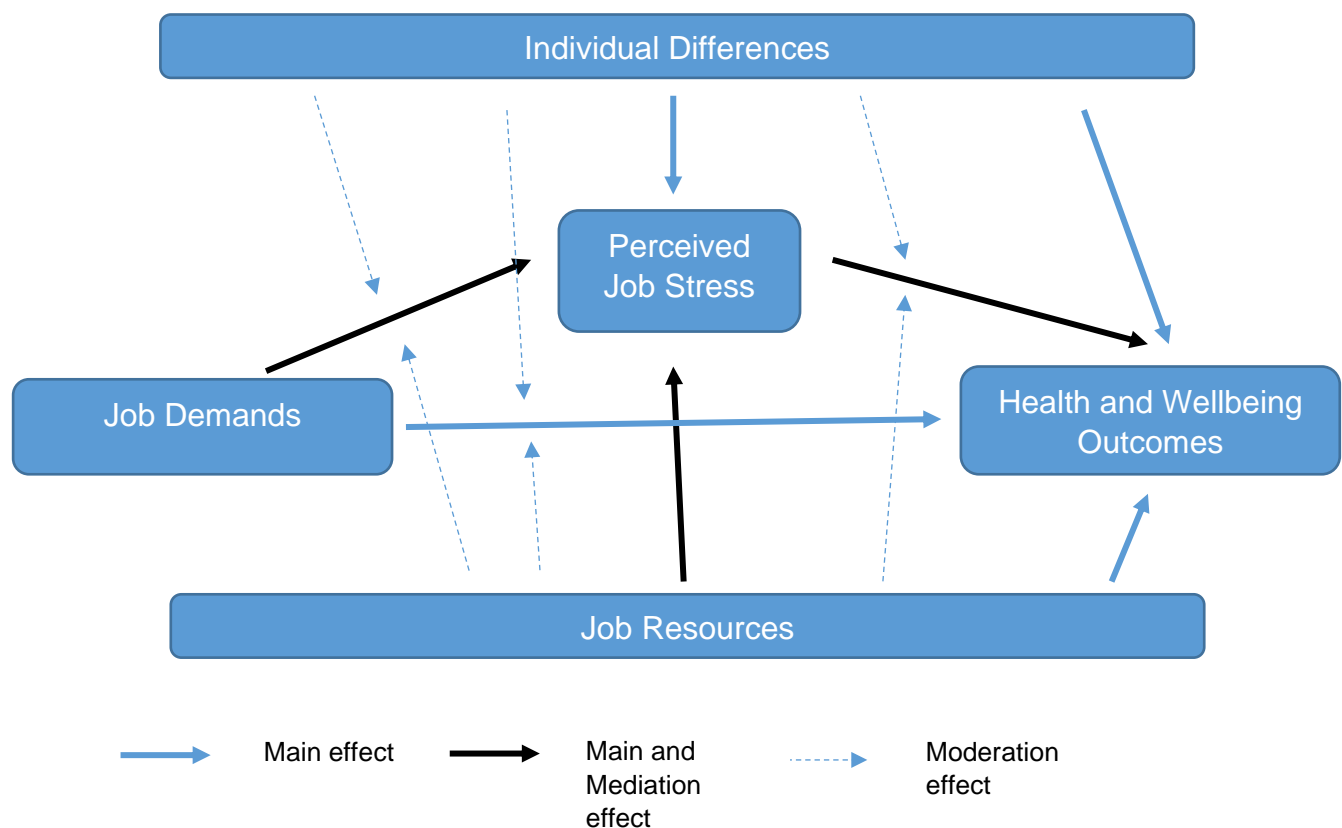
Figure 1 The DRIVE Model (adapted from Mark & Smith, 2008)

Like the Job Demands-Resources model, the DRIVE model does not function as a

formal predictive theory, but rather as a theoretical framework into which relevant

variables can be introduced. The model incorporates positive aspects from a

number of other models, which include: the possibility to incorporate well-

established variables from the Demands-Control-Support and Effort-Reward

Imbalance models; the flexible framework and broad categories of variables from

the Job Demands-Resources model; the ability to adapt the model to different

settings; the inclusion of individual differences, which extends the personal

resources and demands aspect of the Job Demands-Resources model by

incorporating a wider range of individual differences in a systematic way; and the

ability to incorporate coping and attributions from CMRT. In addition, the inclusion

of perceived stress as a mediator makes clear the mechanisms by which job

demands and resources are theorised to impact health.

The DRIVE model has been tested in a number of studies by Smith and

colleagues (e.g., Mark & Smith, 2012a; Williams, Thomas & Smith, 2017),

although some of these studies have not looked at the full model or have tested

amended versions of the model. Two measurement tools have been developed to

measure a number of relevant variables within the structure of the DRIVE model:

the Wellbeing Process Questionnaire; (WPQ; Williams & Smith, 2012) and the

Smith Wellbeing Questionnaire (SWELL; Smith & Smith, 2017a). Tests of the

model have indicated that individual difference variables such as personality,

coping style and attribution style predict mental health and wellbeing outcomes

over and above workplace factors in a range of occupations, including nurses

(Mark & Smith, 2012a; Vallone et al., 2020; Williams, Pendlebury & Smith, 2017;

Zurlo et al., 2018), university staff (Mark & Smith, 2012b; Williams & Smith, 2016;

Williams, Thomas & Smith, 2017), trainee mental health professionals (Galvin &

Smith, 2015), police officers (Nelson & Smith, 2016), care workers (Capasso et al.,

2016), factory workers (Capasso et al., 2018a), office workers (Langer et al., 2021)

and in mixed occupational samples (Ahmad et al., 2018; Capasso et al., 2018b; Omosehin, 2021). These studies have tested slightly different variables in each case. The individual difference variables most commonly tested were coping styles (e.g., Capasso et al., 2018b; Mark & Smith, 2012a) and personality variables, such as the 'Big 5' (i.e. extraversion, emotional stability, conscientiousness, agreeableness, and openness) and 'Positive Personality' (including traits such as optimism and self-esteem; e.g., Langer et al., 2021; Williams, Pendlebury & Smith, 2017). In addition, other variables have been included in individual studies. For example, Galvin and Smith (2015) measured perfectionism, imposter feelings and core self-evaluations as well as personality variables in their study of trainee mental health professionals. Smith (2021) has identified 'established predictors' based on the evidence using the WPQ and SWELL to date. These established predictors go beyond the DRIVE model, and include positive and negative life circumstances (e.g., daily hassles and uplifts) in addition to job demands (a combination of task-related demands, effort and over-commitment), job resources (a combination of rewards, control, colleague support, consultation on change and good supervisor relationship) and two individual difference constructs: positive personality (a combination of optimism, self-esteem, self-efficacy and emotional stability) and negative coping (a combination of avoidance, self-blame and wishful thinking coping styles). The identification of these established predictors may help to promote greater consistency in future studies using the DRIVE model.

Stress has been found to mediate the relationships between predictors and mental health outcomes in a number of studies (e.g., Galvin & Smith, 2015; Mark & Smith, 2008; Nelson & Smith, 2016). However, little evidence of any of the proposed moderation relationships was found within the model (Mark & Smith, 2008),

although these relationships have been tested less frequently. The findings on the importance of individual differences extend those from studies of the Job Demands-Resources model who found that personal resources played an important role in job engagement in addition to job resources (Vink et al., 2011; Xanthopoulou et al., 2009). Given the success of the Job Demands-Resources model in predicting wellbeing alongside the emerging evidence of the benefits of including individual difference variables within the model, the DRIVE model appears to have the potential to allow researchers to further build upon this work. Whilst the DRIVE model has not yet been tested to the same extent as other established models of workplace stress and wellbeing, notably the Job Demands-Resources model (Demerouti et al., 2001) and the Demands-Control model (Karasek, 1979), its breadth, flexibility, parsimony and the inclusion of individual differences alongside positive and negative workplace factors appear to give this model the potential to be more useful to researchers than previous ones. The existence of the WPQ as a specific measurement tool for the DRIVE model allows the findings to be more generalisable across studies and, therefore, avoids some of the problems that the Job Demands Resources model has faced with operationalising the variables. As such, the DRIVE model incorporates some of the best aspects from other models, whilst avoiding becoming overly complex and unwieldy. Given these advantages, and the need for further testing of this relatively new model, the DRIVE model was chosen as a theoretical framework for the present research. The more complex version of the model was used (see Figure 1).

2.4 Mental health in call centre staff

In this section, the literature on mental health in call centre staff is reviewed. The inclusion criteria for the literature in the review are set out in Section 2.4.1. The literature covered a number of areas. First, in Section 2.4.2, the literature on the levels of mental health and prevalence of mental illness in call centres is reviewed. Section 2.4.3 then outlines what is currently known about the predictors of mental health in call centre staff. The literature on comorbidity of mental and physical illnesses is reviewed in Section 2.4.4 and, finally, in Section 2.4.5, the mental health interventions which have been carried out in call centre settings are reviewed.

2.4.1 The literature search

Electronic searches of the literature on the mental health of call centre staff were conducted. Published and unpublished literature were considered for inclusion. Since there are a variety of legal, cultural, socio-economic, lifestyle and healthcare related differences between countries which may impact both on working practices and the understanding and management of mental health, synthesising literature from different countries can be problematic. It was decided, therefore, to limit the review to research which had been conducted within the European Economic Area (EEA). Within the EEA, there has historically been a shared legal framework, including, for example, on worker's rights, underpinned by wider agreements on broad economic and social policy (European Free Trade Association, 2014). In addition, mental health has been an area of focus for policy within EU countries, with member states agreeing shared actions in the Framework for Joint Action on Mental Health and Wellbeing (Joint Action Mental Health and Wellbeing, 2016),

leading to some broad similarities in approaches to mental health across Europe, despite the UK's recent departure from the EU.

2.4.2 Levels of mental health in call centre staff

Literature relating to the prevalence of common mental illnesses (anxiety and depression) and levels of positive mental health in call centre staff will be considered in this section. Studies of mental illness in call centres have used two broad approaches to measurement. The first approach was to measure overall risk of mental illness (e.g., Charbotel et al., 2009) by using a global measure of mental health symptoms (such as the GHQ-12; Goldberg, 1972), while the second approach was to measure levels of anxiety and depression as individual mental health conditions (e.g., Holman, 2002).

Studies looking at levels of mental illness have mainly found high levels of illness and symptomology. In those focusing on overall mental health symptoms in call centres, Charbotel et al. (2009) and Sprigg et al. (2003) were consistent in reporting that between 35% and 40% of call centre employees scored above the cut off on the GHQ-12 (Goldberg, 1972) indicating psychological distress (suggesting a higher risk of mental illness). In addition, Bond and Bunce (2003) found that average scores were well above the cut-off point for psychological distress. Most studies comparing the mental health of call centre staff to other workers have found poorer mental health in the call centre staff. Sprigg et al. (2003) reported that both psychological distress and job-related anxiety and depression were more prevalent in call centre staff than in comparison occupations (including clerical, shop floor, technical, professional and

management workers). In line with this, Holdsworth and Cartwright (2003) reported that call handlers had poorer overall mental health than the general working population and Johnson et al. (2005) reported that call centre staff showed slightly poorer mental health than average, ranking 15th of 26 occupations. Another study found that call handlers and team leaders within a call centre had below average levels of mental health on the SF-12 (Ware et al., 1996), although this was not true of more senior managers. In contrast, Holman (2002) found call centre staff showed comparable levels of anxiety and depression to clerical and shop floor manufacturing workers. One explanation for this discrepancy is that it could reflect differences across industries and/or organisations.

Sprigg et al. (2003) found that job-related depression varied across industries, and job-related anxiety and depression both varied significantly across individual call centres in the UK. This variation could be partially explained by the findings of Holman (2003), who identified different models of call centre work, which he termed 'mass service' and 'high commitment service' models. The mass service model is characterised by high volumes of calls, low complexity of calls and low levels of call handler control. In contrast, the high commitment service model is associated with a lower volume of calls, with higher complexity of calls and increased control for workers. It appears that the variation in findings across call centres may be due to differences in the types of psychosocial risks that workers in these different environments are exposed to, and suggests that it is important to understand specific issues call centre staff face in order to identify and address the causes of poor mental health. However, one recent study (Gonçalves-Candeias et al., 2019) found that mental wellbeing did not vary across call centres in Portugal,

although burnout, stress and job characteristics all varied by call centre. This suggests that pathways between job characteristics, work stress and mental health may be complex and therefore an in-depth and context-specific understanding of mental health and its predictors in call centre staff is required.

Both the measurement of overall mental health symptoms and the measurement of job-related anxiety and depression have their drawbacks. When considering overall mental health symptoms, the identified studies did not distinguish between mental illness and positive mental health, but rather used a cut-off point on a unipolar mental health scale (e.g., Charbotel et al., 2009). Hu et al. (2007) carried out factor analysis of the GHQ-12 and found two factors reflecting symptoms of mental illness and positive mental health. By using a unipolar scale, it is not clear whether the findings of the identified studies indicate that call centre staff are experiencing mental illness, low levels of positive mental health or both. Using specific measures of mental illness and positive mental health may help to make these risks clearer. No studies were identified which measured positive mental health of call centre staff specifically, with a focus on illness and poor functioning rather than flourishing. The identified studies that used measures of mental illness, focused on job-related anxiety and depression (Warr, 1990a). Warr's (1990b) definition of depression presented it as sitting on the opposite side of a scale to enthusiasm, while anxiety was viewed as the opposite side of a scale to contentment. It is not clear, therefore, to what extent these measures relate to anxiety and depression as mental illness outcomes. In addition, the rationale for conceptualising anxiety and depression as being either job-related or non-job-related is not clear (Warr, 1990a). While both job-related and non-job-related

factors may influence the risk of mental illness, there is no clear conceptual reason to measure these as distinct outcomes. Therefore, while specific measures of anxiety and depression generally make the type of symptoms being experienced clearer (e.g., Kroenke et al., 2001), this does not appear to be the case with Warr's (1990a) less clear conceptualisation of job-specific anxiety and depression. Measuring anxiety and depression as distinct mental health outcomes, in addition to using non-contextual measures of these outcomes, may provide greater conceptual clarity in distinguishing the presence of mental illness from lower levels of positive mental health. It may also allow more accurate estimates of the prevalence of mental illness in call centres to be made. Studies should, therefore, include measures of positive mental health as well as discrete mental illnesses in order to aid decision-makers in planning support for call centre staff experiencing poor mental health.

2.4.3 Predictors of mental health in call centre staff

2.4.3.1 Workplace factors and mental health

A number of workplace factors have been identified which predict mental health outcomes. Several studies have investigated the link between task-related demands and mental health outcomes. Kazi and Haslam (2013) reported that high task-related demands predicted poorer mental health, while Charbotel et al. (2009) found that psychological distress was more prevalent in workers with high job strain (high task-related demands and low control). Work intensity appeared to be an issue, with Zapf et al. (2003) suggesting that the main difference in experiences of stress between call centres was due to the amount of time workers spent on the telephone, with higher time on telephone being associated with lower work

complexity and control, as well as higher demands. A range of specific task-related demands were identified across studies which impacted on mental health. In particular, monitoring of calls was a consistent predictor of overall mental health (Charbotel et al., 2009; Sprigg et al., 2003) and work-related anxiety and depression (Holman, 2002; Sprigg et al., 2003). The exact relationship between monitoring and mental health varied somewhat across studies, with some finding that higher intensity monitoring led to poorer mental health (Charbotel et al., 2009; Holman et al., 2002), while Sprigg et al. (2003) found that moderate amounts of monitoring were better for mental health than low or high monitoring. In line with Sprigg et al.'s findings, Kazi and Haslam (2013) carried out focus groups with call centre staff who reported that they welcomed some monitoring in order to get feedback on their work, but high levels of monitoring were reported to lead to excessive checking of work and poorer productivity. The impact on mental health was not reported, but it is plausible to speculate that excessive checking may be related to anxiety about making mistakes. Holman et al. (2002) found that where feedback was immediate and performance criteria clear, and where the purpose of monitoring was developmental rather than punitive, this was associated with lower levels of depression. It therefore appears that the purpose and nature of monitoring and feedback is important in addition to its intensity.

Some research has suggested that job demands may have different impacts depending upon whether they are appraised by the employee a challenging or threatening, in line with Cognitive-Motivational-Relational Theory (Lazarus, 1991). This has led to job demands being categorised as either 'challenge demands' which have the potential to lead to greater learning, growth and mastery, or

'hindrance demands' which are appraised by employees as hindering or blocking their progress (Cavanaugh et al., 2000). This distinction has largely been supported in research studies, with hindrance demands being more consistently associated with negative psychological and physical outcomes, while challenge demands are associated with increased engagement (Crawford et al., 2010; Horan et al., 2020; LePine et al., 2005; Podsakoff et al., 2007). Examples of challenge demands may include high workload and responsibility while hindrance demands may include role ambiguity and having conflicting job demands (Crawford et al., 2010). A certain amount of monitoring, with associated feedback, could be conceptualised as a challenge demand which allows staff to develop their skills and learning, whilst excessive amounts could be seen as a hindrance demand, which slows them down and leads to anxiety.

Linked to monitoring, the use of workplace targets, such as call length and volume, was another task-related demand which predicted mental health outcomes (Charbotel et al., 2009). Sprigg et al. (2003) found that this may be partially due to resulting high workloads and fast pace of work. Targets and other role expectations could conflict with one another. For example, where call handlers were expected to provide good customer service while keeping call times short, this conflict was also related to poorer mental health outcomes (Charbotel et al., 2009; Sprigg et al., 2003). Sprigg et al. (2003) suggested that while call centres pay lip service to the importance of providing good customer service, actual performance measurements tend to focus on call volumes and lengths. Kazi and Haslam's (2013) findings confirm this, with employees reporting that their efforts in providing good customer service were not recognised, leading to demotivation. In

addition, emotional demands have been found to be prevalent in call centres (Kjellberg et al., 2010), with call handlers expected to provide 'service with a smile' and suppress any negative emotions while displaying positive emotions which they may not feel (e.g., Rohrmann et al., 2011). This 'emotional labour' has been found to lead to a range of negative outcomes among call centre staff including greater strain (Wegge et al., 2007), emotional exhaustion (Holman et al., 2002) and negative affect (Wegge et al., 2010), and poorer mental health (Holman et al., 2002). The mental health impact appeared to be particularly great where call handlers were expected to deal with customer aggression (Charbotel et al., 2009; Wegge et al., 2010).

Several studies looked at the relationship between job control and mental health outcomes. Bond and Bunce (2003) reported that better overall mental health was predicted by higher job control, while a few studies found that work-related anxiety and depression were predicted by low levels of control (Holman, 2002; Holman & Wall, 2002; Sprigg et al., 2003). These studies highlighted low levels of control among call centre staff over the pace of work and work scheduling (Holman 2002; Sprigg et al., 2003), and a lack of discretion over how to approach work tasks (Sprigg et al., 2003). Control was lower among call handlers than back office call centre staff (Gonçalves-Candeias et al., 2019). Low levels of control were linked with constraints over working practices such as call handlers having to follow a strict script and low levels of skill utilisation (Sprigg et al., 2003). Conversely, Kazi and Haslam (2013) found that job control did not predict mental health. The reason for this discrepancy is not clear. Since previous research has identified low overall levels of control in call centre settings (e.g., Taylor et al., 2002), there is the

possibility that any effects in this study were masked by floor effects in job control scores (i.e. there may have been too little variation in job control scores for statistical analysis to identify a relationship with mental health). In support of this interpretation, Martí-Audí et al. (2013) found in their study of call centres in Spain, that although there was variation in terms of working practices, employee autonomy was very low across the board.

Support at work is another area that has been investigated by a number of researchers. Kazi and Haslam (2013) found that the relationships scale of the HSE Management Standards (Health and Safety Executive, 2007) predicted mental health. This scale includes the promotion of positive behaviours at work, so that conflict is avoided, and procedures to deal with negative behaviours such as bullying. In line with this, Charbotel et al. (2009) found that tension at work predicted poorer mental health. This study found that relationships with supervisors were more likely to involve tension than relationships with colleagues. Supervisor support has been found to be linked to a number of mental health outcomes including psychological distress (Charbotel et al., 2009), anxiety and depression (Holman, 2002). Colleague support was less commonly measured in studies using mental health outcomes but has been linked to lower stress in call centre staff (Kjellberg et al., 2010; Taylor et al., 2003). It is, therefore, a concern that several studies highlighted a lack of support in general (Croidieu et al., 2008) and from supervisors (Kazi & Haslam, 2013; Norman et al., 2004), although this was not the case across all studies (see, e.g., Holman et al., 2002; Kjellberg et al., 2010). As supervisor support is often seen as a proxy for broader organisational culture (Rhoades & Eisenberger, 2002), variation in levels of supervisor support

across organisations could be a reflection of the wider organisational culture and the extent to which it is supportive of employees. Given its consistent link to mental health, support at work may be another area which interventions within call centres could target in organisations where it is found to be inadequate.

The reviewed studies have included important theoretical constructs such as job demands, control and support and have largely supported the importance of these variables in predicting mental health. Nevertheless, the use of theory and models of workplace health and wellbeing within these studies has not been consistent or clear. Many studies did not make their theoretical basis clear and none of the main theories or models of workplace health and wellbeing has been widely tested in a call centre environment. While a range of workplace factors were found to predict poorer mental health in individual studies, such as, being on a permanent contract, low role clarity and lack of task variety (Sprigg et al., 2003), these were isolated findings and there was a lack of consistency in the variables measured across studies. This highlights an underpinning issue with this body of work: that different researchers are using different conceptualisations of job demands and their relationship to mental health. Furthermore, these conceptualisations are often atheoretical, making comparison of studies and the building of a coherent body of evidence more difficult. Without a theoretical framework, the rationale for using some predictors of mental health and not others within studies was often unclear. While some of the studies on mental health of call centre staff went beyond simple correlational designs to consider how workplace factors are related to mental health outcomes (e.g., Holman & Wall, 2002; Sprigg & Jackson, 2006), these studies often did not report using any theory or model to guide their hypotheses

and workplace factors were frequently looked at individually rather than in combination. Only a small minority of studies looked at combinations of workplace factors in line with the predictions of major theories of workplace health and wellbeing (e.g., Charbotel et al., 2009). There is some evidence that cumulative and chronic exposure to job demands leads to more negative wellbeing outcomes (e.g., Igic et al., 2017) and, therefore, it is important that workplace factors need to be considered in combination in order to understand their impact on staff, both in terms of their additive effects and their interactions. The DRIVE model (Mark & Smith, 2008) hypothesises that stress partially mediates and moderates the relationships between work factors and health outcomes. However, no studies included stress as a potential mediator or moderator of the relationship between predictors and mental health in call centre staff and, therefore, the role of stress in these relationships is not clear. Since the relationship between stress and mental health outcomes more generally has long been established (e.g., Bonde, 2008; Kessler, 1997), this omission seems surprising and further supports the need for studies using established theories and models that include the role of stress.

Studies of the mental health of call centre staff were almost all cross-sectional and questionnaire-based. Almost two decades ago, Sprigg et al. (2003) highlighted the lack of longitudinal studies in call centres as a problem with the existing literature, as it limits our understanding of how poor mental health and wellbeing develop over time among call centre staff. It appears little has changed since then. These authors highlighted practical difficulties with conducting longitudinal research in call centre settings, since high rates of staff turnover make it difficult to follow a cohort of workers over an extended period (Sprigg et al., 2003). Nevertheless, a

number of studies have looked at temporal relationships between workplace

factors and wellbeing in call centre staff over shorter periods by using workplace

diaries (e.g., Daniels et al., 2014; Harris et al., 2003; Totterdell & Holman, 2003).

These studies have found that daily experiences of call centre staff have an impact

on affective outcomes that day. For example, Harris et al. (2003) found that

achieving daily goals led to more activated affect (made up of motivation, feeling

active, lower boredom, less tiredness) and pleasurable affect (made up of

happiness, relaxation, low anger, low depression, low anxiety), while Totterdell

and Holman (2003) found that surface acting (i.e. call handlers faking emotions)

was related to emotional exhaustion and emotional estrangement. There is a need

for more research looking at the temporal relationships between workplace factors

and mental health outcomes, both over the short and long term, in order to

understand more about how workplace factors are related to the development of

poor mental health.

2.4.3.2 Individual factors and mental health

A number of studies considered individual factors and found several individual

differences and demographic factors which predicted better mental health,

including being male (Charbotel et al., 2009), lower negative affectivity, internal

locus of control and greater acceptance of negative thoughts (Bond & Bunce,

2003). However, at present, they have only been considered by a small number of

studies, each measuring different variables. Consequently, it is not clear which are

the most important individual differences that contribute to mental health

outcomes. Future research could consider testing complex models of stress and

health, such as the DRIVE model (Mark & Smith, 2008), which has the advantage

of including both workplace and individual factors, and could facilitate exploration of the potential mediating role of stress in the relationships between workplace and individual factors and mental health outcomes.

Little qualitative research has been conducted on the mental health of call centre staff, reflecting a lack of qualitative research within the occupational health psychology field more broadly (Schonfeld & Mazzola, 2013). Qualitative research could help expand our understanding of how individuals interpret the meanings of their experiences, including appraisals of job demands. These appraisals have been conceptualised as individual differences within the DRIVE model (Mark & Smith, 2008) and can be difficult to measure quantitatively (Williams, 2014). Qualitative research could also help to identify important job demands and resources which are specific to call centres and which may not have been considered in previous quantitative studies.

2.4.4 Comorbidity of physical and mental illnesses

A number of physical health outcomes have been found to commonly co-occur with common mental illnesses, including high blood pressure (Shinn et al., 2001), cardiovascular disease (Cohen et al., 2015), diabetes (Ducat et al., 2014) and weight outside of the normal range (i.e. either underweight or obese; Carey et al., 2014). In addition, mental illness has been linked to unhealthy behaviours such as a lack of physical activity (Roshanaei-Moghaddam et al., 2009), smoking (Paperwalla et al., 2004) and alcohol misuse (Boden & Fergusson, 2011). These comorbidities can lead to greater levels of disability among people with mental illnesses. This led the World Health Organisation (WHO, 2013) to recommend that

physical health needs should be taken into account when considering the support required by those experiencing mental illness. Both physical and mental health outcomes have been linked to psychosocial factors in the workplace or work-related stress (e.g., Abdel Hadi et al., 2021; Gilbert-Ouimet et al., 2014), which could suggest that stress-related physical and mental illness could have shared causes, including workplace factors. For example, work-related stress has been linked to higher rates of cardiovascular disease, with both job strain and effort-reward imbalance predicting the development of cardiovascular disease in prospective studies (Byrne & Espnes, 2008). These findings suggest that employees, such as call centre staff, who are at increased risk of stress and mental illness, may also be at increased risk of comborbid physical health conditions. Several studies have found evidence of increased physical health risk among call centre staff, including poor self-rated physical health (Johnson et al., 2005), increased rates of physical symptoms (Holdsworth & Cartwright, 2003; Norman et al., 2004), increased risk of musculoskeletal problems (Toomingas et al., 2003), higher rates of metabolic syndrome (Pietroiusti et al., 2007) and higher rates of smoking and alcohol use (Mannocci et al., 2014). It should be noted, however, that many of these were isolated findings and more evidence is required to establish whether physical health risks are elevated across all call centre staff. Comorbidities between physical and mental illnesses have rarely been explored, although Charbotel et al. (2009) reported that musculoskeletal problems and psychological distress tended to co-occur. In order to fully understand and address the mental health needs of call centre staff, comorbidities with physical illnesses may need to be taken into account. The prevalence of comorbid physical and mental health conditions in call centre staff is currently unknown and there is, therefore, a need to identify rates of comorbidity to inform decisions over whether

physical health outcomes need to be considered alongside mental health outcomes when planning support and interventions.

2.4.5 Mental health interventions and support

While there is a growing body of literature on effective workplace interventions (e.g., Tan et al., 2014), few mental health interventions have been trialled within a call centre setting. Only a small number were carried out in European call centres and measured mental health outcomes (Bond et al., 2008; Holman & Axtell, 2016; Holman et al., 2010; Mills et al., 2007). Unusually, all were primary interventions (which have generally been implemented less frequently in workplaces; Joyce et al., 2016), with the majority focusing on job redesign interventions (e.g., Bond et al., 2008; Holman & Axtell, 2016; Holman et al., 2010). These studies reported interventions that aimed to increase employee control by involving staff in making recommendations for changes to job design, which were then implemented within the call centres. Bond et al. (2008) found improvements in mental health post intervention, while two studies by Holman and colleagues (Holman & Axtell, 2016; Holman et al., 2010) found improvements in affective wellbeing, including positive emotions, low depression and low anxiety. In all studies, these improvements were mediated by increases in perceived job control, while Holman and colleagues also identified participation, skill utilisation and feedback as mediators. These findings suggest that participative primary interventions within call centre settings may help to address low levels of control among call centre staff in order to improve mental health outcomes. An important component of these interventions was the involvement of employees in developing and implementing change, empowering staff to identify and target the factors that they felt would have the greatest impact

on their wellbeing. This staff involvement may be an important aspect of the effectiveness of these interventions, both in terms of increasing employee control and in targeting the intervention to the area staff felt it was most needed. However, in a complex intervention, isolating the aspects that are effective is not easy, and process evaluations of these types of intervention are still required to identify how they lead to positive outcomes (Wierenga et al., 2013). In addition, secondary interventions targeting stress and mental health have been carried out in call centre settings, including progressive muscle relaxation (Krajewski et al., 2010; Krajewski et al., 2011) and mindfulness (Grégoire & Lachance, 2015). Mindfulness was found to have positive effects on psychological distress while progressive muscle relaxation was found to reduce stress and, therefore, may have positive impacts on mental health outcomes.

A wider range of interventions have been found to be effective for mental health outcomes at work than have been trialled within call centres, including CBT-based stress management, return to work interventions, physical activity promotion and mindfulness (for reviews see Bartlett et al., 2019; Joyce et al., 2016; Yunus et al., 2017). There is some evidence that combining therapeutic approaches may increase effectiveness compared to individual interventions (Yunus et al., 2017). Occupational Health Interventions may be more effective if targeted to specific groups and contexts (i.e. person-intervention fit and environment-intervention fit; Randall & Nielsen, 2012). Therefore, there is a need for interventions which have been found to be effective at improving mental health within other industries to be evaluated within call centres, in order to assess their effectiveness in those settings. Furthermore, no evaluation of existing support within call centres was

identified within the available literature. Joseph et al. (2018) have highlighted the importance of evaluating existing interventions, such as employee assistance programmes, that provide a range of support for employees, which may include counselling, information and health promotion (Cooper et al., 2003). These interventions are commonly implemented but rarely evaluated, particularly in relation to health and wellbeing outcomes. This existing support will form part of the workplace context and will need to be taken into account when developing new interventions (Randall & Nielsen, 2012). There is, therefore, a need to understand this support and any gaps in order to best target new interventions.

2.5 Conclusions and research objectives

The aim of the research within this thesis was to develop an in-depth understanding of the mental health needs of call centre staff. In order to meet this aim, specific objectives were developed based on the literature reviewed in the current chapter. The review has identified that poor mental health exists among call centre staff compared to those working in other types of workplace. However, conceptualisations of mental health have not been consistent and have been found to have a negative bias. Consequently, there is a need for research on levels of mental health in call centre staff which focuses on clearly defined and clinically relevant mental illness outcomes such as anxiety and depression as well as a focus on positive mental health. The present body of research in this thesis seeks to address these limitations by fulfilling the first research objective (reported in Chapter 4):

- *To assess levels of depression, anxiety and positive mental health in call centre staff*

The preceding review has also identified a number of methodological limitations within the existing literature, including a lack of a theoretical grounding for the research. There exists a need for a greater use of theory to help the literature to move forward, making it easier to compare outcomes and predictors across studies. In addition, there has been a lack of methodological diversity across studies including a limited amount of longitudinal and qualitative research. The use of longitudinal studies may help understanding of causal relationships between predictors and mental health outcomes, while qualitative research can assist in eliciting staff understandings of mental health at work and appraisals of their workplace experiences. These methodological limitations will be considered by addressing objectives 2 and 3 (reported on in Chapters 4 and 5):

- *To investigate the predictors of mental health outcomes in call centre staff, both concurrently and over time, using the DRIVE model of employee stress and health as a guiding framework.*

- *To explore in depth the impact of daily job demands and resources on mental health outcomes, using diaries and qualitative interviews.*

Currently, it is not known whether there are important comorbid physical illnesses or problematic health behaviours which may need to be targeted alongside mental health in interventions within call centres. This need will be addressed by completing the fourth research objective (reported on in Chapter 6):

- *To explore how mental health outcomes correlate with physical health and health behaviours*

Lastly, the current chapter has identified that a limited number of mental health-focused interventions have been implemented in call centre settings. Primary interventions which aimed to improve employee control and involve employee participation have been carried out and were generally found to be effective at improving mental health. The effectiveness of existing workplace support for call centre staff is unknown and needs to be understood since it provides part of the context for any new interventions. This will be addressed by carrying out the final objective (reported in Chapter 7):

- *To evaluate the mental health support and resources currently provided for call centre staff*

To achieve the objectives within this thesis, a multi-method approach is used, which will also address some of the existing methodological issues described in the literature. Specifically, the methods for the research in this thesis include a longitudinal study of mental health and its predictors; an in-depth investigation of the factors affecting staff mental health using daily diaries and qualitative interviews; physiological and self-report measurement of physical health outcomes that correlate with mental health; and a survey on the current support provided by the call centre. The DRIVE model of employee stress and health is adopted as the overarching framework for the research within this thesis and informs the multivariate analysis undertaken. A detailed description of the methodological approach to the research undertaken in this thesis will be set out in the next chapter.

Chapter 3: Methodology

3.1 Introduction

This chapter will provide a rationale for the methodological decisions relating to how the research within this thesis was conducted. First, the research setting is described in Section 3.2. Section 3.3 then sets out the research approach including the philosophical paradigm underpinning the research and the overall methodological approach. Section 3.4 describes how rigour was considered and Section 3.5 sets out how the results are presented within the thesis. The specific methods used are reported in the respective chapters that relate to each individual study.

3.2 Research setting

The setting for the research of this thesis was the call centre of a UK government higher executive agency in South Wales. This was a large call centre, which grew over the period of the research from around 800 employees at the start to around 1100 at the end. In 2014-2015, call centre staff answered over 11 million telephone calls and 800,000 emails per year. The call centre dealt with customer enquiries while the other functions of the executive agency were carried out at another site located a few miles away from the call centre.

The workforce within the call centre comprised mainly telephone advisors, organised into teams of 12, with a team leader overseeing each team and dealing with complaints and complex enquiries. These teams were then grouped into 'command' areas of several teams with a senior manager overseeing the area.

One multichannel team answered enquiries via email and social media as well as by telephone. The telephone and multichannel teams made up the 'operational', customer facing, area of the business. Teams were divided into two areas depending on the types of query dealt with. In addition to the operational area of the business, the call centre also included support areas which provided a range of functions, such as quality control of calls, scheduling of work, recruitment, internal communication, analysis of call statistics, staff training and staff support (including health and wellbeing support).

A number of organisational changes occurred within the call centre over the research period. The largest of these were the call centre taking over responsibility for the answering of enquiries from a range of new sources (including another government department) and the digitisation or centralisation of the functions previously undertaken at other sites which had closed (including another call centre site and a number of local offices). There were also two major changes to the ways that the Executive Agency delivered services to customers, with a direct impact on customer experience, including the digitisation of one of the agency's key services. In addition, regular small procedural changes took place throughout this period in order to bring practices in line with changing legislation and evolving UK Government guidance, or to provide clarification on issues which arose via customer queries. These changes to services resulted in additional responsibilities for call handlers and more queries from customers, which, in turn, resulted in a higher volume of calls and longer waiting times. In addition, changes to service delivery and procedures led to regular modifications in the advice given to customers. Additional staff were recruited over the period of the research to deal

with the increased volume of calls. This led to pressures on space, leading to an increase in hot-desking across the call centre, meaning staff were not always able to sit with their team. It also led to difficulty in staff parking, particularly for those on later shifts.

Calls were monitored automatically to produce a number of statistics, such as average call length, number of calls answered, customer waiting time and amount of time advisors spent on break or administrative tasks after calls. Calls were also recorded and a selection listened to by a quality team who rated the calls according to whether the information given to the customer was correct and whether other key aspects of a call were included (e.g., a greeting and a question at the end about whether the customer needs help with anything else). Line managers also scored calls in real time (by listening in to the call via a headset) and provided feedback to the advisor following the call. Telephone advisors were expected to meet a number of time-based and performance measures relating to the length of calls (average handling time), the amount of 'wrap up' time between calls to complete administrative tasks, the amount of time taken in breaks and the scoring of calls by line managers and the quality team. Each advisor would attend a monthly meeting with their line manager to discuss their performance, where advisors would be told whether they had met their targets for the previous month (based on the automated statistics and the scoring of three calls by the quality team and three by the line manager). Where targets were not met for three months, performance management procedures were implemented, the individual provided with coaching and expected to improve performance over the next few months. Where performance did not improve, the individual would move to the

next stage of the formal performance management procedure, which could ultimately lead to dismissal if performance did not improve sufficiently.

3.3 Research approach

3.3.1 Philosophical paradigm

The importance of researchers being aware of their underlying philosophical assumptions has long been recognised, since they inform decisions both on the most appropriate methodological approaches to be selected and the interpretation of results (e.g., Della Porta & Keating, 2008). This includes assumptions about ontology (i.e. the nature of reality, or 'what is') and epistemology (i.e. the nature of knowledge and how it can legitimately be acquired), which inform decisions around the methodologies and methods which should be used in research (Rehman & Alharthi, 2016). Qualitative and quantitative methods are traditionally viewed as arising from opposing paradigms. Quantitative methods are often presented as associated with positivism (which assumes that objective reality is directly accessible through observation and can be measured and predicted; Fox, 2008), while qualitative methods are often viewed as underpinned by constructivism (which assumes that reality is socially constructed by individuals and groups; Raskin, 2002). This has led to a number of researchers arguing that mixing qualitative and quantitative methods is inappropriate due to incompatible assumptions (e.g., Guba & Lincoln, 1989). Rejecting this oversimplification, many mixed methods researchers have argued that methods are not tied to specific paradigms, and can instead be led by pragmatic considerations of 'what works' (Cresswell & Plano Clark, 2011). They suggested that pragmatism is, therefore, the best paradigm to unite qualitative and quantitative methods. This is a useful

approach since it allows the method to be chosen according to what is most appropriate to answer the research question, rather than being determined by the researcher's preferred paradigm. Cresswell and Plano Clark (2011) also argued that it is possible to use more than one paradigm within a single study. For example, they suggested that it is possible to use positivist assumptions for the quantitative aspect of a study and constructivist assumptions for the qualitative aspect. This approach seems problematic in terms of integrating the findings of the qualitative and quantitative elements of the research, given the contradictory assumptions of positivism and contructivism (Hall, 2013). Not only is it unclear how findings with differing assumptions can be mixed, Cresswell and Plano Clark (2011) implied that it is possible for a researcher to change assumptions at will. This does not seem feasible, since it ignores the impact that the researcher's experiences and beliefs have on the interpretation of results. Mason (2006) has argued for the importance of reflexivity in mixed methods research as part of the interpretation of results. This reflexivity requires consideration by the researcher of their own stance, where it originates from, and the impact this has on the results presented. This implies that researchers will have relatively stable sets of beliefs and assumptions which inform their interpretation of their results and which cannot be easily changed depending on whether the researcher is using qualitative or quantitative methods. Therefore, a paradigm is needed which allows the researcher to maintain a coherent set of beliefs and assumptions across both the qualitative and quantitative aspects of mixed methods research.

An alternative paradigm suggested for use in mixed methods is critical realism (e.g., Hall, 2013; Maxwell & Mittapalli, 2010). A critical realist approach assumes that there is a reality which exists independently of human knowledge (i.e. a realist

ontology), but that our ability to access and understand that reality is limited (i.e. a subjectivist epistemology; Danermark, 2002). Within this perspective, individuals do not have any objective certain knowledge of the world, opening the possibility for multiple valid perspectives on any given area of study (Maxwell & Mittapalli, 2010). Underpinning a critical realist approach is the concept of 'retroduction', which involves moving beyond observation and experience to postulate underlying explanatory and causal processes, focusing on those with the greatest explanatory power (Mingers, 2003). Explanations within a critical realist perspective are always tentative and open to revision (McEvoy & Richards, 2006). Within this perspective, a range of methodologies can be chosen depending on which is most appropriate for the research question (McEvoy & Richards, 2006). Quantitative and qualitative methods are seen as having different strengths within this framework: quantitative methods provide reliability and accuracy as well as facilitating comparisons, allowing identification of patterns and associations and description of causal mechanisms; qualitative methods can elicit new explanations and provide in-depth descriptions of the area of interest (Mingers, 2003).

As all knowledge is viewed within this perspective as incomplete (Maxwell & Mittapalli, 2010), the use of multi-methods (i.e. using more than one method) and mixed methods (i.e. mixing of qualitative and quantitative approaches) to investigate a given phenomenon may be preferable, since it allows data collected via each different method to add to our understanding and allows for triangulation of results (McEvoy & Richards, 2006). Methodological triangulation can be undertaken for multiple reasons. Firstly, using triangulation for confirmation may allow researchers to draw more robust conclusions from their data, where findings from different methods corroborate one another, and may also allow the biases

inherent in each method to counteract one another (Bryman, 2006). Triangulation may be used for completeness, allowing researchers to provide a fuller explanation of their area of study than would be possible from one method alone (McEvoy & Richards, 2006). Finally, triangulation can be used for 'abductive inspiration', which is similar to the concept of retroduction, allowing researchers to explain findings in a more powerful way through the use of different methods (McEvoy & Richards, 2006). For example, a quantitative study may be followed up by a qualitative study in order to explain the findings of the former in more depth. The research in this thesis was undertaken using a critical realist perspective, allowing multiple methods (including mixed methods) to be employed within a single philosophical paradigm and facilitating the coherent integration of results.

3.3.2 Methodological approach

3.3.2.1 Multi-method approach

In line with a critical realist approach, this programme of research reported in this thesis uses a multi-method design, including the use of mixed methods. Decisions about the methods adopted were driven by considerations of those which were most suitable to address the aim and objectives of the research (Bryman, 2016), within the context of the underlying philosophical paradigm which underpinned this decision-making, informing the considerations around the most appropriate approaches more broadly. Multiple methods were deemed the most appropriate way to address the aim and objectives for several reasons. First, as identified in the literature review, previous studies have mostly relied on self-report questionnaire data to examine mental health and wellbeing at work. To some extent this may be unavoidable, particularly when measuring variables such as symptoms, feelings and attitudes, which are difficult to assess in other ways.

However, this can lead to problems with common method variance, where common sources of bias are present (Spector, 2006). The adoption of multiple methods is one way of addressing this problem. In the research within this thesis, questionnaires were used to assess variables that are difficult to quantify using methods other than self-report. These included subjective measures of mental health, stress, personality, coping, job demands and resources. These constructs were then explored in greater depth using diaries and interviews. Physical health outcomes were measured using both self-report and physiological measures. Using multiple methods in this way enables different aspects of mental health to be explored from a number of perspectives and allows for corroboration or points of divergence to be explored. Triangulation of results is, therefore, one of the benefits of using a multi-method approach (McEvoy & Richards, 2006), allowing a more in-depth and fuller examination of the mental health of call centre staff to be carried out than one method could provide. Since results can be compared across methods, this enables more robust conclusions to be drawn.

Using a combination of approaches also makes it possible to offset the weaknesses of each approach in isolation, by drawing on the strengths of both approaches (Bryman, 2006). Since previous research has highlighted variation in mental health and wellbeing across different types of call centre, it was important for the research in this thesis to ensure that the findings were contextualised. While broad relationships could be uncovered by using a survey, the qualitative aspect of the research provides context for these findings by exploring call centre workers' experiences of the job demands they face and the resources available to them, and how these may impact on mental health (Bryman, 2006). This improves the usefulness of the findings since they can be generalised to the whole

workforce due to the quantitative data generated, and can also be contextualised due to the data collected from the qualitative element. In addition to providing context, a mixed method approach allows for a more comprehensive understanding of poor mental health in the call centre, including potential underlying causes and explanations, with the qualitative results helping to explain the findings from the quantitative phases (McEvoy & Richards, 2006).

The specific type of mixed methods design employed in the research within this thesis was a multi-phase design (Cresswell & Plano Clark, 2011), which included a number of interrelated studies. This design was chosen since a number of studies were required to fulfil the research aim and objectives. As a result, the programme of research comprised four studies:

- *Study 1: Longitudinal study of mental health and its predictors.* This questionnaire-based study examined levels and predictors of mental health in the call centre workers, more specifically how job demands, job resources and individual differences impact on depression, anxiety and positive mental health via workplace stress. Data was collected at four time points over a two-year period. This study addressed research objectives 1 and 2:

  - *To assess levels of depression, anxiety and positive mental health in call centre staff*
  - *To investigate the predictors of mental health outcomes in call centre staff, both concurrently and over time, using the DRIVE model of employee stress and health as a guiding framework.*

- *Study 2: In-depth study of daily mental health and wellbeing.* This study examined daily job demands and resources experienced by call centre staff and their impact on stress and mood via a diary, with follow-up interviews to explore in-depth some of the issues raised by both the diaries and quantitative studies. This study addressed research objective 3:

    - *To explore in depth the impact of daily job demands and resources on mental health outcomes, using diaries and qualitative interviews.*

- *Study 3: Assessment of physical health.* This study measured physical health outcomes in order to consider their correlation with the mental health outcomes examined in Study 1. Study 3 used both physiological and self-report measures of physical health and health behaviours, including assessment of diabetes and cardiovascular risk, obesity, symptoms, physical activity, sedentary behaviour, smoking and alcohol use. This study addressed research objective 4:

    - *To explore how mental health outcomes correlate with physical health and health behaviours*

- *Study 4: Evaluation of existing support for mental health and wellbeing.* This questionnaire-based study aimed to evaluate the existing employee mental health support provided by the call centre, focusing on awareness, acceptability, use and usefulness of the support and staff perceptions of gaps in current support. This study addressed research objective 5:

- *To evaluate the mental health support and resources currently provided for call centre staff*

3.3.2.2 Impact of call centre setting on methodological approach

Methodological decisions undertaken in the research in this thesis were influenced not only by the philosophical paradigm and research aim, but also by the challenges associated with conducting research in a call centre setting. These included the retention of respondents within the longitudinal study and the time pressures faced by staff. Previous research highlighted both the need for longitudinal studies of call centre staff and the difficulties in conducting this type of study in an industry with high rates of turnover (Sprigg et al., 2003). Sprigg et al. suggested tracking individuals as they moved between jobs in different call centres or exited the industry as a way of following up participants. However, this requires access to multiple call centres and highly motivated participants to take part in the research independently of their workplace. This was not feasible given the scope of the current study and the resources available. Instead, all employees within the call centre were invited to take part in the longitudinal study at every time point. This approach was chosen as it provided flexibility, allowing new employees to participate and a subset of individuals with longitudinal data to be followed over time. However, it did not allow the follow-up of staff who had left the call centre.

The call centre environment also presented challenges in terms of the time pressures staff faced. Employees were expected to meet strict targets for the time spent on the telephone, which meant that the amount of time staff were able to spend taking part in research was limited. The call centre managers were able to

allow staff limited time away from telephone duties to take part in some research

activities. For example, employees were given 30 minutes to attend health

assessments. This was possible as only one employee at a time was able to

attend an assessment. However, for the surveys where all employees were invited

to take part, it was not possible for employees to schedule time off the telephones

to participate. The amount of time where staff were not taking telephone calls, and

were, therefore, free to take part in the research, was very limited. This informed

the design of the surveys, making it critical that questionnaires could be completed

within a short period. For some surveys, the call centre management agreed to

allow staff to complete questionnaires in their weekly team meeting. This meeting

lasted 30 minutes and was an opportunity for employees to discuss issues from

the previous week and for their team leader to brief them on any changes. The

questionnaires would, therefore, need to take substantially less than 30 minutes to

complete in order to allow teams to be briefed and have time for discussions within

the same 30 minute window. This consideration helped inform the choice of

measure. The Wellbeing Process Questionnaire (WPQ; Williams & Smith, 2012)

was a practical measure of wellbeing in this regard, since it could be completed in

approximately 10 minutes.

3.4 Consideration of rigour

As mixed methods have become widely accepted as an approach to research, the

question of ensuring quality and rigour in mixed methods has begun to receive

attention (Bryman et al., 2008). Several frameworks for assessing the quality of

mixed methods research have been proposed (Heyvaert et al., 2013). Despite this,

there is currently no consensus on the appropriate quality criteria. Assessing

mixed methods research is more complex than simply applying quality criteria which apply to quantitative and qualitative research separately. It is important to consider how appropriately the qualitative and quantitative strands are combined and how the findings and interpretations are integrated (Bryman et al., 2008). Most frameworks, therefore, include criteria for assessing the qualitative and quantitative elements of the research and additional criteria for assessing how these integrate into a single mixed methods study. Further complicating this picture, Dellinger and Leech (2007) argued that frameworks for assessing the quality of mixed methods research must be used flexibly and that greater weight can be given to quantitative or qualitative criteria depending on which is dominant within the design. Heyvaert et al. (2013) reviewed quality frameworks for mixed methods research and identified 13 broad areas which were covered by the frameworks. In the research within this thesis, quality criteria covering all 13 areas will be addressed and will draw on a number of quality frameworks (Alborz & McNally, 2004; Braun & Clarke, 2006; Bryman et al., 2008; Cresswell & Plano Clark, 2011; Dellinger & Leech, 2007). The thirteen broad areas are as follows:

1. Criteria specific to the qualitative elements of the research
2. Criteria specific to the quantitative elements of the research
3. Mixing and integration of methods
4. Rationale for using mixed methods
5. Description of the theoretical paradigm
6. Aims and objectives
7. Research design
8. Sampling and data collection
9. Data analysis
10. Research context

11. Impact of the researcher

12. Transparency of procedures

13. Interpretation of findings, conclusions, inferences and implications

3.4.1 Criteria specific to the qualitative elements of the research.

The first area for consideration relates to the qualitative elements of the research. The frameworks include criteria which could apply to a range of qualitative methods such as coherence, clarity of objectives and credibility of qualitative analysis. Different quality criteria apply to different qualitative approaches (Heyvaert et al., 2013). As part of the research undertaken in this thesis, thematic analysis was used to analyse the qualitative findings and, therefore, Braun and Clarke's (2006) criteria to assess the quality of thematic analysis was used to guide this element of the research, comprising a 15-point checklist:

1. Data are transcribed in an appropriate level of detail and transcripts checked against the tapes for accuracy.

2. All data is given equal attention in coding.

3. Coding of data is thorough and comprehensive, and themes reflect the breadth of the coding.

4. Relevant extracts of data are collated for each of the themes.

5. Themes are compared to one another and back to the data set.

6. Identified themes are coherent, meaningful and distinct from one another.

7. Analysis goes beyond description to include interpretation of results.

8. Analysis is consistent with the data and the quotations presented clearly illustrate the interpretation of the results.

9. The analysis tells a structured and coherent story about the topic of interest.

10. There is a good balance between the narrative and quotations.

11. Adequate time has been given to complete all phases of analysis in an appropriate amount of depth.

12. The researcher's assumptions and specific methodological approach are made clear.

13. The description of the method and reported analysis are consistent with one another.

14. The language used in reporting is consistent with the stated epistemology

15. The description positions the researcher as active in the research process and themes are not described as passively 'emerging' from the data.

These criteria were used to inform the analysis and write up of the qualitative element of the research. Their use in the analysis process is described in the analysis section of Chapter 5. The methodological approach and epistemology are described earlier in this chapter. Since these criteria were developed, Braun and Clarke (2019) have clarified that they do not expect these criteria to be used as a 'recipe' which guarantees high quality thematic analysis or 'accuracy' of coding, but rather as part of a reflexive approach. As part of a reflexive approach, it is important that the researcher considers their own influence on the research findings, including their own perspective and attributes, which may have impacted on the interpretation of results. In order to contextualise the findings and consider

the impact of the researcher on the qualitative analysis, Chapter 8 includes a reflection on researching in the call centre and lessons learned from this, which is based on a reflective and reflexive diary kept by the investigator throughout the research process. This includes reflections on the experience of researching in the call centre environment, as well as reflexivity on the impact of the researcher on the interpretation of findings.

3.4.2 Criteria specific to the quantitative elements of the research.

The second area relates to the quantitative element of the research. The frameworks include criteria for assessing quantitative methods, in particular the validity and reliability of measurement instruments and appropriateness of statistical analysis (Dellinger & Leech, 2007). A number of quantitative measures are included in the research, including self-report questionnaires and physiological measures of physical health. The main questionnaire used within the longitudinal study of mental health and its predictors is the Wellbeing Process Questionnaire (WPQ: Williams & Smith, 2012) while the assessment of physical health included a number of physiological and self-report measures of health. For each of these, the validity and reliability of the included measures is considered within the relevant methods section, along with the clinical significance of the health measures where appropriate (see Chapter 4 for the psychometric properties of the WPQ and Chapter 6 for the validity and reliability of the physical health measures). For Study 4, which evaluated the existing support offered by the call centre, no appropriate validated measure was available and so a questionnaire was developed by the researcher. The development and piloting of this questionnaire is described in

Chapter 7. In relation to the statistical analysis employed, the analysis sections in Chapters 4 to 7 provide a rationale for the choice of statistical analysis.

3.4.3 Mixing and integration of methods.

In addition to ensuring the quality of the individual quantitative and qualitative methods used, the framework highlights the importance of considering how the different strands of the research are integrated. This facilitates the development of a coherent understanding of the subject of interest with a clear and logical progression from one aspect to the next (Bryman et al., 2008; Dellinger & Leech, 2007). In order to provide a logical progression from one aspect to the next, it was deemed most appropriate to move from identification of relevant mental health issues using broader and descriptive data, to more in-depth understandings of the possible causes and explanations of mental health outcomes in call centre staff. The reporting of findings progresses as follows: 1) general descriptions of the mental health of the workforce drawn from the surveys; 2) investigation of the factors which predict mental health outcomes; 3) examination of how daily demands and resources impact mental health and wellbeing based on the diary data; 4) deeper understandings of the employees' experiences based on the interviews.

Following this in depth consideration of the factors which impact the mental health of call centre staff, the physical health correlates of mental health outcomes are considered. The mental health needs identified across these studies were then integrated and compared to the support provided for mental health, the perceived quality of the support, and staff views on the additional support required. Results

were integrated according to the research objectives, rather than presented in a linear fashion. This allows each research objective to be considered in turn, integrating the results from a variety of methods in line with the research approach outlined in Section 3.3. Teddlie and Tashakkori (2009) highlighted the importance of inferences made based on the integrated findings incorporating the inferences made in each element of the research, as well as providing explanations for inconsistencies between studies. Inferences made from all the studies will be discussed within each chapter in relation to the objective(s) being addressed. These discussions will include consideration of where findings corroborate or diverge from one another.

3.4.4 The research approach

Areas 4 and 5 within the framework relate to the rationale for the use of mixed methods and consideration of the theoretical paradigm. They state that the research rationale should set out why mixed methods is the most appropriate way to answer the research question and explicitly state the researchers' theoretical paradigm, to help the reader to judge the epistemological rigour of the research (i.e. whether the methodology and interpretation of results are in line with the researchers' stated philosophical paradigm; Heyvaert et al., 2013). The rationale for using mixed methods within the research in this thesis and the philosophical paradigm underpinning the current research are set out earlier in this chapter.

3.4.5 Aims and objectives and research design

Areas 6 and 7 of the quality framework cover the research aims, objectives and the research design. They highlight the importance of including clear research aims and objectives and that these should explicitly relate to the research design,

which should also be clearly described. The aim and objectives of the current research are set out at the end of Chapter 2. The specific research objectives addressed by each of the studies will be set out at the end of this chapter as well as at the start of each results chapter (Chapters 4 to 7). The design for each study is then described in depth within the relevant chapters.

3.4.6 Criteria relating to methods employed

Areas 8, 9 and 12 in the quality framework relate to the methods employed by the research, specifically, sampling and data collection, data analysis and transparency of the procedures. Sampling and data collection, analysis and the procedures employed should be clearly reported with sufficient detail, be justified and be appropriate to the objectives and overall methodological approach of the research. Within this thesis, specific sampling and data collection, data analysis and procedures are described in detail within the methods for each study, along with a rationale for their use where required.

3.4.7 Criteria relating to the research context and impact of the investigator

Areas 10 and 11 within the framework relate to the research context and impact of the investigator. The research context should be adequately described and stress the importance of reflecting on the impact of the investigator, including the researcher's relationship with the research participants and assumptions that may have impacted on the interpretation of results. A description of the research setting and its impact on the methodological approach is included earlier in this chapter. Reflections on the impact of the researcher in the current study are included in Chapter 8.

3.4.8 Interpretation of findings, conclusions, inferences and implications.

The final set of criteria in the frameworks highlight the importance of the inferences drawn from the research being consistent, credible and clearly linked to findings and conclusions justified. Teddlie and Tashakkori (2009) further suggested that meta-inferences across studies should incorporate inferences from each individual study and explanations offered for any inconsistencies across studies. Inferences, conclusions and implications of the research will be discussed in the findings of each chapter, where any inconsistencies will also be considered. In Chapter 8, the conclusions and implications will be informed by findings across all four studies in an integrated way.

3.5 Presentation of results

The results are presented for each research objective, which broadly report findings from Study 1 to Study 4 in order. Chapter 4 reports results relating to the first and second research objectives:

- To assess levels of depression, anxiety and positive mental health in call centre staff.
- To investigate the predictors of mental health outcomes in call centre staff, both concurrently and over time, using the DRIVE model of employee stress and health as a framework.

The results in Chapter 4 draw on findings from Study 1, reporting levels of depression, anxiety and positive mental health and predictors of mental health, testing the DRIVE model of employee stress and health and investigating longitudinal relationships between predictors and outcomes based on the longitudinal study of mental health.

Chapter 5 reports results relating to the third research objective:

- To explore in depth the impact of daily job demands and resources on mental health outcomes

This chapter reports findings from Study 2, reporting on how daily experiences predict mental health and wellbeing based on daily diaries, and provides a detailed description of staff views on mental health at work based on the qualitative interviews. In order to draw conclusions about the impact of job demands and resources on mental health, quantitative findings on the daily impact of job demands and resources and in-depth qualitative insights on demands and resources from Study 2 will also be discussed alongside the longitudinal findings from Study 1.

Chapter 6 reports results relating to the fourth objective:

- To explore how mental health outcomes correlate with physical health and health behaviours

The results in Chapter 6 draw on findings from Studies 1 and 3, reporting levels of physical health and health behaviours based on the physical health assessments and their correlations to mental health. Levels of sickness absence and presenteeism from Study 1 are also reported and correlated with mental health outcomes.

Chapter 7 reports results relating to research objective 5:

- To evaluate the support and resources currently provided for call centre staff

This chapter reports findings from Study 4 on staff views on the support for mental health and wellbeing currently provided. The chapter draws together findings from the first three studies, using qualitative results to explain the quantitative findings in greater depth, in order to identify health and wellbeing needs of call centre staff. Recommendations are made based on a comparison of current support with findings on mental health and wellbeing needs.

Chapter 4: Levels and Predictors of Mental Health

4.1 Introduction

This chapter addresses research objectives 1 and 2:

- To assess levels of depression, anxiety and positive mental health in call centre staff.

- To investigate the predictors of mental health outcomes in call centre staff, both concurrently and over time, using the DRIVE model of employee stress and health as a guiding framework.

The objectives were addressed by Study 1 which was a longitudinal study of mental health. Section 4.2 describes the methods used in this study. Three goals were identified in order to address these research objectives: 1) to assess the levels of mental health in call centre staff, by measuring anxiety, depression and positive mental health; 2) to investigate the relationships predicted by the DRIVE model cross-sectionally, including main effects, moderation and mediation; and 3) to investigate the main effects predicted by the DRIVE model longitudinally, by exploring whether job demands, resources and individual differences predict mental health at the next time point, over and above mental health at the same time point. In order to address the first goal, anxiety and depression scores were categorised as normal, mild, moderate or severe and proportions of staff falling into each category reported, while average scores are reported for positive mental health. In order to address the second goal, regression-based path analysis was conducted to explore the cross-sectional relationships predicted by the DRIVE model, using the PROCESS macro for SPSS (Hayes, 2018). In order to address the third goal, further hierarchical multiple regression analyses were conducted to explore longitudinal relationships, focusing on how the constructs within the model

predict mental health over time. Section 4.2 describes the methods used in Study

1, including a more detailed description of the analyses used. Section 4.3 reports

the findings relating to the first goal of this chapter, presenting the results on the

levels of mental health and discussing the implications of these findings. Section

4.4 reports the findings relating to the second goal of this chapter, on the

predictors of mental health in call centre staff and discusses the extent to which

the findings support the DRIVE model as well as their implications for supporting

mental health within a call centre setting. Section 4.5 reports the findings relating

to the third goal of this Chapter, reporting and discussing the longitudinal findings.

Finally, Section 4.6 will set out the key conclusions relating to the Chapter

objectives and outline the next steps of the research.

4.2 Methods. Study 1: Longitudinal study of mental health and its predictors

4.2.1 Design

The longitudinal study spanned a two-year period (May 2013 to June 2015) and

included four data collection points. Time lags between data collection points were

considered in relation to the amount of time it might reasonably be expected to

take for mental illness outcomes to change. Diagnosis of mental illness often

requires symptoms over an extended period. For example, general anxiety

disorder symptoms must be present for 6 months before a diagnosis, while for

depression symptoms must be present for at least 2 weeks (American Psychiatric

Association, 2013). As a result, a time lag of approximately 6 months was chosen

as an appropriate time lag to see change in mental illness outcomes. A longer gap

of approximately a year was left between data collection points 2 and 3, since

Study 3 and Study 4 were carried out in this period (see Chapters 5 and 7). It was

agreed with the call centre management that a longer gap would be left in order to limit the burden on participants. All staff members were invited to take part at each point in time which resulted in longitudinal data being available for a subset of participants. Longitudinal data was available for 374 individuals out of a total of 820 participants (46%). Only a cohort of 23 individuals completed all four data points (3%). Independent and dependent variables were measured within the same questionnaire.

4.2.2 Participants

Participants were employees of the call centre of a UK government executive agency in South Wales. All staff working in the call centre were invited to take part in the survey at four points in time, allowing new employees to take part as well as to follow up on those who previously completed the survey. The inclusion criteria were being an employee of the call centre at the time of the survey. Exclusion criteria were being absent from work at the time of the survey (e.g., those taking annual leave, sickness absence or maternity leave at the time of the survey were not able to access the surveys). At Time 1 (May 2013), 819 employees were invited to take part and 397 responses were received (49% response rate). At Time 2 (November 2013), 861 employees were invited to take part and 389 responses were received (45% response rate). At Time 3 (November/December 2014), 970 employees were invited to take part and 276 responses were received (28% response rate) and at Time 4 (June 2015), 1139 employees were invited to take part and 248 responses were received (22% response rate). Demographic information for each of the time points is included in Table 1 along with comparisons to demographic information for the call centre as a whole.

Table 1

Demographic Information and comparison to all call centre staff

Demographics	Sample Time 1	All Staff Time 1	Sample Time 2	All Staff Time 2	Sample Time 3	All Staff Time 3	Sample Time 4	All Staff Time 4
N (response rate)	397 (49%)	871	389 (45%)	902	276 (28%)	1087	248 (22%)	1139
Repeat responses (% of total)	-	-	186 (48%)	-	135 (49%)	-	167 (67%)	-
Gender								
Female	250 (63.0%)	523 (60.0%)	179 (60.1%)	551 (61.1%)	179 (65.3%)	675 (62.1%)	167 (67.3%)	710 (62.3%)
Male	147 (37.0%)	348 (40.0%)	119 (39.9%)	351 (38.9%)	95 (34.7%)	412 (37.9%)	81 (32.7%)	429 (37.7%)
Age								
20 or under	20 (5.0%)	30 (3.4%)	11 (2.8%)	27 (3.0%)	11 (4.0%)	26 (2.4%)	6 (2.4%)	24 (2.1%)
21-30	177 (44.6%)	391 (44.9%)	180 (46.5%)	411 (45.6%)	118 (42.9%)	487 (44.8%)	97 (39.1%)	497 (43.6%)
31-40	99 (24.9%)	214 (24.6%)	85 (22.0%)	203 (22.5%)	74 (26.9%)	279 (25.7%)	61 (24.6%)	298 (26.2%)
41-50	54 (13.6%)	127 (14.6%)	63 (16.3%)	159 (17.6%)	43 (15.6%)	187 (17.2)	53 (21.4%)	200 (17.6%)
51-65	47 (11.8%)	109 (12.5%)	48 (12.4%)	101 (11.2%)	28 (10.2%)	106 (9.8%)	29 (11.7%)	109 (9.6%)
Over 65	0	0	0	1 (0.1%)	1 (0.4%)	2 (0.2%)	1 (0.4%)	2 (0.2%)
Job grade								
Call handler/admin	364 (91.7%)	752 (86.3%)	367 (95.3%)	777 (86.1%)	227 (82.2%)	955 (87.9%)	212 (85.8%)	995 (87.4%)
Team leader	28 (8.3%)	89 (10.2%)	15 (3.9%)	94 (10.4%)	41 (14.9%)	101 (9.3%)	23 (9.3%)	108 (9.5%)
Manager	5 (1.3%)	30 (3.4%)	3 (0.8%)	31 (3.4%)	7 (2.5%)	31 (2.9%)	12 (4.9%)	35 (3.1%)
Area of work								
Call area 1	164 (41.5%)	359 (41.2%)	188 (48.8%)	378 (41.9%)	137 (49.8%)	475 (43.7%)	118 (47.6%)	508 (44.6%)
Call area 2	202 (51.1%)	395 (45.4%)	186 (48.3%)	408 (45.2%)	111 (40.2%)	496 (45.6%)	102 (41.1%)	517 (45.4%)
Support	29 (7.3%)	117 (13.4%)	11 (2.9%)	116 (12.9%)	27 (9.8%)	116 (10.7%)	28 (11.3%)	114 (10.0%)
Length of service								
Less than a year	119 (30.0%)		62 (16.1%)		64 (23.2%)		46 (18.6%)	
1-3 years	59 (14.9%)		153 (39.7%)		79 (28.6%)		92 (37.2%)	
3-5 years	59 (14.9%)	-	35 (9.1%)	-	20 (7.2%)	-	25 (10.1%)	-
5-7 years	80 (20.2%)		57 (14.8%)		28 (10.1%)		18 (7.3%)	
7-10 years	50 (12.6%)		49 (12.7%)		46 (16.7%)		39 (15.8%)	
More than 10 years	30 (7.6%)		29 (7.5%)		39 (14.1%)		27 (10.9%)	
Working pattern								
Full-time	-	-	326 (84.5%)	731 (81.0%)	224 (81.2%)	871 (80.1%)	197 (79.4%)	906 (79.5%)
Part-time			60 (15.5%)	171 (19.0%)	52 (18.8%)	216 (19.9%)	51 (20.6%)	233 (20.5%)

Demographics of respondents were compared to call centre staff as a whole at each time point. Respondents in the sample were similar to call centre staff as a whole in terms of the gender split at both time points although females were slightly overrepresented at Times 1, 3 and 4. Respondents appeared representative of the call centre in terms of age groups, although at Time 4 older workers were slightly overrepresented. Staff members worked in one of three areas within the call centre: two operational areas dealing with different types of calls labelled call area 1 and call area 2 and non-operational support areas. The distribution of respondents across these areas of work was broadly in line with the distribution of staff within the call centre although call area 1 was slightly overrepresented at Times 2, 3 and 4, while call area 2 was overrepresented at Time 1 and underrepresented at Times 3 and 4. Support areas were underrepresented at Times 1 and 2. Employees at the call handler/administrative grades appeared to be overrepresented in the sample at Times 1 and 2, whilst the management grades were underrepresented at these time points. However, at Times 3 and 4 the sample more closely matched the population in terms of job grade. The proportion of part-time and full-time staff in the sample closely matched that of the call centre as a whole at Times 3 and 4, although part time staff were slightly underrepresented at Time 2. Working pattern was not measured at Time 1. Information on the length of service of all staff was not easily available and, therefore, was not included in the comparison. Overall, there were only small demographic differences between those who responded to the survey and the entire workforce. Therefore, it appeared that the sample was broadly representative of the call centre as a whole.

4.2.3 Measures

The Wellbeing Process Questionnaire (WPQ; Williams & Smith, 2012) was the main measure used and was developed in order to measure a wide number of variables which are relevant to workplace health and wellbeing in a relatively short and practical manner (Williams, 2014; Williams & Smith, 2012). This was done by developing single item measures of a range of variables which have been found to relate to health and wellbeing, including work variables, daily life variables, individual differences and coping styles. Further, the WPQ measures anxiety, depression and positive mental health (by combining measures relating to subjective and eudaimonic wellbeing), therefore covering mental health as defined in this programme of work (see Chapter 2).

As already noted in the literature review, the factors which influence mental health at work are complex, multi-faceted and contextual, which means that focusing on a small number of variables may not be adequate to capture this complexity. A problem with understanding this complex picture is the practical difficulty involved in measuring all the relevant variables. If this were attempted using traditional questionnaires, hundreds of items would be included (Williams, 2014). This length of questionnaire would constitute a considerable burden on respondents and be likely to lead to low response rates (Dillman et al., 1993), and an increased risk of bias. The length of questionnaire can impact on bias through a number of mechanisms. The most obvious is that of volunteer bias, where only the most motivated participants complete the questionnaire (Roth & BeVier, 1998). Other studies have found that patterns of response change towards the end of a long questionnaire, with greater use of the most frequent response category and less

use of extreme response categories (Kraut et al., 1975) and an increase in a 'straight line' response pattern, where the same response is chosen for most questions (Herzog & Bachman, 1981). Shorter measures like the WPQ are, therefore, preferable in order to maximise response rates and reduce 'straight line' responding.

Single item measures have clear advantages in terms of reducing questionnaire length, however, their use is often criticised since they generally show poorer psychometric properties compared to multi-item measures (Wanous & Hudy, 2001). The key consideration then is whether, on balance, the ability to measure more variables with less accuracy is preferable to measuring fewer variables more precisely. Where there are several dimensions of equal importance and testing time is limited, it seems worthwhile to measure more variables with less precision rather than to measure some very accurately but ignore the others (Cronbach, 1990). In the case of measuring mental health at work, the omission of important variables would be likely to limit the predictive power of a measure of factors relevant to mental health. However, this is only the case where a questionnaire can be shown to exhibit minimum levels of validity and reliability. Although single items generally show poorer psychometric properties than multi-item measures of the same construct, in many cases they can perform as well as, or in a few cases better then, their multi-item equivalents (Williams, 2014). For example, single item measures of depression have been found to show comparable levels of sensitivity and specificity as established multi-item measures when compared to the gold standard of clinical interview (Ayalon et al., 2010; Watkins et al., 2007). However, other studies have found low correlations between single items and their multi-item

counterparts (Pantilat et al., 2012). Therefore, it is important to consider the validity and reliability of the specific measure used.

The single item measures included in the WPQ were developed and compared to established multi-item measures of the same constructs in samples of university staff and nurses (Williams, 2014). More items were developed than were included in the final WPQ. The development of the items was based around the DRIVE model of stress and health (Mark & Smith, 2008). Since this model is a broad framework within which a range of job demands, resources and individual differences can be measured, specific items relating to work characteristics were developed based on the dominant approaches to stress and wellbeing at work. This included task-related demands, control, supervisor and colleague support from the Demands-Control-Support model (Karasek & Theorell, 1990), effort and reward from the Effort-Reward Imbalance model (Siegrist, 1996), relationships, understanding of role and consultation about change from the Health and Safety Executive (HSE) Management Standards, as well as task-related demands, control and support which overlap with the Demands-Control-Support model (Health and Safety Executive, 2007). Individual differences were based on personality and specific individual difference variables which have previously been linked to workplace wellbeing (Diener et al., 2003). These included the big five personality variables (openness to experience, conscientiousness, extraversion, agreeableness and emotional stability), self-esteem, self-efficacy and optimism as well as overcommitment from the Effort-Reward Imbalance model (Siegrist, 1996). Coping styles were included based on Cognitive-Motivational-Relational Theory (CMRT; Lazarus, 1991). Coping style items included positive coping (seeks social

support and problem focused coping) and negative coping (avoidance, self-blame and wishful thinking). All items were rated on a scale of 1 to 10. Some examples of the included items are listed in Table 2. Originally, items on appraisal of job demands were included, based on CMRT (Lazarus, 1991), but these were all dropped due to poor psychometric properties. The questionnaire was refined with testing (Williams, 2014), and some of the least predictive work and individual characteristics were dropped from the refined model (these included the big five personality variables openness to experience, conscientiousness and agreeableness, relationships and understanding of role from the HSE Management Standards and positive coping styles from CMRT).

Table 2

Examples of items from the Wellbeing Process Questionnaire

Item	Question	Rating
Task-related demands	I feel that my work is too demanding (for example, I have to work very fast, I have to work very hard, I have conflicting demands).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Colleague support	I feel that I am supported by my colleagues (for example, there is a good atmosphere at work, I get along with my colleagues, my colleagues understand me).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Depression	On a scale of one to ten, how depressed would you say you are **in general**? (For example, feeling 'down', no longer looking forward to things or enjoying things that you used to).	Rating 1-10 (1 = Not at all Depressed, 10 = Extremely Depressed)

Tests of the validity and reliability of these items with university staff and nurses (Williams, 2014; Williams & Smith, 2012; 2016) have found that the items generally performed adequately or well. Construct validity was estimated using concurrent validity with established multi-item measures. Most items were adequate or good in terms of construct validity. Discriminant validity was assessed

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by correlating single items to multi-item measures of related constructs. This assessed the ability of the items to distinguish between closely related variables. In many cases good discriminant validity was established. However, there was some overlap in the case of some closely related constructs such as effort and task-related demands. This suggests that where these are considered as predictors of outcomes individually, multicollinearity could become a problem. However, Williams (2014) suggested that items within each category can be summed to create a total score. This allows, for example, cumulative effects of job demands and resources to be tested, rather than individual factors. Diagnostic validity for anxiety and depression was estimated by examining sensitivity (the percentage correctly identified with a positive diagnosis) and specificity (the percentage correctly identified without a diagnosis), in comparison to the cut off points for the Hospital Anxiety and Depression (HAD) scale (Zigmond & Snaith, 1983). The single items were able to show good levels of sensitivity (71.4% for depression and 86.3% for anxiety) and specificity (85.4% for depression and 72.6% for anxiety) with defined cut off points. Predictive validity was good, with the single items predicting outcomes in a very similar way to the multi-item measures. Multi-item measures were able to account for between 23% and 77% of the variance in outcomes compared to between 13% and 78% for the single items. However, it would benefit from validation in a wider range of occupational groups. Reliability was estimated based on the correlation with the multi-item measure and this was more variable, with some variables showing very good reliability estimates of 0.6 or 0.7, and several items showing poor reliability. A direct investigation of test-retest reliability showed comparable stability to multi-item measures of the same constructs and, therefore, it appeared that reliability was

adequate. It was, therefore, concluded that the WPQ showed adequate levels of validity and reliability in order to provide an acceptable estimate of multi-dimensional wellbeing within a short questionnaire.

In addition to the WPQ, measures of sickness absence and presenteeism were included in the questionnaire. These were included due to concerns from both call centre managers and Trade Union representatives about levels of sickness absence within the call centre. The format of the question on sickness absence was negotiated with the managers at the call centre in order to ensure it was consistent with the way sickness absence was measured by the organisation, where the number of separate periods of absence was felt to be a more important indicator than the total number of days taken. The question, "How many different occasions of sickness absence have you had over the last 12 months (that is, the number of times you have had sick leave)?" was agreed. The question on presenteeism was adapted from Aronsson et al. (2000) and asked employees to report the number of instances of presenteeism in the previous year. The original question from Aronsson et al.'s study was awkwardly and confusingly worded, perhaps due to translation from the original Swedish. In order to increase clarity, the question was reworded from "Has it happened over the previous 12 months that you have gone to work despite feeling that you really should have taken sick leave due to your state of health?" to "In the past 12 months, how many times have you gone to work despite feeling that you really should have taken sick leave due to the state of your health?". In line with the recommendation of Johns (2010), an open response format question was provided for these questions, since providing ranges can be interpreted by respondents as indicating norms on the

prevalence of the behaviour and may therefore affect the responses given. Sickness absence was measured in number of periods and was divided into 3 categories: no sickness absence, some sickness absence (1-2 periods) and high sickness absence (3 periods). Three periods of sickness absence was categorised as 'high' since this is the point at which staff in the call centre hit a sickness absence 'trigger point'. This is the point where staff would be required to attend a sickness absence meeting with their manager to discuss reducing their sickness absence and be informed that more formal procedures would be instigated if they took another period of absence within a monitoring period. In a similar way, presenteeism was divided into 3 categories: no presenteeism, some presenteeism (1-3 times) or high presenteeism (4+ times). The most complete estimate of the prevalence of presenteeism in Europe comes from the European Working Conditions Survey (Kubicek et al., 2019), which found that employees across Europe reported attending work despite being ill on an average of 3 days in the previous year. Therefore, those reporting presenteeism on 4 or more occasions in the previous year show above average levels of presenteeism and were categorised as 'high' in presenteeism.

At Times 1-3, the original version of the WPQ was administered along with the questions on absence and presenteeism. At Time 4, the least predictive variables were dropped from the questionnaire as the call centre management requested that the questionnaire be shortened due to increased demand on their service. The predictors which were dropped at Time 4 were two individual difference variables (extraversion, self-efficacy), one coping style variable (wishful thinking) and one resources variable (supervisor relationship). This resulted in a different

set of variables than was found to be most predictive in other populations

(Williams, 2014). The questionnaire is included in Appendix 1, with questions

which were dropped at Time 4 included in italics.

4.2.4 Procedure

Data was collected at four points in time (May 2013, November 2013,

November/December 2014, June 2015). At each time point, all employees working

within the call centre were invited to take part in the survey which was

administered electronically. At each time point, an email invitation was sent to all

staff with a link to an electronic questionnaire which was hosted on the intranet

site. At Times 1 and 2, the email was sent by the communication team within the

call centre who administered the first two surveys. At Times 3 and 4, the email was

sent by a research team within the organisation who administered all other staff

surveys and who took over the administration of the mental health surveys. An

information sheet was attached to the emails (see Appendix 2), explaining the

purpose of the study and the overall research project, and outlining the measures

the researcher was taking to ensure anonymity and confidentiality. A link to the

electronic survey was included at the end of the information sheet. Participants

were asked to provide their staff number at the start of the survey so that

longitudinal data could be collated. For surveys 1 and 2, employees were given

twenty minutes to complete the questionnaire during their weekly team meetings.

At Time 1, data was collected over eleven working days (from 14th to 25th May

2013). At Time 2, data was collected over eight working days (18th to 26th

November 2013). At Time 3, the survey was originally launched with no provision

for staff to complete during work hours due to service demand. After a very low

response rate of 5% over two weeks (18th November to 1st December), the survey was extended for another two weeks (to 12th December) and staff were allowed to build 10 minutes of flexi time if completing the survey in their lunch break. At Time 4, the survey was again launched with no provision for staff to complete it during work hours. The survey was originally planned to run for three weeks (1st to 20th June), however, during the third week, the response rate was reviewed and again was low (11%). Following this, the survey was extended for a fourth week (to 27th June) and time was allocated during the weekly team meetings to complete the survey.

4.2.5 Ethical considerations

Ethical approval was gained from Cardiff Metropolitan University's School of Sport Ethics Committee. Arrangements for staff anonymity were also agreed with the call centre managers and the organisation's HR department. Since the research was being administered by staff at the call centre, there was a risk that employees may have been concerned about their answers having an impact on their jobs. This was addressed in the participant information sheet (see Appendix 2). Data was anonymised by the researcher at the call centre site where staff numbers were replaced with unique identifiers. A separate document was produced by the researcher with a list of staff numbers and identifiers. The data was then entered into SPSS using the identifiers. The document detailing staff numbers and identifiers was held by a member of staff at the call centre and was only used during anonymisation of survey data. This ensured that staff responses and identifiable information remained separate. Information on support available to

staff was included on the information sheet for those who were concerned about their health or wellbeing.

4.2.6 Analysis

4.2.6.1 Cut-off points

Scores on the depression and anxiety scales were categorised as normal or mild to severe using cut-off points developed by using the Hospital Anxiety and Depression scale (Zigmond & Snaith, 1983) as a comparison (Williams & Smith, 2013; Williams & Smith, 2018). As such, scores of 1-4 were categorised as normal, scores of 5 were categorised as mild anxiety or depression, scores of 6-8 were categorised as moderate anxiety or depression and scores of 9-10 categorised as severe anxiety and depression. Three items on subjective wellbeing (positive mood, negative mood and life satisfaction) and one item on eudaimonic wellbeing were combined to create a positive mental health score. As there are no widely agreed cut off points for positive mental health, this is included as a continuous variable. For workplace stress, previous five point scales have interpreted scores of 3 or 4 out of 4 as high stress, 2 as moderate stress and 0 or 1 as low stress (e.g., Smith et al., 2011). These cut off points were adapted to the current 10 point scale, with scores of between 7 and 10 being regarded as high stress, scores of 4 to 6 regarded as moderate stress and scores of 1 to 3 regarded as low stress. While these cut-off points are, to an extent, arbitrary, they give some indication of the distribution of scores and allow comparison across time points.

4.2.6.2 Operationalising the DRIVE model

The DRIVE model (Mark & Smith, 2008) suggests that mental health is predicted by job demands, resources and individual differences, with workplace stress mediating the relationships between job demands and resources and outcomes. Tests of the model have varied in terms of whether they have looked at the effects of different job demands, resources and individual differences separately or cumulatively (e.g., Mark & Smith, 2012a; Williams, Thomas & Smith, 2017). Looking at the cumulative effects of job demands and resources may provide a more complete assessment of the risk to workers' health compared to looking at specific job demands and resources individually (e.g., Fletcher et al., 2011). It was, therefore, decided that this study would consider the cumulative effects of each construct. This was facilitated by the use of the Wellbeing Process Questionnaire (WPQ; Williams, 2014), which allows job demands, resources and individual differences to be measured within a single questionnaire and a total score to be calculated for each construct, so that the cumulative effects of these factors can be explored. The established predictors identified by Smith (2021) were used as the basis for developing four independent variables: job demands (made up of task-related demands, effort, and lack of consultation about change); job resources (made up of control, rewards, supervisor support and colleague support); positive personality (emotional stability; self-esteem; self-efficacy and optimism) and negative coping styles (avoidance, self-blame and wishful thinking). Scores from the individual measures were summed to create the four independent variables.

4.2.6.3 Testing of assumptions

Prior to conducting regression-based analyses, key assumptions were tested (Field, 2013). Collinearity was tested by examining the correlation matrix and calculating the variance inflation factor (VIF) and tolerance statistics for each outcome (anxiety, depression and positive mental health). Examination of the correlation matrix did not identify any excessive collinearity (defined as correlations of more than .8 in line with Field, 2013). Tests of the VIF and tolerance found no VIF of more than 10 and no tolerance of less than .2 suggesting that collinearity was not a problem. The assumption of independent errors was tested using the Durbin Watson test. The test statistic exceeded the upper critical value at each time point. Therefore, it can be assumed that the errors are independent. Scatter plots of standardised residuals against standardised predicted values were plotted for each time point. All plots appeared to show points which were randomly and evenly dispersed, with no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity. Examination of scatter plots identified one outlier at Time 1 which was likely to affect the outcomes of the regression, which was removed from each analysis. After removal of the outlier, all Cook's distances were less than 1 for all variables at all time points, suggesting no overly influential points were present. The assumption of normally distributed errors was investigated by examining histograms of standardised residuals and normal probability plots. At each time point, histograms showed distributions which were approximately bell-shaped and symmetrical while normal probability plots showed points lying close to the diagonal line. Both plots suggested that residuals were

normally distributed at each time point. As no assumptions were violated, multiple regression analyses were conducted. Full results are reported in Appendix 3.

4.2.6.4 Cross-sectional test of the DRIVE Model

This section outlines the analyses used to address the second goal of this chapter:

- To investigate the relationships predicted by the DRIVE model cross-sectionally, including main effects, moderation and mediation

In order to address this goal, the DRIVE model was tested with ordinary least squares regression-based path analysis using the PROCESS macro for SPSS (Hayes, 2018), allowing estimation of direct, indirect and interaction effects for three mental health outcomes (anxiety, depression and positive mental health). As hypothesised by the DRIVE model, for each outcome this involved considering three main effects, that: 1) job demands predict mental health outcomes, 2) job resources predict mental health outcomes and 3) individual differences predict mental health outcomes. In addition, this involved considering two mediation relationships, that: 1) workplace stress mediates the relationships between job demands and mental health outcomes and 2) workplace stress mediates the relationships between resources and mental health outcomes. The original DRIVE model hypothesised six moderation relationships, that: 1) job resources moderate the effects of job demands on mental health; 2) job resources moderate the effects of job demands on work stress; 3) job resources moderate the effects of work stress on mental health; 4) individual differences moderate the effect of job demands on mental health; 5) individual differences moderate the effects of job demands on work stress; and, 6) individual differences moderate the effects of

work stress on mental health. Previous research has found little evidence of moderation, although these relationships have been less frequently tested. On this basis, independent effects are predicted in this study.

Four regression models were built for each mental health outcome. Model 1 tested the main effects by estimating the effects of job demands, job resources, positive personality and negative coping on mental health outcomes. Models 2 and 3 were built to test whether work stress mediates the relationships between job demands and resources and mental health outcomes by: estimating the effects of job demands, job resources and individual differences on work stress (Model 2); estimating the effects of work stress on mental health outcomes (Model 3); and then calculating indirect effects of job demands and resources on mental health using bootstrapping procedures. Unstandardized indirect effects were calculated for each of 10,000 bootstrapped samples. The 95% confidence interval was calculated by computing the indirect effects at the 2.5th and 97.5th percentiles. A further model (Model 4) was built with the addition of all predicted interactions in order to look for moderation effects (i.e. where the interaction term significantly predicted mental health outcomes when controlling for the main effects). Prior to tests of the DRIVE model, analyses were conducted to identify whether a number of demographic factors (i.e. age, gender, grade, area of work and length of service) were significantly related to mental health outcomes in order to identify potential confounders. Demographic factors which significantly predicted outcomes were controlled for in analyses.

Due to the number of statistical comparisons employed in the analysis, the risk of a Type I error is increased, meaning that without controlling for the overall familywise error rate using procedures such as the Bonferroni or Dunn-Šidák correction, it is likely that false positive results will be found (Abdi, 2007). However, by correcting the familywise error rate, statistical power is lost and the risk of making Type II errors is increased. Given the number of variables measured in the present study and the relatively small sample sizes at the later time points, there is a risk that controlling for the familywise error rate would lead to the study being underpowered. Where the relationships between the same variables are being measured at 4 different time points, one alternative way of controlling the risk of making a Type I error is to consider the consistency of results. Since Type I errors are unlikely to be replicated (Lieberman & Cunningham, 2009), where a variable consistently predicts an outcome across the 4 time points, it is very unlikely that this finding will be the result of a Type I error. In order to control the familywise error rate when carrying out multiple regression analyses, the cross-sectional results were looked at across the 4 time points. It was concluded that a significant effect was present where the effect was replicated at least 3 of the 4 time points. Since the probability of making the same Type 1 error across at least 3 of the 4 time points is very small, this approach reduces the familywise error rate without the need for further correction of the p value.

4.2.5.5 Longitudinal analysis using the DRIVE model

This section outlines the analyses used to address the third goal of this chapter:

- To investigate the main effects predicted by the DRIVE model longitudinally, by exploring whether job demands, job resources and individual differences predict mental health at the next time point, over and above mental health at the same time point

Longitudinal hierarchical multiple regression analyses were conducted and considered the relationship between predictor factors and later mental health, while controlling for mental health at the same time point (i.e. the relationship between predictors at Time 1 and mental health at Time 2 was calculated while controlling for mental health at Time 1; the relationship between predictors at Time 2 and mental health at Time 3 was calculated while controlling for mental health at Time 2; and the relationship between predictors at Time 3 and mental health at Time 4 was calculated while controlling for mental health at Time 3) . This approach was used since the sample size for those with complete data was too small to look at change across all time points or to perform more advanced statistical techniques such as structural equation modelling (SEM; Westland, 2010). Whilst there are several advantages to using SEM over regression-based path analysis, most notably the ability to include cross-sectional and longitudinal effects within the same model and the ability to estimate the overall model fit, the two techniques tend to yield similar results (Hayes et al., 2017).

In order to control the familywise error rate when carrying out longitudinal regression analyses, the cross-sectional results were looked at across the 3 longitudinal comparisons. It was concluded that a significant effect was present where the effect was replicated in at least 2 of the 3 analyses. Since the probability of making the same Type 1 error across at least 2 of the 3 time points is small, this

approach reduces the familywise error rate without the need for further correction of the p value (see the previous section for a more detailed explanation).

4.3 Levels of mental health: Results and discussion

This section reports and discusses the findings relating to the first goal of this Chapter:

- To assess the levels of mental health in call centre staff, by measuring anxiety, depression and positive mental health.

Rates of self-reported anxiety, depression and positive mental health are summarised in Table 3 along with levels of workplace stress at each time point.

Table 3

Levels of mental health and wellbeing of call centre staff

Variable	Level	Time 1		Time 2		Time 3		Time 4	
		N	%	N	%	N	%	N	%
Depression	Normal	236	59.4	202	51.2	186	67.9	129	52.2
	Mild	62	15.6	57	14.7	23	8.4	26	10.5
	Moderate	85	21.4	110	28.4	57	20.8	71	28.7
	Severe	14	3.5	19	4.9	8	2.9	21	8.5
		N	%	N	%	N	%	N	%
Anxiety	Normal	211	53.1	163	42	143	53.2	115	46.7
	Mild	66	16.5	68	17.5	34	12.6	24	9.8
	Moderate	93	23.4	120	30.9	66	24.5	80	32.5
	Severe	27	6.8	37	9.5	26	9.7	27	11
Positive mental health		**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
		25.18	6.75	26.75	6.55	29.24	6.98	19.93	6.15
		N	%	N	%	N	%	N	%
Workplace stress	Low	95	23.9	77	19.8	68	24.7	54	21.9
	Moderate	170	42.8	179	46.1	104	37.8	79	32
	High	132	33.2	132	34	103	37.5	114	46.2

Between 32 and 49 percent of staff showed some evidence of depression at each time point and between 47 and 58 percent of employees showed some evidence of anxiety. It is important to note that this is not a diagnosis but an indicator of symptoms. However, the questions on anxiety and depression showed good levels of sensitivity and specificity in relation to the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983; reported in the measures section of this chapter) and, therefore, this can be regarded as a reasonable estimate of diagnosable common mental illness.

The anxiety and depression questions within the WPQ allow common mental illnesses to be quickly and easily measured and show adequate psychometric properties. However, since no prevalence estimates have been made using this measure, it is not easy to directly compare the levels of mental illness in call centre staff to those of the wider population. There are a variety of different estimates of population mental illness, some based on actual diagnoses and others on survey measures. Estimated rates of depression and anxiety vary by country and by the specific measurement tool used. It is important therefore to ensure that comparison rates are based on survey data rather than diagnoses (since a proportion of mental illnesses will go undiagnosed), as well as being up to date. Since 2010, the Office for National Statistics has measured population wellbeing, including evidence of anxiety or depression. This was chosen as a comparator since it measured anxiety and depression symptoms at a similar time to the current data collection, uses a similar survey approach to measuring anxiety and depression, and includes measures for the Welsh population. In the UK in 2014/15, 17.3% of the population showed some evidence of anxiety or depression

(ONS, 2017). The rate in Wales was similar at 17.4%. Rates of anxiety and depression also varied according to age and gender. The age group most at risk was the 16 to 24 age group, 19.4% of whom showed some evidence of anxiety or depression. Rates were higher among women than men at 20.1% and 14.3% respectively. It might, therefore, be expected that our sample would show higher rates of depression and anxiety in comparison to the general population due to high numbers of women and younger workers. However, even within these population groups with higher rates of anxiety and depression, around one in five individuals showed evidence of anxiety and depression, whereas in the call centre staff, the figure was around one in two or three employees. Therefore, it appears that call centre staff show higher rates of common mental illnesses than the general population.

A number of estimates exist of the prevalence of mental illness within the workplace, including the Adult Psychiatric Morbidity Survey (NHS Digital, 2016) which is conducted every 7 years in England. This survey found that in 2014, 15% of working adults in England showed evidence of a common mental illness, such as depression, general anxiety disorder and panic disorder. This rate was slightly lower than that for the general population, reflecting a higher risk of mental illness among adults who are not in employment. Comparing the findings of Study 1 to this prevalence rate, suggests that call centre staff are at high risk of mental illness compared to the working population. However, the survey used a different measure of mental illness from Study 1 (the revised Clinical Interview Schedule; Brugha et al., 1999) and, therefore, rates may not be directly comparable. A previous study used the Hospital Anxiety and Depression Scale (Zigmond &

Snaith, 1983), which the anxiety and depression scales from the WPQ have been validated against, to estimate the prevalence of anxiety and depression in the general working population (Andrea et al., 2004). This study found anxiety prevalence rates of 8.2% for males and 10% for females, and depression prevalence rates of 7.1% in males and 6.2% in females. The rates of anxiety and depression symptoms identified among call centre staff in the current study are very high in comparison. These findings suggest that call centre staff may be at high risk of common mental illnesses, both in comparison to the general population and the working population. These findings are in line with previous research looking at levels of mental illness among call centre staff, which has consistently found call centre staff are at high risk of mental illness both using measures of overall symptoms and measures of work-related anxiety and depression (e.g., Charbotel et al., 2009; Sprigg et al., 2003). The present study extends these findings by using non-contextual measures of anxiety and depression, confirming that call centre staff show high rates of mental illness, rather than merely experiencing poor work-related wellbeing or low levels of positive mental health.

Previous research in call centre staff has not reported on levels of positive mental health. Keyes (2007) has reported that only 20% of people can be described as 'flourishing', while around two thirds of people were categorised as being moderately mentally healthy, with the small remainder of people classed as 'languishing'. The cut- off points developed by Keyes for flourishing and languishing have, however, been called into question (e.g., Wissing et al., 2021), since it is not clear what level of functioning a 'flourishing' category needs to

represent. There is a lack of qualitative research exploring what flourishing means and what it might look like in practice. Qualitative research by Wissing et al. (2021) found that those who were categorised as flourishing and languishing using Keyes' approach could not be distinguished from one another in terms of what was important to them, but were distinguishable by whether their motivations were more hedonic (those categorised as languishing) or eudaimonic (those categorised as flourishing). These findings are in line with those of Schotanus-Dijkstra et al. (2016) who found that individuals who were categorised as 'flourishing' paralleled those who were high in eudaimonic wellbeing (38% in this study), whereas a larger number of people could be categorised as high in hedonic wellbeing (around 80%). This calls into question the categorisation of individuals as 'flourishing' and what distinguishes this group of people from those who are high in eudaimonic wellbeing. In addition, Abbott et al. (2010) found that Ryff's Psychological Wellbeing Scale (Ryff, 1989), which measures positive psychological functioning, was less accurate and reliable at measuring high levels of wellbeing compared to low or moderate levels of wellbeing. This suggests that flourishing may be difficult to measure reliably and, therefore, calls into question how accurate the categorisation of individuals as 'flourishing' has been. There is a need to develop a greater understanding of whether those who are 'flourishing' categorically differ from those who are 'languishing' or whether positive mental health is better conceptualised as a continuum without distinct categories. If those with high and low levels of positive mental health are found to differ categorically, there is a need to ensure that those who are flourishing can be identified meaningfully and reliably. In either case, the development of normative population reference values would be beneficial to the interpretation of levels of mental

health. Nevertheless, positive mental health could be compared over time, and it seemed that there was a decrease in positive mental health at Time 4 as workplace stress saw a notable increase. The relationship between stress and positive mental health (as well as the other mental health outcomes) will be explored in the next section in line with the predictions of the DRIVE model.

4.4 Predictors of mental health: Results and discussion

This section reports and discusses the results of the analyses used to address the second goal of this Chapter:

- To investigate the relationships predicted by the DRIVE model cross-sectionally, including main effects, moderation and mediation

Section 4.3.1 will report and discuss the results relating to the overall model and main effects, while Section 4.3.2 will report and discuss the results of the mediation and moderation analyses.

4.4.1 Overall model and main effects

Regression analyses were used to test the hypothesis from the DRIVE model that workplace stress predicts health outcomes. Findings are summarised in Table 4 and indicated that workplace stress significantly predicted all mental health outcomes after controlling for stress outside of work. Both workplace stress and home stress had independent effects on mental health outcomes. At Times 1 to 3, the combination of workplace and home stress accounted for between 20 and 30 percent of the variance in mental illness (depression and anxiety), but a slightly lower proportion of the variance in positive mental health. At Time 4, this pattern

Table 4

Main effects of stress on mental health outcomes

Predictors	Depression					Anxiety					Positive Mental Health				
	B	SE B	β	t	p	B	SE B	β	t	p	B	SE B	β	t	p
Time 1															
Constant	0.23	0.31				0.54	0.32				19.85	0.97			
Home stress	0.25	0.04	0.26	6.23	<.001	0.29	0.04	0.29	6.85	<.001	-0.47	0.13	-0.18	-3.66	<.001
Workplace stress	0.46	0.04	0.46	10.8	<.001	0.46	0.05	0.44	10.32	<.001	-0.65	0.14	-0.23	-4.82	<.001
R^2		0.29					0.29					0.09			
F		82.14			<.001		81.33			<.001		19.46			<.001
Time 2															
Constant	1.13	0.34				1.38	0.33				23.3	0.9			
Home stress	0.3	0.04	0.31	6.83	<.001	0.27	0.04	0.28	6.21	<.001	-0.78	0.12	-0.31	-6.6	<.001
Workplace stress	0.31	0.05	0.29	6.32	<.001	0.42	0.05	0.38	8.61	<.001	-0.66	0.13	-0.24	-5.03	<.001
R^2		0.22					0.27					0.18			
F		54.32			<.001		70.06			<.001		42.96			<.001
Time 3															
Constant	0.46	0.37				1.24	0.42				25.74	1.13			
Home stress	0.33	0.05	0.35	6.47	<.001	0.33	0.06	0.32	5.82	<.001	-0.49	0.16	-0.18	-3.14	.002
Workplace stress	0.3	0.05	0.3	5.69	<.001	0.31	0.06	0.28	5.12	<.001	-0.93	0.16	-0.32	-5.7	<.001
R^2		0.25					0.21					0.16			
F		43.88			<.001		35.61			<.001		25.0			<.001
Time 4															
Constant	1.19	0.48				1.7	0.49				18.38	1.04			
Home stress	0.31	0.06	0.3	5.21	<.001	0.31	0.06	0.3	5.06	<.001	-0.92	0.13	-0.39	-7.16	<.001
Workplace stress	0.3	0.06	0.3	5.09	<.001	0.3	0.06	0.28	4.85	<.001	-0.82	0.13	-0.35	-6.35	<.001
R^2		0.19					0.18					0.28			
F		27.71			<.001		25.65			<.001		47.28		F	<.001

was reversed, with a slightly lower proportion of the variance in mental illness being explained by workplace and home stress, while over a quarter of the variance in positive mental health was explained by these variables.

Multiple regression analyses using the predictors in the DRIVE model indicated that the overall model was generally a good fit, particularly for positive mental health where the predictor within the DRIVE model accounted for up to 64% of the variance in scores. For anxiety and depression, the model accounted for slightly less of the variance (up to 41% and 47% respectively), while for workplace stress, the model typically accounted for around a third of the variance (up to 36%). Six main effects of independent variables predicted by the DRIVE model were explored and are reported in Tables 5a and 5b.

The hypothesised main effects were: 1) job demands predict mental health outcomes, 2) job demands predict workplace stress, 3) job resources predict mental health outcomes, 4) job resources predict workplace stress, 5) individual differences predict mental health outcomes and 6) individual differences predict workplace stress. Two individual difference variables were included: positive personality and negative coping. Analyses relating to hypothesis 1) found mixed evidence, since job demands did not consistently predict any of the mental health outcomes, but did predict depression and positive mental health at 2 of the 4 time points. Analyses relating to hypothesis 2) found that it was fully supported, as job demands consistently and strongly predicted workplace stress. Analyses relating to hypothesis 3) found that it was partially supported, since job resources predicted positive mental health and depression, but did not significantly predict

Table 5a

Main effects of job demands, job resources and individual differences on mental illness

Predictors	Depression					Anxiety				
	B	SE B	β	t	p	B	SE B	β	t	p
Time 1										
Constant	3.73	0.71				3.36	0.73			
Grade: Manager	-2.06	0.97	-0.1	-2.14	.033	-2.2	1.0	-0.1	-2.24	.026
Grade: Supervisor	-1.02	0.43	-0.11	-2.39	.017	-0.84	0.43	-0.09	-1.93	.055
Length of service	0.07	0.07	0.05	1.07	.285	0.02	0.07	0.02	0.33	.746
Job Demands	0.05	0.02	0.12	2.55	.011	0.05	0.02	0.13	2.77	.006
Job Resources	-0.05	0.02	-0.15	-3.04	.003	-0.02	0.02	-0.05	-1.09	.275
Positive Personality	-0.05	0.02	-0.14	-2.91	.004	-0.07	0.02	-0.19	-3.98	<.001
Negative Coping	0.13	0.02	0.34	7.42	<.001	0.17	0.02	0.4	8.96	<.001
R^2		0.28					0.31			
F		21.51			<.001		24.72			<.001
Time 2										
Constant	6.73	0.95				6.41	0.95			
Grade: Manager	-0.37	1.56	-0.01	-0.24	.813	-0.13	1.55	-0.00	-0.08	.933
Grade: Supervisor	-0.00	0.61	0.00	-0.00	.997	-0.05	0.61	-0.00	-0.09	.933
Length of service	0.01	0.08	0.16	0.16	.877	-0.02	0.08	-0.01	-0.26	.793
Job Demands	0.06	0.02	0.13	2.58	.01	0.04	0.02	0.08	1.65	.10
Job Resources	-0.07	0.02	-0.17	-3.38	.001	-0.03	0.02	-0.09	-1.74	.082
Positive Personality	-0.1	0.02	-0.25	-5.01	<.001	-0.11	0.02	-0.27	-5.38	<.001
Negative Coping	0.09	0.02	0.2	4.19	<.001	0.13	0.02	0.3	6.18	<.001
R^2		0.27					0.28			
F		19.4			<.001		20.34			<.001
Time 3										
Constant	7.66	0.98				7.12	1.18			
Grade: Manager	-0.25	0.69	-0.17	-0.35	.724	0.71	0.83	0.04	0.86	.390
Grade: Supervisor	-0.6	0.36	-0.09	-1.68	.094	-0.28	0.43	-0.04	-0.65	.515
Length of service	0.04	0.07	0.03	0.5	.615	0.05	0.09	0.03	0.54	.591
Job Demands	0.04	0.02	0.09	1.8	.074	0.03	0.03	0.07	1.32	.188
Job Resources	-0.05	0.02	-0.15	-2.86	.005	-0.06	0.02	-0.14	-2.46	.015
Positive Personality	-0.16	0.02	-0.41	-7.46	<.001	-0.13	0.03	-0.31	-5.21	<.001
Negative Coping	0.11	0.02	0.26	5.18	<.001	0.15	0.03	0.33	5.99	<.001
R^2		0.48					0.4			
F		34.43			<.001		103.92			<.001
Time 4										
Constant	7.63	1.12				6.0	1.26			
Grade: Manager	1.49	0.68	0.12	2.20	.029	0.87	0.79	0.06	1.11	.270
Grade: Supervisor	0.07	0.52	0.01	0.12	.902	-0.00	0.59	0.00	-0.01	.994
Length of service	0.08	0.09	0.05	0.89	.376	0.03	0.1	0.02	0.26	.798
Job Demands	0.02	0.03	0.05	0.77	.441	0.05	0.03	0.1	1.59	.112
Job Resources	-0.03	0.03	-0.07	-1.20	.233	-0.01	0.03	-0.02	-0.34	.735
Positive Personality	-0.3	0.04	-0.5	-7.71	<.001	-0.22	0.04	-0.35	-4.94	<.001
Negative Coping	0.11	0.03	0.2	3.43	.001	0.14	0.04	0.24	3.70	<.001
R^2		0.45					0.33			
F		26.79			<.001		15.66			<.001

Table 5b

Main effects of job demands, job resources and individual differences on positive mental health and workplace stress

Predictors	Positive Mental Health					Stress				
	B	SE B	β	t	p	B	SE B	β	t	p
Time 1										
Constant	4.06	1.75				3.63	0.67			
Grade: Manager	5.8	2.37	0.1	2.45	.015	-0.42	0.91	-0.02	-0.46	.644
Grade: Supervisor	0.91	1.04	0.04	0.88	.382	-0.69	0.4	-0.07	-1.73	.085
Length of service	-0.2	0.17	-0.05	-1.19	.235	0.02	0.06	0.01	0.24	.811
Job Demands	-0.13	0.05	-0.12	-2.83	.005	0.19	0.02	0.49	11.07	<.001
Job Resources	0.16	0.04	0.17	3.7	<.001	-0.05	0.02	-0.16	-3.32	.001
Positive Personality	0.45	0.04	0.45	10.55	<.001	0.00	0.02	0.00	0.05	.958
Negative Coping	-0.21	0.04	-0.2	-4.83	<.001	0.04	0.02	0.09	2.12	.034
R^2	0.44					0.36				
F	43.17				<.001	30.76				<.001
Time 2										
Constant	-3.09	1.66				3.83	0.89			
Grade: Manager	-1.91	2.7	-0.02	-0.71	.481	1.04	1.45	0.03	0.72	.474
Grade: Supervisor	1.54	1.06	0.05	1.45	.148	0.56	0.57	0.05	0.99	.323
Length of service	-0.09	0.13	-0.02	-0.7	.482	-0.02	0.07	-0.01	-0.3	.768
Job Demands	-0.05	0.04	-0.05	-1.39	.167	0.13	0.02	0.32	6.27	<.001
Job Resources	0.08	0.03	0.09	2.53	.012	-0.06	0.02	-0.17	-3.25	.001
Positive Personality	0.72	0.04	0.7	20.66	<.001	0.01	0.02	0.01	0.26	.797
Negative Coping	-0.19	0.04	-0.17	-5.31	<.001	0.08	0.02	0.21	4.25	<.001
R^2	0.68					0.25				
F	109.3				<.001	17.31				<.001
Time 3										
Constant	-3.74	2.12				6.49	1.16			
Grade: Manager	0.23	1.5	0.01	0.16	.877	0.83	0.82	0.06	1.01	.313
Grade: Supervisor	2.11	0.78	0.11	2.72	.007	0.56	0.42	0.08	1.33	.184
Length of service	0.00	0.16	0.00	0.02	.984	-0.14	0.08	-0.11	-1.68	.094
Job Demands	-0.14	0.05	-0.11	-3.01	.003	0.18	0.03	0.41	7.1	<.001
Job Resources	0.15	0.04	0.15	3.79	<.001	-0.04	0.02	-0.1	-1.69	.092
Positive Personality	0.73	0.05	0.64	15.83	<.001	-0.07	0.03	-0.18	-2.85	.005
Negative Coping	-0.17	0.05	-0.14	-3.82	<.001	0.02	0.02	0.04	0.76	.451
R^2	0.72					0.31				
F	93.41				<.001	16.39				<.001
Time 4										
Constant	-5.45	2.0				5.76	1.19			
Grade: Manager	0.95	1.19	0.03	0.8	.425	-0.23	0.72	-0.02	-0.32	.751
Grade: Supervisor	0.44	0.94	0.02	0.47	.641	-0.13	0.56	-0.01	-0.24	.811
Length of service	0.06	0.16	0.37	0.37	.715	0.16	0.1	0.1	1.71	.089
Job Demands	0.02	0.05	0.02	0.35	.728	0.15	0.03	0.36	5.58	<.001
Job Resources	0.16	0.04	0.17	3.67	<.001	-0.06	0.03	-0.14	-2.12	.035
Positive Personality	0.89	0.07	0.63	12.7	<.001	-0.1	0.04	-0.17	-2.45	.015
Negative Coping	-0.22	0.06	-0.17	-3.85	<.001	0.04	0.04	0.08	1.2	.231
R^2	0.67					0.35				
F	66.14				<.001	17.49				<.001

anxiety. Analyses relating to hypothesis 4) found that it was supported, since job resources predicted workplace stress at 3 of the 4 time points. Analyses relating to hypothesis 5) found that it was supported, with both positive personality and negative coping styles strongly predicting all mental health outcomes. Analyses relating to hypothesis 6) found that it was supported, with one of the individual difference variables predicting workplace stress at each time point. However, the specific type of individual difference that predicted workplace stress varied over the time points, with negative coping predicting workplace stress at Times 1 and 2, and positive personality predicting workplace stress and Times 3 and 4. Examination of correlations between the included factors indicated that job demands and resources were significantly correlated with all mental health outcomes, while larger significant correlations were seen between individual difference variables and mental health outcomes (correlation matrices are reported in Appendix 4).

Tests of the DRIVE model have reported inconsistent findings regarding the relationships between job demands, job resources and mental health and wellbeing outcomes. Mark and Smith (2012a; 2012b) found that both job demands and job resources predicted mental health outcomes in nurses and university staff. Galvin and Smith (2015) found that job demands, but not job resources, predicted psychological ill health in mental health workers. In line with this, Williams, Thomas and Smith (2017) found that job demands but not job resources predicted negative wellbeing. In contrast, Williams, Pendlebury and Smith (2017) found that neither job demands nor resources predicted positive outcomes but both did predict 'positive appraisals' (low job stress and high job satisfaction). The findings

of the current research are at odds with other tests of the DRIVE model since

resources were shown to be predictive of depression and positive mental health,

while job demands did not consistently predict any of the mental health outcomes.

Both job demands and resources correlated significantly with all mental health

outcomes, but demands were not found to be significant predictors when added

into the model with the other variables. To some extent, this may be due to there

being small to medium significant correlations between the individual difference

variables and job demands and resources (although not meeting the threshold for

excessive multicollinearity. See Appendix 4 for correlation matrices). These

correlations may reflect the impact of individual differences on the interpretation of

demands and resources, or may simply be a result of common method variance,

since all the independent variables were measured within the same questionnaire.

Alternatively, a possible reason for the differing findings across studies could be

differences in specific predictors and outcomes or differences in the occupational

groups studied. It may be that specific job demands and resources are relevant to

certain groups of staff while others are less relevant and may dilute significant

effects when considered in combination. Tailoring of the DRIVE model to specific

groups may facilitate the development of a greater understanding of the factors

which impact on mental health within and across populations. This may include

employees identifying the job demands and resources which they feel are relevant

to them, some of which may be specific to their industry or workplace. This

approach has been employed in studies using the Job Demands-Resources

Model, where a qualitative phase is used first, to create a bespoke questionnaire

that includes workplace specific job demands and resources. This questionnaire is

then used to explore burnout and engagement in staff in a second, quantitative,

phase of the research (Bakker & Demerouti, 2007). This allows a tailored approach to be taken to each workplace and unexpected job demands and resources to be captured. However, since it requires a different questionnaire with different variables to be created for each study, it makes comparison across studies and the synthesis of results more difficult. In addition, the psychometric properties of the newly created questionnaires are likely to be poorly understood. An alternative way of using mixed methods to explore job demands and resources has been used in the research within this thesis, using a standardised questionnaire in a quantitative phase followed by exploration of workplace specific job demands and resources in a qualitative phase (reported in Chapter 5). Although not including the quantitative measurement of workplace specific demands and resources, this approach allows both a consistent approach to quantitative measurement of job demands and resources and a tailored approach to understanding the specific experiences of staff within their work context.

The support for the main effect of individual differences on mental health outcomes is in line with other tests of the DRIVE model. Several studies have looked at the impact of coping styles on mental health and wellbeing, and have consistently found that coping styles predict mental health and related wellbeing outcomes. This includes Mark and Smith (2012a; 2012b) who found that negative coping styles predicted higher anxiety and depression over and above job demands and resources in both nurses and university staff while Capasso et al. (2016) found that positive coping strategies were associated with lower levels of psychophysical disorders. Smith and Smith (2017b) and Vallone et al. (2020) both found that passive coping predicted poorer mental health. Other studies have

investigated the relationships between specific types of coping style and mental health. Zurlo et al. (2018) found three coping styles that predicted anxiety (i.e. problem-focused, wishful thinking and seeking advice), while only problem-focused coping predicted depression. Galvin and Smith (2015) and Nelson and Smith (2016) both found that emotion-focused coping predicted mental health outcomes in mental health professionals and police officers, respectively. Conversely, Capasso et al. (2018b) found that objective coping but not emotional-relational coping predicted anxious-depressive disorders among migrant and non-migrant workers in Italy. This discrepancy in findings could potentially be attributed to differences in the workplaces studied, since individual's coping styles can vary across situations (Kato, 2012). There is some evidence that the individual's ability to adapt their coping strategy to the specific situation predicts how well they adapt to stressful situations (Cheng et al., 2014) and, therefore, the differing findings may reflect the most appropriate coping strategies for the specific workplaces studied.

In addition, a number of studies have found that mental health and wellbeing outcomes are predicted by personality factors. In line with the current study, several of these have studied the construct of 'positive personality', and have consistently found that higher positive personality predicts better mental health and wellbeing across a range of worker types (Langer et al., 2021; Omosehin, 2021; Williams & Smith, 2016; Williams, Pendlebury & Smith, 2017; Williams, Thomas & Smith, 2017). Other studies have looked at the relationship between other personality variables and mental health outcomes. For example, Galvin and Smith (2015) found that psychological ill health was predicted by higher negative

personality traits (imposter feelings, negative perfectionism and neuroticism) and lower relationship focused personality traits (agreeableness and extraversion). Capasso and colleagues (Capasso et al., 2016; 2018a; 2018b) found that anxious-depressive disorders were predicted by several personality variables including Type A behaviour, negative affectivity and social inhibition, although predictors varied slightly across studies. The current study supports these findings on the importance of personality factors in predicting mental health outcomes. There is consistent support for the importance of positive personality in predicting mental health and wellbeing (Smith, 2021). However, negative personality traits have also been found to predict mental health outcomes (e.g., Galvin & Smith, 2015). Further research could help to establish whether the addition of negative personality factors as predictors in studies using the DRIVE model could improve the prediction of mental health, over and above the inclusion of positive personality.

4.4.2 Mediation and moderation

Two mediation relationships were tested, that: 1) workplace stress mediates the relationships between job demands and mental health outcomes, and 2) workplace stress mediates the relationships between job resources and mental health outcomes. Indirect effects of job demands and resources on mental health outcomes via work stress are reported in Table 6 along with 95% confidence intervals.

Table 6

Indirect effects of job demands and resources on mental health

Predictors	Depression		Anxiety		Positive Mental Health	
	Indirect effect	95% CI	Indirect effect	95% CI	Indirect effect	95% CI
Time 1						
Job demands	0.07	0.05 to 0.1	0.07	0.05 to 0.1	-0.02	-0.07 to 0.04
Job resources	-0.02	-0.04 to -0.01	-0.02	-0.04 to -0.01	0.00	-0.01 to 0.02
Time 2						
Job demands	0.03	0.01 to 0.05	0.04	0.02 to 0.07	-0.03	-0.07 to -0.01
Job resources	-0.01	-0.03 to -0.00	-0.02	-0.04 to -0.00	0.02	0.00 to 0.13
Time 3						
Job demands	0.02	-0.00 to 0.04	0.02	-0.00 to 0.05	-0.00	-0.04 to 0.04
Job resources	-0.00	-0.01 to 0.00	-0.00	-0.01 to 0.00	0.00	-0.01 to 0.01
Time 4						
Job demands	0.03	-0.03 to 0.07	0.01	-0.02 to 0.1	0.02	-0.08 to 0.11
Job resources	0.00	-0.01 to 0.01	-0.00	-0.01 to 0.01	0.00	-0.02 to 0.01

Analyses relating to hypothesis 1) found mixed evidence, since the indirect effects of job demands on depression and anxiety were significant (i.e. the confidence interval did not include zero) at 2 out of the 4 time points. There was no evidence of an indirect effect of job demands on positive mental health via stress. Analyses relating to hypothesis 2) also found mixed evidence, since the indirect effects of job resources on depression and anxiety were significant at 2 of the 4 time points. There was no evidence of an indirect effect of job resources on positive mental health via stress.

A handful of previous studies have tested the DRIVE model's hypothesis that stress would mediate the relationships between job demands and resources and mental health outcomes (Mark, 2008; Galvin & Smith, 2015; Nelson & Smith, 2016; Vallone et al., 2020). All found evidence of the mediating effect of stress. In the present study, both workplace and home stress were consistently strong predictors of all mental health outcomes. In addition, both job demands and

resources consistently predicted workplace stress. There was also evidence that workplace stress mediated the relationships between job demands and mental illness and between job resources and mental illness at the first two time points, even in the absence of a direct effect of demands on mental health. However, this effect was not replicated at the later time points. It appeared that the relationship between stress and mental health changed over the course of the longitudinal study, as workplace stress increased over time (with around a third of staff reporting high stress at the first two time points, rising to close to half at Time 4), but no corresponding increase in mental illness was seen (see Table 3). At Time 4, stress accounted for less of the variance in mental illness outcomes compared to the earlier time points. It may be that an acute increase in stress among staff had not been translated into more chronic mental illness, weakening the relationship between high levels of stress and mental illness outcomes. This highlights the importance of understanding the temporal relationships between the variables within the DRIVE model in order to further develop the insights gained by correlational research. Further longitudinal research in this area could help to corroborate the findings of this study and increase our understanding of the temporal relationships between high workplace stress and subsequent mental illness. There is existing evidence suggesting that workplace interventions can prevent the development of depression and anxiety (Deady et al., 2017; Joyce et al., 2016; Tan et al., 2014). Therefore, intervening when an increase in workplace stress is first identified may be beneficial to staff within the call centre, in order to prevent high levels of stress from developing into more chronic mental illness. More broadly, given the strong relationship between stress and mental health outcomes, as well as the evidence that stress is key to understanding how job

demands and resources influence mental health outcomes at times of lower stress, it appears that workplace stress is an important candidate for intervention.

Six moderation relationships were tested, that: 1) job resources moderate the effects of job demands on mental health; 2) job resources moderate the effects of job demands on work stress; 3) job resources moderate the effects of work stress on mental health; 4) individual differences moderate the effect of job demands on mental health; 5) individual differences moderate the effects of job demands on work stress; and, 6) individual differences moderate the effects of work stress on mental health. No consistent evidence was found of any of these moderation relationships across all outcomes, suggesting that the predictors do not interact with one another but influence mental health independently of one another. Tables showing the full multiple regression models including all predictors and interactions are included in Appendix 5.

Moderation relationships have rarely been tested, but studies which have tested moderation have found mixed findings. Vallone et al. (2020) found evidence of some of the hypothesised moderation relationships in their study of Italian nurses, where resources moderated the relationship between demands and psychological disease and individual differences (coping styles and personality variables) moderated the effects of demands and resources on psychological disease. Williams and Smith (2016) found that positive self-attitude (a similar construct to positive personality) moderated the effect of job control on positive affect. Conversely, Mark (2008) found little evidence of interactions between the constructs included in the DRIVE model. The findings of the current study are in

line with Mark (2008) in finding no consistent moderation effects. The lack of consistency in findings on moderation effects within the DRIVE model may be due to the lack of specificity in the hypothesised effects. For example, all resources may not be expected to moderate the effects of all demands at all times. Margrove and Smith (2022) suggested that moderation may occur within the model where demands are matched to resources. For example, the relationship between low self-esteem and stress may be moderated by social support that increases self-esteem, whereas other types of support would not moderate this relationship. Where the predictors included in the DRIVE model are relatively general (for example, combined rather than discrete demands), they may not be specific enough for this type of matching of job demands and resources. Researchers carrying out future studies using the DRIVE model, where consideration of moderation effects is deemed important, may wish to consider developing specific hypotheses about interactions between job demands and resources.

4.4.3 Longitudinal findings

This section reports the results of analyses used to address the third goal of this chapter:

- To investigate the main effects predicted by the DRIVE model longitudinally, by exploring whether job demands, job resources and individual differences predict mental health at the next time point, over and above mental health at the same time point

Findings of longitudinal hierarchical multiple regression analyses are summarised in Tables 7a, 7b and 7c..

Table 7a

Longitudinal hierarchical multiple regression analyses: Depression

Predictors			Model 1					Model 2		
Time 1 to 2	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	2.82	0.37				2.86	1.1			
Grade: Manager	0.17	2.11	0.01	0.08	.935	-0.17	2.11	-0.01	-0.08	.935
Grade: Supervisor	1.64	0.9	0.12	1.82	.07	1.48	0.92	0.11	1.62	.107
Length of Service	-0.17	0.1	-0.11	-1.73	.085	-0.16	0.1	-0.11	-1.59	.113
Depression	0.57	0.07	0.56	8.7	<.001	0.48	0.08	0.47	6.13	<.001
Job Demands						0.01	0.03	0.03	0.45	.651
Job Resources						-0.01	0.03	0.14	-0.53	.594
Positive Personality						-0.01	0.03	-0.04	-0.55	.586
Negative Coping						0.06	0.03	0.14	1.96	.052
R^2		0.3					0.32			
F for change in R^2		19			<.001		1.34			.254
Time 2 to 3	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	1.82	0.69				4.24	2.25			
Grade: Manager	-1.7	2.35	-0.07	-0.72	.472	-1.35	2.18	-0.06	-0.62	.536
Grade: Supervisor	-0.74	1.13	-0.07	-0.65	.519	-0.5	1.11	-0.05	-0.45	.656
Length of Service	0.18	0.18	0.11	1.0	.320	0.02	0.17	0.01	0.08	.934
Depression	0.4	0.11	0.38	3.75	<.001	0.19	0.12	0.18	1.64	.105
Job Demands						0.04	0.05	0.08	0.73	.470
Job Resources						-0.04	0.05	-0.09	-0.77	.445
Positive Personality						-0.08	0.05	-0.21	-1.62	.109
Negative Coping						0.09	0.05	0.23	2.06	.043
R^2		0.17					0.33			
F for change in R^2		4.08			.005		4.48			.003
Time 3 to 4	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	1.97	0.51				2.74	2.39			
Grade: Manager	1.05	1.04	0.09	1.01		1.26	1.05	0.1	1.20	.233
Grade: Supervisor	0.75	0.87	0.08	0.87		0.96	0.86	0.1	1.11	.270
Length of Service	-0.21	0.15	-0.13	-1.4		-0.25	0.15	-0.15	-1.65	.102
Depression	0.76	0.09	0.7		<.001	0.6	0.13	0.56	4.6	<.001
Job Demands						0.08	0.04	0.15	1.75	.084
Job Resources						-0.03	0.04	-0.07	-0.84	.406
Positive Personality						-0.03	0.05	-0.06	-0.56	.579
Negative Coping						0.04	0.04	0.08	0.83	.411
R^2		0.44					0.45			
F for change in R^2		18.91			<.001		1.54			.197

Table 7b

Longitudinal hierarchical multiple regression analyses: Anxiety

Predictors	Model 1					Model 2				
Time 1 to 2	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	3.06	0.39				4.49	1.05			
Grade: Manager	0.1	2.12	0.00	0.05	.963	-0.17	2.07	-0.01	-0.08	.935
Grade: Supervisor	2.25	0.9	0.16	2.5	.013	1.91	0.89	0.13	2.14	.034
Length of Service	-0.12	0.1	-0.08	-1.19	.237	-0.13	0.1	-0.08	-1.29	.198
Anxiety	0.57	0.06	0.56	9.07	<.001	0.42	0.07	0.42	5.75	<.001
Job Demands						0.02	0.03	0.04	0.6	.551
Job Resources						-0.02	0.03	-0.04	-0.64	.523
Positive Personality						-0.06	0.03	-0.17	-2.34	.021
Negative Coping						0.07	0.03	0.16	2.39	.018
R^2		0.32					0.38			
F for change in R^2		21.39			<.001		3.77			.006
Time 2 to 3	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	2.08	0.72				3.96	2.18			
Grade: Manager	-0.43	2.36	-0.02	-0.18	.856	-0.11	2.21	-0.00	-0.05	.961
Grade: Supervisor	-0.92	1.14	-0.08	-0.8	.424	-0.92	1.12	-0.08	-0.82	.415
Length of Service	-0.07	0.18	-0.04	-0.39	.695	-0.24	0.18	-0.13	-1.34	.185
Anxiety	0.62	0.11	0.55	5.87	<.001	0.34	0.12	0.31	2.82	.006
Job Demands						0.06	0.05	0.11	1.07	.286
Job Resources						-0.01	0.05	-0.02	-0.17	.867
Positive Personality						-0.08	0.05	-0.2	-1.83	.072
Negative Coping						0.1	0.05	0.24	2.15	.035
R^2		0.32					0.43			
F for change in R^2		9.2			<.001		3.86			.007
Time 3 to 4	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	2.23	0.53				3.11	2.19			
Grade: Manager	1.28	1.11	0.1	1.15	.254	1.53	1.12	0.12	1.37	.175
Grade: Supervisor	0.06	0.82	0.01	0.07	.946	0.36	0.83	0.04	0.44	.663
Length of Service	-0.23	0.15	-0.15	-1.56	.122	-0.27	0.15	-0.17	-1.79	.078
Anxiety	0.68	0.08	0.69	8.4	<.001	0.55	0.11	0.56	4.89	<.001
Job Demands						0.06	0.04	0.12	1.33	.187
Job Resources						-0.04	0.04	-0.1	-1.16	.249
Positive Personality						-0.02	0.05	-0.04	-0.4	.694
Negative Coping						0.05	0.04	0.11	1.03	.305
R^2		0.45					0.49			
F for change in R^2		17.75			<.001		1.44			.229

Table 7c

Longitudinal hierarchical multiple regression analyses: Positive mental health

Predictors	Model 1					Model 2				
Time 1 to 2	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	9.12	1.36				8.07	2.95			
Grade: Manager	1.2	5.96	0.01	0.2	.840	1.79	5.83	0.02	0.31	.760
Grade: Supervisor	2.25	2.51	0.06	0.89	.373	2.25	2.5	0.07	0.98	.328
Length of Service	-0.01	0.28	-0.00	-0.03	.973	-0.07	0.27	-0.02	-0.25	.805
Positive mental health	0.43	0.07	0.43	6.31	<.001	0.29	0.08	0.29	3.53	.001
Job Demands						0.09	0.08	0.08	1.1	.273
Job Resources						0.03	0.07	0.03	0.43	.670
Positive Personality						0.17	0.08	0.17	2.03	.043
Negative Coping						-0.2	0.08	-0.19	-2.7	.008
R^2		0.19					0.25			
F for change in R^2		10.28			<.001		3.47			.009
Time 2 to 3	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	5.34	2.63				0.92	5.59			
Grade: Manager	3.47	6.49	0.05	0.54	.594	3.42	6.11	0.05	0.56	.577
Grade: Supervisor	3.97	3.14	0.12	1.26	.210	4.88	3.13	0.15	1.56	.123
Length of Service	-0.06	0.51	-0.01	-0.12	.907	0.05	0.5	0.01	0.1	.923
Positive mental health	0.7	0.11	0.58	6.27	<.001	0.2	0.18	0.16	1.11	.269
Job Demands						-0.08	0.14	-0.06	-0.55	.582
Job Resources						0.08	0.14	0.06	0.55	.585
Positive Personality						0.48	0.17	0.42	2.93	.005
Negative Coping						-0.14	0.14	-0.12	-1.07	.289
R^2		0.35					0.46			
F for change in R^2		10.91			<.001		3.72			.008
Time 3 to 4	**B**	**SE B**	**β**	**t**	**p**	**B**	**SE B**	**β**	**t**	**p**
Constant	-1.9	1.47				-10.27	4.22			
Grade: Manager	0.42	2.19	0.02	0.19	.850	-0.6	2.13	-0.02	-0.28	.779
Grade: Supervisor	-1.78	1.85	-0.08	-0.96	.338	-1.79	1.82	-0.08	-0.98	.328
Length of Service	0.54	0.31	0.15	1.73	.088	0.56	0.3	0.16	1.83	.071
Positive mental health	0.57	0.07	0.7	8.82	<.001	0.25	0.12	0.31	2.11	.038
Job Demands						0.05	0.09	0.05	0.55	.582
Job Resources						0.16	0.08	0.16	1.97	.052
Positive Personality						0.35	0.12	0.36	2.87	.005
Negative Coping						-0.1	0.09	-0.1	-1.09	.279
R^2		0.5					0.56			
F for change in R^2		21.42			<.001		2.96			.025

Model 1 of the hierarchical regression analyses found that levels of mental health at one time point predicted mental health at the next time point for all outcomes Model 2 added job demands, job resources, positive personality and negative coping and investigated whether they predicted subsequent mental health scores, over and above mental health at the same time point. For positive mental health, the second model significantly increased the amount of variance accounted for in mental health outcomes at all of the time points. For anxiety, the second model significantly increased the amount of variance accounted for in mental health outcomes at two of the three the time points. For depression, the second model only significantly increased the amount of variance accounted for in mental health outcomes at one of the time points. For anxiety and positive mental health, some individual differences significantly predicted subsequent mental health scores over and above mental health reported at the same time point. Negative coping predicted subsequent anxiety scores over and above anxiety reported at the same time point, while positive personality predicted subsequent positive mental health scores over and above positive mental health reported at the same time point.

Individual differences did not significantly predict subsequent depression scores over and above depression reported at the same time point. Job demands and job resources did not significantly predict subsequent mental health scores over and above mental health reported at the same time point for any of the outcomes. Since individual differences significantly predict future mental health, this suggests that there may be a causal relationship between the individual differences measured and subsequent anxiety and positive mental health. There is no evidence to suggest that the same is true of job demands and resources.

While the outcomes and specific predictors vary across studies, the existing research has consistently found that individual differences, as set out within the DRIVE model, predict mental health and wellbeing (e.g., Mark & Smith, 2012a; 2012b; Williams & Smith, 2016). The current study extended these findings by using a longitudinal design. To some extent, individual differences predicted future mental health outcomes over and above concurrent mental health. This lends support to the hypothesis that individual differences impact on mental health outcomes, rather than the other way around. It is possible, however, that there is a bidirectional causal relationship between the two. For example, depression may impact on individual factors such as coping styles, although most individual difference factors which have been measured in studies are considered to be trait-like and, therefore, relatively stable within individuals. These findings also lend strong support to Mark and Smith's (2008) assertion that individual differences should be considered in addition to job demands and resources in studies of workplace health and wellbeing. In addition, they confirm the findings of previous research which have underlined the importance of a range of individual differences in predicting the mental health of call centre staff (e.g., Bond & Bunce, 2003; Charbotel, 2009). This suggests that interventions targeting individual factors should be considered by call centres who wish to support their staff's mental health. This may include interventions which have previously been found to be effective in supporting mental health at work (e.g., CBT, see Joyce et al., 2016), which can target individual factors such as coping and self-esteem in order to improve mental health.

Longitudinal analyses of predictors of mental health found no significant effects of job demands and resources on future mental health outcomes. This may suggest that the impact of job demands and resources on mental health is minimal, particularly as the concurrent findings did not find a consistent effect. However, in contrast, Lesener et al. (2019) carried out meta-analytic structural equation modelling of longitudinal studies on the Job Demands-Resources model (Demerouti et al., 2001) and found that job demands and resources predicted burnout and engagement, with reciprocal relationships between job factors and wellbeing. In addition, the concurrent findings indicated both direct effects of job demands and resources on mental health and indirect effects via stress at times of lower stress, although how these work to influence mental health over time is still unclear. In the longitudinal analysis, the gap between measurements was relatively long (between 6 months and a year). Given that general anxiety disorder symptoms must be present for 6 months before a diagnosis (American Psychiatric Association, 2013), this time lag appears appropriate for these outcomes. However, the optimal time lag for measuring change in job demands, resources and workplace stress is unknown. Dormann and Griffin (2015) found that the optimal time lag for identifying maximum effect size in panel studies is often shorter than those frequently employed (dependent on the variables in question, this may be a few weeks or months). Therefore, it is important to understand the extent to which job demands, resources and workplace stress vary over time in order to ensure that longitudinal studies can employ appropriate time lags in order to detect their effects on mental health. Repeated measurement with a shorter time lag would allow this variation to be considered. In addition, it is not clear how long it takes for increases in workplace stress to have an impact on mental health

outcomes. A deeper understanding of how workplace stress develops into chronic mental illness would help to determine the most appropriate point to intervene, in order to prevent call centre staff who are experiencing high levels of stress from developing mental illnesses.

4.5 Key findings and conclusions

4.5.1 Summary of key findings

This Chapter aimed to address three goals: 1) to assess the levels of mental health in call centre staff, by measuring anxiety, depression and positive mental health; 2) to investigate the relationships predicted by the DRIVE model cross-sectionally, including main effects, moderation and mediation; and 3) to investigate the main effects predicted by the DRIVE model longitudinally, by exploring whether job demands, resources and individual differences predict mental health at the next time point, over and above mental health at the same time point. In relation to the first goal, the research identified high levels of mental illness among call centre staff in comparison to both the general population and the working population. Since currently there is no clear consensus on how to identify those who are 'flourishing' from those who are 'languishing', findings on the levels of positive mental health within the call centre are more difficult to interpret. This has highlighted the need for further research to understand whether those who are flourishing are categorically different from those who are languishing, or whether positive mental health is better conceptualised as a continuum.

In relation to the second and third goals of this chapter, the results provide partial support for the hypotheses of the DRIVE model both cross-sectionally and longitudinally. The findings of Study 1 confirm the importance of individual

differences in understanding the causes of poor mental health in the call centre. The prominence of individual difference variables within the DRIVE model is perhaps its key distinguishing feature in comparison to other models of workplace stress and health. The research within this thesis found that individual difference variables (negative coping and positive personality) were the strongest predictors of mental health. Higher negative coping predicted more negative mental health outcomes (i.e. higher depression and anxiety and lower positive mental health), while higher positive personality predicted more positive mental health outcomes (i.e. lower depression and anxiety and higher positive mental health). Some of these individual differences predicted future mental health over and above concurrent mental health in longitudinal analyses, suggesting the existence of a causal relationship between individual differences and mental health outcomes. This supports the assertion of Mark and Smith (2008) that individual differences should be given greater attention in research on workplace stress and health.

There were mixed findings in relation to the DRIVE model's predictions on job demands and resources. Higher job resources predicted lower depression and higher positive mental health, but did not significantly predict anxiety. There were mixed findings for the impact of job demands on outcomes, with higher job demands predicting higher depression and lower positive mental health at two of the four time points. Job demands did not significantly predict anxiety. Longitudinal analyses did not find that job demands and resources predict future mental health over and above concurrent mental health. These findings contrast with previous research on the DRIVE model (e.g., Mark & Smith, 2012a; 2012b; Galvin & Smith, 2015) and are somewhat difficult to interpret. Two possible interpretations are put

forward. First, it should be noted that small to moderate significant correlations were found between demands and resources and the individual difference variables. Therefore, it may be that the overlap in variance meant that the effect of demands and resources was masked by the stronger individual difference predictors within the model. A second interpretation is that some of the job demands and resources measured may have been less relevant to staff in the call centre than others, and looking at job demands and resources in combination may, therefore, have diluted any significant effects. This underlines the difficulty in relying on one method to understand the complex relationships between the variables included in the DRIVE model. Further exploration of the relationships between job demands and resources and mental health in Study 2 (Chapter 5) using diaries and interviews will help to address these limitations and provide a fuller understanding of how job demands and resources are impacting on the mental health of staff in the call centre.

There were also mixed findings on the mediating role of stress. Workplace stress mediated the relationships between job demands and resources and mental illness outcomes (depression and anxiety) at the first two time points but not at the later time points. For anxiety, these indirect effects were significant even in the absence of direct effects. It appeared that the relationship between stress and mental health changed over the course of the longitudinal study. Stress increased at the later time points, particularly Time 4, but no corresponding increase in mental illness was seen at that point. This suggests that the acute workplace stress may not have had time to develop into more chronic mental illness, highlighting the importance of understanding the temporal relationships between

workplace stress and mental health outcomes. This suggests that further longitudinal research is required to investigate how mental illness develops over time in response to workplace stress.

No consistent evidence of any moderation effect was found. This is consistent with Mark (2008) who found no evidence of moderation, although across the small number of studies to have explored moderation effects in the DRIVE model, findings have been mixed. In all, the DRIVE model was partially supported by the findings of Study 1.

The findings in this chapter have several important implications:

- The high levels of depression and anxiety in call centre staff which were identified in this study suggest it is vital for call centre managers to identify and address the mental health needs of their staff. The best way to address these needs will be considered as part of Studies 2,3 and 4, which will feed into a number of recommendations to improve mental health in call centre staff at the end of Chapter 7.

- In relation to the DRIVE model, the findings highlight the strong role individual differences play in predicting mental health, supporting Mark and Smith's (2008) argument of the importance of including individual differences in occupational health psychology theories. This suggests that future research in the field should incorporate individual difference measures as standard.

- This study was the first to test the DRIVE model and to use the WPQ as a measurement tool (Williams & Smith, 2012) in call centre staff. The WPQ

was used successfully to collect data on this group of staff in a time-pressured context. Future studies using the DRIVE model in call centres should consider using the WPQ as a practical way to measure a range of variables in a limited amount of time. In order to increase its usefulness, researchers may also consider developing benchmarks for the outcomes included in the WPQ, which would facilitate interpretation of results and comparisons across different groups of employees.

4.5.2 Conclusions and next steps

The current study supported previous research in finding high levels of mental illness among call centre staff, suggesting that these staff are in need of support for their mental health. Overall, there was strong evidence that individual differences impact mental health of call centre staff, including additional evidence from longitudinal analysis that this may be a causal relationship. This suggests that individual level interventions which focus on developing coping strategies and increasing individual resources such as self-esteem may be beneficial to call centre staff. Both job demands and job resources had direct effects on mental health, with some indirect effects via stress. It seems that workplace stress may be an important candidate for intervention, appearing to have a strong relationship with mental health outcomes, although the temporal nature of this relationship requires further exploration. The mixed findings on the relationships between job demands and resources and mental health within this study, and also across studies, suggests that an understanding of the impact of specific job demands and resources within call centres and other work contexts may be important. In addition, the lack of significant effects within the longitudinal study with a relatively

long time lag, suggest that looking at the effects of job demands and resources on mental health related outcomes over a shorter time period may be warranted. The next Chapter (Chapter 5) reports the findings from an in depth diary and interview study which aimed to develop a deeper understanding of how job demands and resources impact on call centre staff. The study allowed staff to identify the job demands and resources which they believed had the greatest impact on their mental health, including those which may be context specific. The diary study explored how these job demands and resources impacted on mental health-related outcomes, including stress, on a daily basis. The experiences reported in the diaries were explored in greater depth in follow-up interviews in order to develop an in depth understanding of how job demands and resources were experienced on a daily basis.

Chapter 5: An in depth study of mental health in call centre staff

5.1: Introduction

This chapter addresses the third objective of the research:

- To explore in depth the impact of daily job demands and resources on mental health outcomes.

This objective was addressed by Study 2 which was an in-depth study of the mental health of call centre staff using diaries and interviews. Two goals were identified for the chapter in order to address this research objective: 1) to explore the relationship between daily job demands and resources and mental health-related outcomes using multi-level modelling and 2) to explore in depth the demands and resources experienced by call centre staff using qualitative interviews. Section 5.2 describes in detail the methods used in this study. Section 5.3 includes the findings addressing the first goal of this chapter, where the results of the multilevel modelling analysis carried out using the daily diaries, assessing the relationships between daily job demands and resources and mental health outcomes, are presented and discussed. In Section 5.4, findings addressing the second goal of this chapter are described. The most commonly identified job demands and resources and their impacts based on analysis of diaries and follow up qualitative interviews are presented and discussed. Conclusions and next steps for the research within this thesis are set out in Section 5.5.

5.2 Methods Study 2: In-depth study of daily mental health and wellbeing

Study 2 provided an in-depth look at the mental health and wellbeing of call centre staff using daily diaries and follow-up interviews.

5.2.1 Design

The study incorporated quantitative and qualitative elements. The design employed was a multiphase design (Cresswell & Plano Clark, 2011), beginning with the concurrent collection of quantitative and qualitative data within participant diaries and followed up with in-depth qualitative interviews.

The diaries measured daily events and their relationship to mental health. As mentioned in Chapter 4, some aspects of mental health might be expected to be relatively stable from day to day, particularly mental illnesses which have a minimum period over which symptoms must occur (American Psychiatric Association, 2013). Other aspects of mental health might be expected to vary in relation to daily events and, therefore, be more appropriate for monitoring change over a short period. In particular, positive and negative mood may vary over short periods and have previously been measured within daily diaries to explore the impact of daily events on affective outcomes, including within a call centre setting (Harris et al., 2003). Positive and negative mood are aspects of subjective wellbeing (Diener et al., 1999), which is considered to be an element of 'flourishing' or positive mental health (Keyes, 2010; see the discussion of wellbeing and mental health in Section 2.2.1 for more detail). In addition, as outlined in Chapter 4, stress is an important precursor of mental illness and has also been measured within workplace daily diaries to explore employee wellbeing (e.g., Beattie & Griffin, 2014; Schiller et al., 2017). Many of these types of studies have approached daily diaries in a quantitative way, using rating scales for measuring mental health and wellbeing (e.g., Beattie & Griffin, 2014; Zhou et al., 2015), while others have taken a more qualitative approach, aiming to understand

the daily experiences of employees (e.g., Alford et al., 2005; Clarkson & Hodgkinson, 2007). In the present study, these approaches were combined in a relatively short diary which included daily ratings of mood and stress as well as open ended questions on daily job demands, job resources, coping strategies and outcomes, allowing the strengths of both approaches to be utilised and the findings of each aspect to complement one another.

The second aspect of the in-depth study involved interviewing employees in order to gain a deeper understanding of their experiences at work. Adopting a qualitative approach allowed employees to identify their own categories, including the specific job demands and resources they experienced, and provide a contextualised and rich understanding of employee mental health. The diaries were used as a starting point to explore daily experiences. This allowed participants to reflect in more depth on the events, thoughts and feelings which were captured in their diaries as well as for points to be clarified and expanded upon. In addition to discussing the diaries, the interviews included additional questions on their experiences of mental health at work and the support they have received in the call centre. The interviews sought to gather a more in-depth insight into employees' understanding of the impact that their job and working environment had on their mental health.

5.2.2 Participants

Participants were recruited via the longitudinal study of mental health at Time 3, which included a question asking employees if they were interested in taking part in further research. Those who stated that they were interested in taking part were considered for inclusion. Participants were purposively sampled from those who

expressed an interest in taking part with the aim of recruiting 10 employees who, based on their questionnaire scores, reported good mental health and 10 who reported poor mental health. The overall pattern of mental health scores was considered. Employees were considered to have good mental health where anxiety and depression were within the normal range, positive mental health was above average and stress levels were below average. Participants were mainly sampled from those with longitudinal data, so that longer term patterns of mental health could be considered (only one of the final sample did not have longitudinal data). Previous scores were taken into account and employees who had previously reported high levels of stress, depression or anxiety or low positive mental health were excluded. Employees were considered to have poor mental health where their scores indicated high depression or anxiety, below average positive mental health and above average workplace stress.
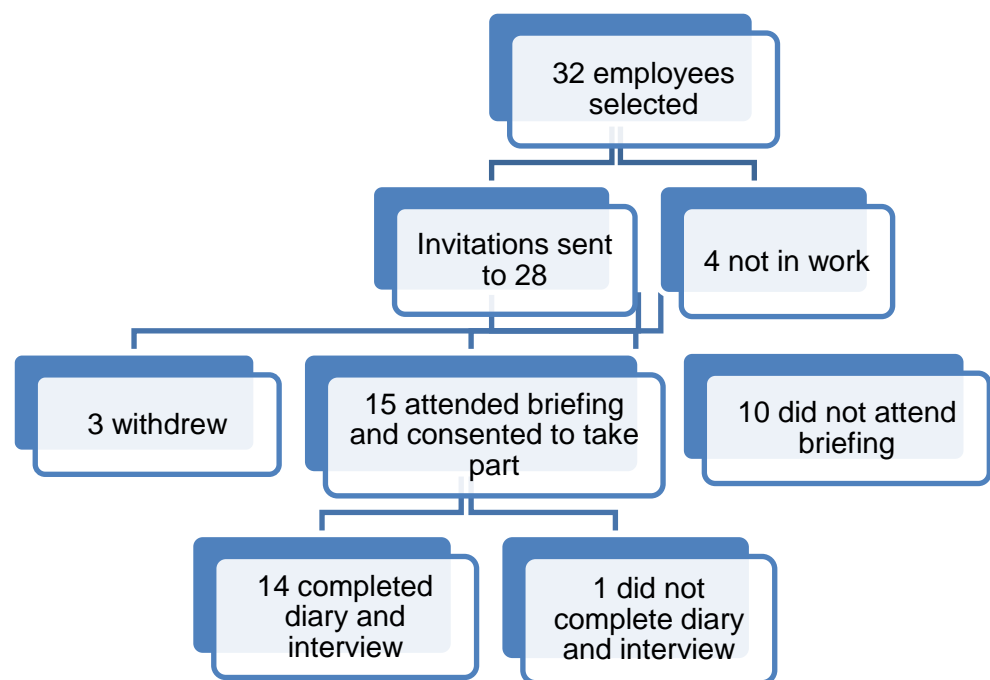
Figure 2: Recruitment of employees

From Study 1, 134 employees volunteered to take part in further research. Of these, 32 were identified as potential participants and their staff numbers were located. Initially twenty staff numbers were sent to an administrator within the call centre, with the other numbers held by the researcher in reserve. The administrator sent an invitation to the employees inviting them to attend a briefing on the research. Three batches of invitations were sent to the employees. A simplified flow diagram of the participant recruitment process is shown in Figure 2, with the batches combined. Of those who were selected, four were not in work (one had left the job, one was on maternity leave, one had taken a career break and one was on long-term sickness absence).

Invitations were sent to 28 employees. Of these, two withdrew via email, one expressed an interest initially but subsequently took long term sickness absence, and 10 did not attend the briefings they were invited to or did not respond to a follow-up email. Consequently, 15 attended a briefing. All those who attended briefings completed consent forms. They were asked to complete their diaries over a two week period and return them to the researcher. Fourteen diaries were returned. One participant did not return the diary or respond to a reminder email and, therefore, was deemed to have withdrawn. Of the fourteen participants, seven had been categorised as having good mental health and seven as having poor mental health. Demographic information is summarised in Table 8.

Table 8

Demographic information

Demographic	Good mental health	Poor mental health		Good mental health	Poor mental health
Gender			**Working pattern**		
Female	5	6	Full-time	6	6
Male	2	1	Part-time	1	1
Job grade			**Area of work**		
Call handler/admin	6	7	Call area 1	3	1
Team leader	1	0	Call area 2	3	5
Manager	0	0	Support	1	1
Length of service			**Age**		
Less than a year	0	1	20 or under	0	0
1-3 years	5	3	21-30	3	4
3-5 years	0	1	31-40	3	3
5-7 years	0	2	41-50	0	0
7-10 years	2	0	51-65	1	0
More than 10 years	0	0	Over 65	0	0

5.2.3 Materials

5.2.3.1 Diaries

Diaries incorporated both qualitative and quantitative elements. The qualitative aspect of the diary was adapted from Clarkson and Hodgkinson (2007) who developed qualitative daily diaries which asked employees to record daily stressful events, the consequences and their coping mechanisms. In the current study, employees were asked to record both positive and negative events at work, in order to capture both demands and resources, rather than only stressful events. Employees were then asked to record the effect that the events had on them, including thoughts, emotions and physical feelings. A third question asked staff members to describe how they coped with the events of the day and the difference their coping made. Following these qualitative questions, three rating scales were included. Employees were asked to rate their stress levels, and extent of positive

and negative mood for that day. Rating scales used single items and were scored from 1 to 10, in line with the WPQ.

The diary was piloted with three members of staff from the call centre prior to its use in the study. The aims of the pilot were to assess whether the diary could be completed briefly as part of the working day, whether the questions were clear and whether the required information could be gathered in this way. Staff involved in the pilot reported that the diary could be completed in five minutes, although giving detailed responses to the questions could take substantially longer. They all reported that the questions were clear and were felt to be appropriate. An examination of the diaries found that the required types of response were elicited by the questions. Therefore, no changes were made to the diary following the pilot. The information sheet was reviewed to ensure that the instructions made it clear that only brief answers to the questions were needed. This expectation was also included in the information given at the briefing in order to ensure that completion of the diaries did not place an excessive burden on participants. A copy of the diary sheet is included in Appendix 6.

5.2.3.2 Interview guide
For the follow-up interviews, a semi-structured interview schedule was developed. The interviews had several aims: First, to expand on the information in the diary; second, to generate a deeper understanding of how work affects the mental health of call centre staff; and, third, to elicit the views and experiences of staff regarding the support and facilities available at the call centre. The interview schedule design sought to balance the structure of the interview, in order to keep a focus on

the topic and to be flexible to allow employees to identify categories of importance to them which were not anticipated by the researcher (Kvale & Brinkmann, 2009, p. 131). A list of topics was, therefore, developed with several questions identified for each topic. Questions were developed by the researcher based upon the three aims identified, however, these questions were used flexibly, in that additional follow-up questions or prompts were asked spontaneously in relation to unexpected categories which were raised by participants.

The interview guide comprised 5 sections, each focusing on one of the identified topics. First, general introductory questions were included about the participants' job and what it involved. Second, the guide included discussion of the participants' diary. Questions in this section depended on the content of the individual's diary. Prior to the interview, the interviewer would identify any events or comments in the diary which were of interest in relation to the aims of the interview, or were unclear. These areas were then noted so they could be discussed in more depth. The participant was asked how typical the experiences recorded in the diary were and any differences to their typical daily experience were explored by the interviewer. In the third section, questions were included on the employee's experiences of working in the call centre, including their typical day, relationships with others and comparison to other experiences of work. In the fourth section, questions related to how work affected the participant's mental health and wellbeing, focusing on job demands and resources, as well as coping strategies. The final part of the interview contained questions that explored the support services and facilities at the call centre, including the employee's awareness and experiences of support and any unmet needs.

The schedule was piloted with three members of staff at the call centre. The feedback indicated that the questions were mainly clear, appropriate and logically ordered. However, some feedback indicated that there were important topics which had not been covered. Based on this, two questions were added to the schedule. The first asked about the effect of home and family life on mental health and wellbeing and the second about the factors which made a difference to mental health and wellbeing. A copy of the final interview schedule is included in Appendix 7.

5.2.4 Procedure

Employees who were selected to take part in the study were invited to do so by email. The email included an information sheet and consent form, as well as a copy of the diary sheet. The email invited those who were interested in taking part to attend a briefing explaining the purpose of the study and allowing them to ask questions. Those who attended the briefing were given hard copies of the information sheet, consent form and diary sheet and were given a verbal explanation about the study. Participants were asked to spend around five minutes completing each diary and were informed that detailed descriptions of events were not required. They were also informed that the interviews would last around one hour and that they would be given time off their telephone duties in order to attend. Employees who expressed an interest in taking part during the briefing were asked to return their consent forms via email or during the briefing. Participants were asked to complete diaries each working day over a specified two week period and were given the option whether to complete them electronically and return them to

the researcher via email, or to complete them by hand and return them in a sealed

envelope to a nominated individual in the call centre. Participants were asked to

return the diaries prior to their interviews being arranged. Following completion,

participants were invited by email to take part in an interview in a private room at

the call centre, and were scheduled off telephone duties for this time. Interviews

lasted between 45 minutes and 1 hour 10 minutes.

5.2.5 Ethical considerations

Ethical approval was gained from the, then, Cardiff Metropolitan University's

School of Sport Ethics Committee (now School of Sport and Health Sciences

Ethics Committee). In addition, arrangements to protect staff anonymity were

agreed with the call centre managers and the call centre's HR department. Since

the research was being undertaken at the participants' workplace, important

ethical considerations were handling of personal data, anonymity and whether

employees may feel pressurised to take part in the research or fear negative

consequences for their jobs. The information sheet, therefore, stressed that

participation in the study was voluntary and that participants were free to withdraw

at any time. The information sheet also made it clear that personal data would be

held securely, that individual answers to the diary and interview questions would

be written up anonymously, and would have no impact on their work. Informed

consent was required before participants were able to take part in the study. The

information sheet and consent form are included in Appendix 8. In order to

anonymise the qualitative data, interviews were transcribed using a participant

identification number and any personal details such as names were removed.

Information which could potentially identify individuals, such as names and

references to places of work, were removed from quotations. Measures were also taken to protect participants' personal data. Personal data held in hard copy such as consent forms were kept in a locked filing cabinet at Cardiff Metropolitan University. Personal data held electronically was password protected and was not stored on memory sticks.

5.2.6 Analysis

5.2.6.1 Quantitative analysis

Quantitative analysis of diaries used multilevel modelling which allowed the daily diary data (level 1 data) to be nested within the participants (level 2). Analysis was undertaken at level 1 while controlling for level 2 variables (i.e. differences between individuals). Outcomes were daily stress and mood ratings. Daily events from diaries were categorised as job demands or resources. Any event which did not fall into these categories, or which was ambiguous or unclear, was excluded from the analysis. Coding into job demands or resources was based on Demerouti's (2001) definitions of job demands and resources. As such, events were coded as demands where they were considered to require sustained effort (physical or mental). Events were coded as resources where they were either functional in helping the individual achieve their work goals, reduced job demands, or facilitated personal development and growth. Some examples of daily events that were coded as job demands and resources or excluded from the analysis are included in Table 9. The number of daily demands and resources was then used to predict outcomes. In line with Enders and Tofighi's (2007) recommendations, independent variables were not centred since the number of daily job demands

and resources has a meaningful zero point and, therefore, centring was not necessary.

Table 9

Coding of daily job demands and resources recorded in diaries

Events coded as Job Demands
Gutted – failed a call on my [performance management process]
Really busy again – huge queues again,
Negativity from line manager.
[Customer] very rude and abusive
Events coded as Job Resources
Positive feedback from [manager]
Comic relief – made cakes to sell and wore red. Nice feeling on team.
Positive meeting [with colleague]
Was doing admin duties for half of the day – this is a nice break off the phones.
Events excluded from the analysis
Team meeting
Standard daily duties
Continued my work on [a specific project]

Prior to conducting multilevel modelling analysis, key assumptions were tested (Field, 2013). Collinearity was tested by examining the correlation matrix. No excessive collinearity was identified (defined as correlations of more than .8 in line with Field, 2013). Scatter plots of standardised residuals against standardised predicted values were plotted for each outcome. All plots appeared to show randomly and evenly dispersed points, with no indication of heteroscedasticity or non-linear relationships. Histograms of standardised residuals were examined in order to test the assumption of normally distributed errors. These showed approximately symmetrical bell-shaped curves. Since no assumptions were violated, multilevel modelling analysis was carried out.

5.2.6.2 Qualitative analysis

Qualitative analysis of diary and interview data was conducted using inductive thematic analysis based on the steps described by Braun and Clark (2006). In line with their guidance, recordings of the interviews were transcribed verbatim and checked against tapes for accuracy. Initial codes were developed by hand in Microsoft Word on a line by line basis, which ensured that all data was given equal attention in the coding process and closely reflected the content of the transcribed data. These initial codes were then entered into NVivo where they were organised into broader themes which were then refined and defined. Themes, codes and raw data were compared against one another to ensure that the themes reflected the entire set of codes and to confirm that the content and description of the themes accurately reflected the original data. Further, the comparison helped refine the themes to ensure that they were coherent, stood alone and did not overlap excessively and to allow a holistic interpretation of the findings to be developed. Coding, theme development and the write up of results was done over a period of several weeks in order to allow adequate time for each element of the analysis. The findings were presented using text and quotations to illustrate the identified themes.

5.3 Daily demands and resources and their impact on mental health outcomes: Quantitative findings from daily diaries

In this section, the results of multilevel modelling analysis on the diaries will be reported and discussed. The number of job demands and resources recorded by staff with good and poor mental health on a daily basis is summarised in Table 10. This sets out the number of days on which a specific number of demands and

resources was recorded. Staff with good and poor mental health recorded similar

numbers of daily job demands on average, although those with good mental health

recorded more days with no job demands. Staff with poor mental health recorded

fewer daily resources on average than those with good mental health.

Table 10

Number of daily job demands and resources recorded in diaries

Participants	Job Demands			Job Resources		
	No. of demands recorded per day	N (days)	Mean (SD) no. of daily demands	No. of resources recorded per day	N (days)	Mean (SD) no. of daily resources
Participants with good mental health	0	17	1.33 (1.37)	0	8	1.24 (0.73)
	1	27		1	37	
	2	16		2	18	
	3	1		3	3	
	4	2				
	5+	3				
Participants with poor mental health	0	6	1.13 (0.83)	0	32	0.76 (0.94)
	1	35		1	17	
	2	15		2	9	
	3	5		3	4	
	4	1				
	5+	0				

The multi-level modelling analysis indicated that both high numbers of daily job

demands, $F(1, 122.96) = 4.89$, $p<.05$, and low numbers of daily resources, $F(1,$

$120.25) = 9.35$, $p<.01$, predicted stress levels. The interaction between daily job

demands and daily resources did not predict stress levels $F(1, 114.85) = .68$, n.s.

The relationship between job demands, resources and stress levels showed

significant variance in intercepts across individuals with good and poor mental

health, $var(u_{0j}) = 2.72$, $\chi^2 (1) = 47.09$, $p<.01$. This indicates that levels of stress

varied across individuals in the absence of daily demands and resources. The

slopes did not show significant variance across individuals with good and poor

mental health for job demands, $\text{var}(u_{1j})$ = .21 or resources, $\text{var}(u_{1j})$ = .23, χ^2 (2) = 5.39, n.s. This indicates that while levels of stress varied across individuals, the increase in stress in relation to higher demands and lower resources was similar across individuals, regardless of their levels of mental health.

High numbers of daily job demands, $F(1, 121.12)$ = 5.68, p<.05, and low numbers of daily resources, $F(1, 118.72)$ = 33.32, p<.001, predicted lower positive mood. The interaction between daily job demands and daily resources did not predict positive mood $F(1, 114.45)$ = 1.29, n.s. The relationship between job demands, resources and positive mood showed significant variance in intercepts across individuals with good and poor mental health, $\text{var}(u_{0j})$ = 2.02, χ^2 (1) = 63.25, p<.01. This indicates that levels of positive mood varied across individuals in the absence of daily demands and resources. The slopes did not show significant variance across individuals with good and poor mental health for job demands, $\text{var}(u_{1j})$ = .18, or resources, $\text{var}(u_{1j})$ = .03, χ^2 (2) = 0.71, n.s. This indicates that while levels of positive mood varied across individuals, the decrease in positive mood in relation to higher demands and lower resources was similar across individuals, regardless of their levels of mental health.

Low numbers of daily resources, $F(1, 116.96)$ = 23.74, p<.001, predicted greater negative mood. Neither daily job demands, $F(1, 119.33)$ = 3.27, n.s., nor the interaction between daily job demands and daily resources predicted negative mood $F(1, 110.58)$ = 1.07, n.s. The relationship between job demands, resources and negative mood showed significant variance in intercepts across individuals

with good and poor mental health, var(u_{0j}) = 1.87, χ^2 (1) = 30.69, p<.01. This indicates that levels of negative mood varied across individuals in the absence of daily demands and resources. The slopes did not show significant variance across individuals with good and poor mental health for job demands, var(u_{1j}) = .21, or resources, var(u_{1j}) = .12, χ^2 (2) = 3.03, n.s. This indicates that while levels of negative mood varied across individuals, the increase in negative mood in relation to lower resources was similar across individuals, regardless of their levels of mental health.

This analysis of daily diaries found that higher numbers of daily job demands and lower resources predicted greater daily stress and less positive mood ratings. Lower resources also predicted more negative mood. The finding that job demands and resources predicted stress aligned to some extent with the longitudinal study of mental health (Study 1 as reported in Chapter 4), where stress was found to mediate the relationship between job demands and resources and mental illness at the earlier time points. The current study extended the findings of Study 1 by identifying that job demands and resources predicted positive mood, while job resources but not job demands predicted negative mood. The longitudinal study in Chapter 4 found mixed evidence on whether job demands directly predicted mental health outcomes. The current study suggests that job demands do have a direct impact on mental health, with reductions in positive mood (which is one aspect of positive mental health) as demands increase. These findings are in line with previous research which has suggested that higher job demands predict poorer mental health (e.g., Mark & Smith, 2012a).

Based on an extensive review of the literature, this is believed to be the first diary study investigating the relationships between demands and resources and mental health using the DRIVE model. There have been previous tests of the Job Demands-Resources model (Demerouti et al., 2001) using daily diaries, with a small number considering mental health-related outcomes. Simbula (2010) found that one typical resource (co-worker support) and one typical demand (work/family conflict) predicted mental health on a daily basis, and that these relationships were mediated by engagement and exhaustion respectively. Tadić et al. (2015) looked at the relationships of daily hindrance demands and daily challenge demands to positive affect and found that hindrance job demands were negatively related to daily positive affect while challenge demands were positively related to daily positive affect. Job resources buffered the negative relationship and boosted the positive relationship. These findings support those of the current study in suggesting that job demands and resources can impact mental health-related outcomes on a daily basis, as well as in relation to more stable measures of job characteristics and mental health.

One of the potential reasons for the mixed findings on the relationships between job demands and resources and mental health outcomes in Study 1 is the use of the WPQ (Williams & Smith, 2012), which is a generic measure of job demands and resources and not tailored to the individual workplace or to individual's appraisals. One strength of Study 2 is that the demands identified by staff in the diaries were self-generated. Staff may have recorded only the demands which were most salient to them and, perhaps, those which they appraised as threatening their wellbeing and most likely to have an impact on mental health-

related outcomes. Evidence from studies of challenge and hindrance demands shows that both have negative impacts on psychological strain and burnout, although limited evidence suggests they may have differential effects on positive affect (Mazzola & Disselhorst, 2019). These findings suggest that distinguishing between challenge and hindrance demands may be of limited use in furthering our understanding of the impact of job demands on mental illness, though they may have differential effects on at least some aspects of positive mental health. Some researchers (e.g., Bakker & Sanz-Vergel, 2013) have suggested that measuring individual appraisals of demands may be preferable to measuring predefined challenge or hindrance demands. The use of individualised measures of job demands within this study could, therefore, help explain the more consistent relationships between job demands and mental health in Study 2 compared to Study 1.

The finding that job demands predict positive mood but not negative mood, while job resources predict both positive and negative mood could suggest an alternative interpretation of the findings on the relationships between job demands and resources and positive mental health in Study 1. Positive mental health is a multi-dimensional construct which includes both positive and negative mood. Job resources consistently predicted positive mental health, while job demands predicted positive mental health at two of the four time points. It appears that job demands are related to some aspects of positive mental health (i.e. positive mood) and not others (i.e. negative mood), making it uncertain whether demands would, therefore, predict the construct as a whole, which could account for the inconsistent results across time points.

The findings from Study 1 on the changing relationship between stress and mental health over time as stress increased have highlighted the need to better understand the temporal relationships between the constructs within the DRIVE model. The findings from Study 2 show that changes in job demands and resources can have a rapid impact on daily stress and mood. This seems to vary by outcome, with Study 1 finding that mental illness outcomes did not change as workplace stress increased, while positive mental health did see a decrease. This is to be expected, due to the chronic nature of mental illness (see Section 5.2.1 of this chapter), but does not appear to have been widely considered in previous tests of the DRIVE model, or in tests of other models of workplace stress and wellbeing. This may be due to the largely correlational nature of the research to date where effects are considered cross-sectionally and time-lags between cause and effect are, therefore, not investigated. Future research could consider how the DRIVE model operates as a process, investigating pathways between the predictors, mediator and outcomes over time. This would help to develop a better understanding of the causal relationships between these variables as well as facilitate the design of longitudinal studies by clarifying appropriate time lags between data collection points. A better understanding of the temporal relationships between these factors could also inform intervention strategies. For example, those at risk of future mental health problems could be identified and targeted for early intervention.

For each outcome, a random intercept, fixed slope model was the best fit for the data, indicating that while overall levels of stress and mood varied across

individuals, the impact of daily job demands and resources on these outcomes was consistent across participants. The sample size at level 2 (i.e. the number of individuals) was somewhat small and, therefore, it is possible that random effects across slopes were present but were not detected in this study, particularly if the differences between individuals were small (e.g., Maas & Hox, 2004). However, the study was powerful enough to identify random effects relating to intercepts. The current evidence suggests that all call centre employees could be at risk of poorer mental health, given increased exposure to job demands and decreased availability of resources, and not just those who were identified as having poor mental health. This implies that primary interventions which target job demands and resources may be beneficial to all staff.

5.4 Common demands and resources

In this section, qualitative results from the diaries and follow-up interviews are reported and discussed.

5.4.1 Commonly reported demands and resources from diaries

The most commonly reported job demands and resources from the daily diaries are summarised in Tables 10a and 10b, along with the number of participants who reported each, and the total number of events recorded under each category. The most commonly reported job demands were the pace of work and lack of breaks, difficult customers, performance targets and problems with colleagues. Most commonly reported resources were colleague and manager support. The reported impacts of the daily events included increased experience of stress, changes in

Table 11a

Daily job demands and outcomes from diaries

Daily job demands	No of employees reporting (of 14)	No of call handlers reporting (of 10)	No of events reported
Fast pace of work and lack of breaks	12	10	43
Difficult customers	10	10	29
Performance targets	9	9	19
Problems with colleagues	9	6	25
Complex calls	7	7	18
Poor organisational communication	6	4	7
Lack of information/ training	3	3	4
Difficulty in manager relationship	3	3	4
Negative feedback/ disciplinary issues	3	3	4
Working hours	3	3	3
Workspace and hot-desking	3	3	3
Difficulty parking	2	2	2
IT problems	1	1	1

Table 11b

Daily job resources and outcomes from diaries

Daily job resources	No of employees reporting (of 14)	No of call handlers reporting (of 10)	No of events reported
Colleague support	12	10	22
Manager support	11	10	22
Recognition and positive feedback	7	6	14
Team social/charity events	7	7	10
Task enjoyment/satisfaction	4	3	13
Breaks between calls	2	2	5

mood (both positive and negative), physical symptoms (e.g., headaches) and job satisfaction. The diaries did not link specific demands and resources to impacts, but the most commonly recorded demands, resources and their impacts were explored in more depth in interviews in order to understand the relationships between them.

5.4.2 Interview findings: in-depth exploration of common demands and resources

In this section, findings from the interviews exploring common demands and resources are reported and discussed.

5.4.2.1 Fast pace of work and lack of breaks

The majority of call handlers reported that the fast pace of work and lack of breaks led to exhaustion and stress and was a major demand. The volume of work was reported to have increased due to organisational change, leading to an increase in the pace of calls and a reduction in quieter periods:

> There used to be [times] it would be pretty quiet… and by quiet,
> I mean you take a call and then you're sat there for 10 seconds,
> 20 seconds between calls. Whereas, now the customer's
> waiting 5 minutes before they speak to you… Really, it doesn't
> matter to us if they've waited 1 second or 10 minutes. If they're
> waiting at all, it means continuous talking. [P10, male, call
> handler]

This finding is in line with previous research, such as that of Sprigg et al. (2003), who found that workload was one key factor which was related to call handler stress and Zapf et al. (2003) who suggested that the amount of time spent on the telephone was the main factor which characterised higher stress environments in call centres. Sprigg et al.'s research found that the workload of call handlers was typically in the middle range compared to other types of job. In the executive agency, workloads were felt to have increased and to be unmanageable, which suggests that they may have been higher than in the average call centre. Interviewees suggested that the relentlessness of the high workload was an issue, with a move from busier and quieter periods to a more constant high level of calls. Workplace theories and models which include job demands, such as the DRIVE model (Mark & Smith, 2008) and Job Demands-Resources model (Demerouti et al., 2001), typically assume that high or low demands is a relatively fixed attribute of a job. However, Downes et al. (2021) have suggested that variability in job demands also needs to be considered. They suggest that the experiences of employees in jobs where job demands are relatively stable will be different to those in jobs where job demands vary from day to day, even where the average overall level of job demands is the same. They hypothesised, in line with arousal theory (Berlyne, 1960), that employees experiencing more variability in demands would experience greater strain, since stimuli which are routine are expected to require less attention and tax resources less than those which are changing. However a meta-analytic path analysis on previous diary studies found that this was true of challenge but not hindrance demands. Hindrance demands showed strong relationships with strain regardless of the variability in those demands. The findings from the current study suggest a potential interpretation of these findings:

that the relentlessness of consistently high demands has a negative impact on staff wellbeing, regardless of their routine nature. Greater variability in job demands may also imply that staff have less control over their workload, which may offer an alternative reason for the relationship between greater variability in demands and increased strain. Taylor et al. (2003), for example, found that call centre staff reported a lack of control over work pace, which contributed to stress.

In the current study, the number of customers waiting had other negative impacts on call handlers in addition to the lack of breaks between calls. The length of the queues (which was shown on display screens within the call centre) was reported to lead to additional stress, particularly when the length of the queues did not reduce, despite the employees taking one call after another:

> It's really stressful when there's queues… It is psychological really, I suppose, because it doesn't really matter - you're going to take one call after another either way. But it's more the thought that you're not getting anywhere, you're taking calls and the queues are just not going down. And it seems then like all your effort is for nothing. It's not really, is it? But that's what it feels like. You know, you're taking as many calls as you can and it's relentless, exhausting really, speaking to people all day like that. You just keep looking at the queues and they're not going anywhere and it really just makes you feel exhausted and stressed. [P2, female, call handler]

Bain et al. (2002) argued that the displaying of queue length statistics to call handlers added to the pressure on them to reduce call times and to not take breaks. One interviewee reported positioning herself so that she was unable to see the statistics in order to manage her stress levels:

> If I can see [the statistics on the board] that's what I'm constantly thinking about… but if I'm not facing them, I can just deal with the call I'm on. The caller goes away us happy usually, and then I can deal with the next call… Because I sit [facing the opposite wall]… it makes me feel calmer. [P5, female, call handler]

The workload and associated pressure to work at a fast pace was seen as having a negative impact on mental health and wellbeing, due to the lack of downtime between calls:

> As an advisor on the phone, it has a massive effect on your wellbeing... I think it's massive [for] mental wellbeing, definitely a massive impact… You're not getting a break, it's constant queues, constant calls, you don't have that break in between. Obviously, you get your rotaed breaks, but you don't get breathing space and that breathing space, I think, is really important. [P6, female, call handler]

Previous research has suggested that work overload in call centres, including receiving calls on a continuous basis and a lack of breaks, was related to burnout

(Visser & Rothman, 2008). Bakker et al. (2008) found that daily workload was positively related to work engagement, provided employees felt sufficiently recovered from the previous day's work. While this study did not look at mental health or negative wellbeing, it does suggest that recovery is an important aspect of how employees experience the impact of workload. While they looked at recovery outside of work, the findings of the current study suggest that a lack of opportunity to recover within work time by having sufficient "breathing space" may also lead to more negative outcomes in response to high workloads.

The lack of breaks was seen as leading to problems with mental health and wellbeing partly due to the emotionally demanding nature of some calls. Call handlers reported that they were not always able to take sufficient breaks to recover their emotional equilibrium after a difficult call:

> Say you have a bad call and you feel really flustered, you're back on the phone then and if somebody's having a bit of attitude with you, it just spirals and it's hard to get back and just calm down… Like sometimes when you know it's going downhill you do put yourself on break, but you do forget at times …you've just got to go back again as if nothing's happened.
> [P2, female, call handler]

Call handlers also reported that their scheduled breaks were inadequate for allowing recovery from the intense pace of calls. In some cases, call handlers were not always able to take their scheduled breaks, due to a lack of flexibility in their timings:

You have potentially a 15-minute break - you might be on that

call that you've just been on for 5, 6, 7, 10 [of those minutes]. I

mean, yesterday, I missed my break altogether. I didn't have

one yesterday because I was on a call for the full 15 minutes of

my break, which isn't unusual. So, you get a quick break while

you 'pee and tea' I call it [laughs]. Grab a cup of tea, go to the

loo and you're back on, so it's constant till the time you finish.

There's no breaks really. [P1, female, call handler]

Conversely, having a quieter day with breaks between calls was seen as a

resource, allowing staff to interact with colleagues and leading to reduced stress

and increased positive mood:

It was nice to have a little bit of a breather and chat with my

team. I like to go and do things with the team as it gives us a

chance to bond as we don't get much chance to talk in work

itself, so this cheered me up. [P14, female, call handler]

5.4.2.2 Interacting with difficult customers

Job demands associated with customers included dealing with rude, angry or

abusive, customers:

I've been told to drop dead and die of cancer - I've been called

everything under the sun. And as much as you try not to take it

personally, you do. It brings you down. [P11, female, call

handler]

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Interacting with rude or abusive customers was reported by call centre staff to increase stress and negative mood. These findings are supported by a number of previous studies, including Wegge et al. (2007) who simulated a call centre setting in a laboratory with call centre agents and found that interacting with rude customers led to stress among the call centre agents. Croidieu et al. (2008) found that 79% of call handlers in their study reported experiencing verbal aggression, insults or threats at work. Whilst this study did not identify the source of the verbal aggression, 76% of call handlers in the study reported negative comments from customers. Further findings reported from the same study highlighted that both verbal aggression and experiencing negative comments from customers were associated with increased psychological distress (Charbotel et al., 2009). Dormann and Zapf (2004) found that customer related demands, including verbal aggression, were related to burnout in customer service employees. In conjunction with the findings of the present study, these studies suggest that job demands associated with customers are a source of stress for call centre staff and may increase the risk of poor mental health and wellbeing. In some cases, call handlers reported that the negative effects of a difficult call on their mood could last for a day or longer:

> Things that put me down the most will be people on the phone… like the guy the other day who… said he was going to complain about me - that weighed on my mind for a few days… I'll be thinking about it for a few days and that will bring down my mood for a few days… You might not seem so cheerful on the next call, then you think you're sounding bad on every call and you start worrying more about it on every call – it's a

downward spiral and each bad call makes you feel worse. [P10, male, call handler].

Employee rumination on customer aggression and incivility can lead to a number of negative outcomes, including increased negative affect, anger, emotional exhaustion and poor wellbeing (Sommovigo et al., 2019). Organisational support can reduce rumination following customer mistreatment (Wang et al., 2013) and may therefore be important for call centre staff in reducing the negative effects of difficult calls with customers.

The requirement for customer service employees to express positive emotions and suppress negative emotions in their interactions with customers leads to a discrepancy between felt and displayed emotion which has been termed 'emotional dissonance' (e.g., Wegge et al., 2010). Call handlers within the present study reported both suppressing negative emotions and expressing positive emotions which were not felt:

It's hard - sometimes you feel like you're wearing a mask in this place where you've got to sound happy… and sometimes you just don't feel it… It doesn't feel nice. If you're in a mood in general and don't want to smile… it's hard to put on a brave face. [P7, female, call handler]

In some cases, call handlers reported that they sympathised with the customers and felt that the organisational procedures were unhelpful or unreasonable, but that they had to put forward and defend the organisational messaging. This was

another way in which call handlers were required to suppress their true thoughts and feelings:

> I sometimes think, "Oh god that person really does have a point, you know."… I'm there, trying to make [the information I am giving] sound reasonable. But really I'm like, "Are you serious?" …So it is hard when you [are] getting screamed at and shouted at, and it happens regularly [P1, female, call handler]

This emotional dissonance was reported by call handlers to lead to frustration, stress and exhaustion. This is in line with previous studies of emotional dissonance in call centre staff, which has been linked to a number of negative outcomes including lower work motivation, health problems and burnout (e.g., Wegge et al., 2010):

> You do get frustrated on the phone, you have to hold your tongue so much… I just wish I could just like tell people straight and you can't, you're not allowed to… They're screaming at you for something they've done and you have to be all polite… It's like, how much can one person give, because I just feel like I haven't got anything left to give. It is just sapping the energy out of me all the time. [P3, female, call handler]

Call handlers reported feeling that they were inadequately prepared in their training for how to deal with difficult customers:

> You speak to people with a lot of problems, and there is no training about the fact that people have got problems [laughs].

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So when you speak to somebody and they're schizophrenic or

they have dementia and so on, it's very difficult... There was

nothing to prepare you for the type of people you're going to be

speaking to… even the people that are going to be screaming

and crying and abusive. There's not training on how to handle

somebody's abuse, or how to control the call. [P1, female, call

handler]

A systematic review of studies on the impact of customer aggression and incivility

on customer service workers (Sommovigo et al., 2019) found that workers'

appraisals and coping strategies for dealing with customer aggression and incivility

could moderate the impact of negative customer behaviours on employee

wellbeing. This suggests that training on coping strategies for dealing with

customer aggression and incivility may be beneficial to staff. On the other hand,

positive interactions with customers were seen as encouraging and could be

conceptualised as a resource, in that they tended to reduce the impact of negative

calls by boosting call handlers' positive mood and job satisfaction. One female call

handler (P14) highlighted that "when customers [gave her] a compliment and say,

'You've been the most helpful [person] I've spoken to' – that [made her] feel

happy."

5.4.2.3 Performance Targets

Performance targets were reported to lead to an increase in perceived demand

levels. Targets included the length of call, amount of time allocated after each call

to update the system, amount of time that employees could take as breaks, and

provision of correct information. The targets were often seen as overly rigid and as adding to call handler stress:

> It's black and white. You literally have X number of seconds to
> be on the call; X number of seconds after the call typing things
> up; X number of seconds to be transferring to somewhere else -
> it is literally that tight. And if you don't make it you fail at the end
> of the month, so it is stressful. [P1, female, call handler]

These performance targets reduced the ability of call centre staff to control their work, particularly the timings of their work. Sprigg et al. (2003) highlighted that call handler control and autonomy over their work timings and methods was lower than in all other jobs they were able to compare to, and that this may explain the high stress scores of call centre staff compared to other workers. Failure to meet monthly targets could lead to performance management procedures being implemented, where employees were given a set amount of time to improve their performance with increased support from managers. This was reported to limit employees' ability to move into other roles, which could lead to worry and feelings of being trapped:

> I mean I don't hate being on the phones but it's been such a
> long time now [since I did that role] that… I don't think I'd be
> able to meet the stats. Then you get into that cycle, if you fail a
> month, then all of a sudden I'm stuck on the phones for 6
> months - I'm not allowed to go anywhere else. I just don't want
> to be stuck in that. [P8, male, administrative role]

A failure to improve performance could then ultimately lead to dismissal. This was reported to lead to worry and feelings of anxiety by some:

> I do worry about the possibility of losing this job… [The performance review is] like a job interview every month… It's another thing to worry about in this job, another thing to do to stop me being fired. [P10, male, call handler]

Previous studies have highlighted a relationship between greater performance monitoring and stress in call centre staff (e.g., Charbotel et al., 2009; Sprigg & Jackson, 2006). Some monitoring could be seen as beneficial since it was an opportunity to learn and gain feedback (e.g., Kazi & Haslam, 2013). However, excessive amounts could lead to anxiety about making mistakes and lowered performance.

Performance targets were sometimes seen as somewhat arbitrary, and not always reflective of the quality of the job that the call handler had done or the satisfaction of the customer. This 'tick box' approach to assessing performance, such as the requirement to follow a specific script, was perceived as a hindrance demand and could lead to lower morale among call handlers:

> Since they've brought in this quality team, it seems they're a lot more nitpicky. My attitude is, if the customer goes away happy and the information is correct, then why am I being penalised for not saying, "Is there anything else I can help you with?" and stuff like that. It just feels a bit deflating at times. [P11, female, call handler]

Sprigg et al. (2003) highlighted scripting as another cause of call handlers' low control over their work. She recommended that scripting should be avoided where possible and that call handler autonomy could be increased via improvements in training. In some cases, it was felt that the targets were incompatible with one another since it was seen as difficult to meet time targets and also provide correct information:

> You have to try and balance customer service with the statistics
> [related to performance targets]. I mean, do you get them off the
> phone as quick as possible to make your statistics look good?
> Or do you try and help them? And that is a difficult balance,
> very much so. [P1, female, call handler]

In the present study, a lack of adequate information and training for staff exacerbated anxieties about monitoring and targets, since performance targets were more difficult to meet where the information to answer customer queries was not readily available to staff.

> There's so much pressure on you with your stats. You've only
> got a certain amount of time to answer the calls and you can
> only use 'hold' this much and 'wrap up' after the call… There's
> something I might not know [that a customer has queried], and
> you ask your line manager and they don't know either. So, they
> have to find the answer, and the longer it takes, then you're
> conscious that you're on hold and you're using your stats.
> You're going to have terrible stats, but at the same time you
> have to get the right information. [P2, female, call handler]

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There was a perceived need for additional training on the information needed to provide to customers particularly following changes to information or procedures:

> There's been four massive changes last week… If you missed the team meeting last week you got no training and in the meeting, it was the manager saying, 'This is coming in next week. Have a read through'. That was it, and it feels like such a substantial change, we should have a bit more than just this.
>
> [P5, female, call handler]

Having the correct information easily to hand could allow call handlers to answer queries more quickly and, therefore, make it easier to meet targets.

5.4.2.4 Colleague relationships

Relationships with colleagues were frequently discussed by call centre staff as having both positive and negative impacts. Colleague support was seen as an important resource while difficult relationships with colleagues was seen as a particularly difficult demand. The ability to chat to colleagues between calls was seen as a particularly important resource, which could mitigate the effect of working under the strict constraints within the call centre environment. One female call handler (P13) described herself and her colleagues as being "like caged chickens" where "the only thing that makes it bearable, keeps you going, is to have people around you can have banter with." Social support from colleagues is an important aspect of the Job Demands-Control-Support model (Johnson & Hall, 1988). Previous research has suggested that support from coworkers is a form of social capital, where employees can draw on resources from their colleagues in

order to help them accomplish their work tasks (Settoon & Mossholder, 2002). In general, the call centre was seen as a supportive environment by most of the staff interviewed, with most colleagues being keen to support those around them, with one female call handler (P6) describing the call centre as "like a massive family [where] everyone's on same team." A number of interviewees reported that positive interactions with colleagues were facilitated by charity and social events that were organised within the call centre, which was seen as buffering the effect of negative interactions with customers:

> That [event] was for charity, so you all had to bring in funny hats to wear... It was a fun day and everyone was just having a laugh so it makes you feel better... I think it just brightens up the day and everyone is just smiling. It just makes the day easier because you can get calls which are quite difficult... if there's other stuff going on you can forget the bad stuff. [P14, female, call handler]

Sommovigo et al. (2019) reported that the negative impacts of customer aggression and incivility could be buffered by support from colleagues, highlighting the importance of access to this resource. Support from colleagues was seen as more valuable than support from family and friends, due to their shared experiences of interacting with difficult customers:

> It's really helpful [to speak to colleagues] because they understand. It's different talking to people at home because they're not in the situation... A lot of the time I feel really shaky and really upset when somebody's had a go at me... but when

you talk to your team mates and they just know [what it's like].

They make a joke of it, make light of it, and it's a bit better then.

So it does help to cope with things a lot. [P2, female, call

handler]

Luchman and González-Morales's (2013) meta-analysis of 106 studies using the

Job Demands-Control-Support model and found a negative relationship between

task-related demands and colleague support. They explained this relationship

using Lazarus's (1991) Cognitive-Motivational-Relational Theory which proposes

that increased support will be taken into account by staff when appraising whether

job demands will tax their resources or threaten their wellbeing. Therefore, they

suggest that increased support leads to employees perceiving their job as less

demanding. The current study found a more direct impact of job demands on

colleague support, since chatting to colleagues was only possible where there

were adequate breaks between calls. These breaks provided a chance for call

handlers to let down their professional 'mask' and express their genuine feelings:

[There are] periods where we're so busy… you can put yourself

on break, but that's literally for toilet or to get a drink - not much

room for chitter chatter… [The opportunity to chat with

colleagues is] the most important thing. It is the only form of

human contact. On the phone you're professional - it can't be

personal... So, it's nice to have a chat with your colleagues, nice

to have a breather now and then, but it's down to how busy we

are. [P13, female, call handler]

Taylor and Bain (2003) reported in their ethnographic study of a call centre that humour and 'banter' with co-workers was an important form of coping, which made work 'tolerable' and helped form a sense of community among call handlers. They noted that call handlers took advantage of quieter periods to joke and gossip with one another. In the current study, there were examples of how colleagues found ways to interact, despite the limited opportunities for conversation:

> We give each other looks or roll our eyes, tell little jokes, play
> little games that keep us going… We try to keep interesting by
> doing team competitions: one of our colleagues organises
> bingo, or we've got word of the day [which you have] got to get
> into the conversation [with customers] - things like that,
> something just to break up the monotony. That is…how I cope
> with it being so repetitive. [P13, female, call handler]

Despite the importance that call centre staff placed on colleague support, it could be difficult for call centre staff to take time away from their duties on the phone to provide support to colleagues due to time constraints and worries about the impact on meeting performance targets. This could lead to additional stress where job demands were high:

> [A colleague came] to me close to tears and swearing… [She
> had] failed her monthly review… [and] is looking at leaving
> because she can't cope with the stress and monthly worry
> before each review… I spent 10 minutes talking to her and

calming her on my break button... stats ruined again [P1,

female, call handler]

As well as time pressure and a lack of breaks, pressures on space could make it difficult to get colleague support, since there were instances where call handlers were forced to sit away from their teams due to a lack of desks:

It's horrible [sitting away from your team]. You feel like you're

not part of the team. You feel like you don't have any support,

you don't know anyone… [in one instance] I think [a colleague]

was sat with a [team dealing with different types of queries] so

there wasn't anyone that she could speak to. It's not good for

your morale. [P14, female, call handler]

There were some instances where staff reported having conflict or difficult relationships with their colleagues. This was seen as very stressful and upsetting:

[A discussion with my colleague] really upset me… I did

approach her and then we did work it out, but that was a bit of a

blow. I really struggled with that because [the conversation]

really hurt. [P13, female, call handler]

Negative interactions with colleagues were reported relatively frequently, although the incidents were most often minor conflicts or annoying behaviour rather than serious incidents such as bullying or ongoing negative relationships. Previous research has shown that conflict at work is relatively common, but can have negative impacts on wellbeing (Giebels & Janssen, 2005). A number of

interventions (such as individual-level training in conflict resolution skills,
interventions targeting conflict on a work unit level, and conflict coaching and
mediation interventions) have been found to have positive impacts in reducing
workplace conflict, and could be considered if serious or ongoing problems were
identified in this area (Gilin Oore et al., 2015).

5.4.2.5 Manager relationships

Relationships with managers were often viewed as a resource where managers
were supportive and helpful. In other cases these relationships could be strained
and these difficult manager relationships were viewed as a particularly challenging
demand. In the majority of cases, line managers were seen as supportive of their
staff:

> My [team leader] keeps a close eye on all of us. She's been
> doing [the job] for so long she appreciates what impacts on
> wellbeing, so I feel I'm very well looked after in that sense. [P13,
> female, call handler]

Supervisor support is a key aspect of the Job Demands-Control-Support model
(Johnson & Hall, 1988) and has been found to consistently predict employee
wellbeing (e.g., Häusser et al., 2010) and to buffer the negative impacts of
customer incivility and aggression on wellbeing (Sommovigo et al., 2019). Staff
reported that important aspects of a supportive manager relationship included
approachability; their ability to trust the manager, including with confidential
information; and the managers' willingness to address problems on behalf of their
staff:

> I can tell my line manager anything really, and my [more senior
>
> manager]. I know that they would keep it confidential, whatever
>
> it is, and they'll do whatever they can as well to help. So I'm
>
> really lucky. [P14, female, call handler]

A supportive manager relationship was reported to help staff to feel reassured and helped to reduce anxiety about dealing with the difficult aspects of their job:

> [A positive manager relationship] just makes you feel, you know
>
> a bit more secure. Like I can go to her and you know if I've got a
>
> problem she'll do her best to help me …She can't solve
>
> everything but she will try her best and it's reassuring that she'll
>
> do that for you. [P3, female, call handler]

In addition to support, interviewees described how good managers recognised and rewarded good work, which had a positive impact on mood:

> My [manager] sent me a really nice email actually about the
>
> work I was doing on team. All it takes is one email and it picks
>
> up your mood up for the rest of the day. It's good to get
>
> feedback when you're doing a good job… Recognition when it's
>
> due is a massive lift [P6, female, call handler]

Managers encouraging their staff to develop their skills and experience in order to progress their careers was also deemed to be important. One female call handler (P2) noted that her manager "really tries to push you" with the result that "you know that someone's there who's got your back".

Positive relationships with managers were reported to extend to senior managers within the call centre as well as direct line managers, with one female call handler (P2) noting that even among senior managers "everyone's really approachable. They speak to you, you don't feel intimidated by higher management so it's really nice".

Staff relationships with managers were not universally reported to be positive, nevertheless, and there were reported to be some inconsistencies across the organisation:

> I've only been [in this area of the call centre] since September and I've noticed a huge difference [compared to the previous area]... It is regimented, 'you do this, you do that; you do not do this, you do not do that'. Whereas [in the area I previously worked in] I found it was much more relaxed [P3, female, call handler]

A few interviewees reported that their managers did not provide them with the support they needed and weren't always available:

> [My managers] seem to be continually in meetings… whenever I need someone they're not there… I don't know what they're talking about all the time, they seem to spend so little time at their desks [P10, male, call handler]

Previous research has highlighted a lack of supervisor support as a risk factor for anxiety and depression (Sinokki et al., 2009), psychological strain (Beehr et al., 2003) and burnout (Hämmig, 2017). While a minority of interviewees reported a

lack of supervisor support, those employees may be at an increased risk of poor mental health, as a result. In addition, line managers often act as gatekeepers for providing reasonable adjustments to work and for referral into workplace support services and, therefore, may require training in how to support staff with mental illnesses (Silcox, 2016).

5.4.2.6 Combined effect of job demands and resources

Job demands were seen as having cumulative effects. Job demands did not occur in isolation and were reported to exacerbate one another. For example, the lack of breaks between calls was reported by staff to lead to a lack of opportunity to recover from the stress and negative mood which were reported to result from dealing with difficult customers:

> You might have somebody screaming at you. Literally screaming at you, screaming, crying, 'You've ruined my life'… And, 'OK, I'm going to have to put this call down. There is nothing else further I can help you with. Thank you for your call.' [You] put it down and it goes beep, 'Good morning, you're speaking to [name].' It's literally that quick. [P1, female, call handler]

When workloads were higher and queues longer, interactions with customers were felt to be more difficult, not only due to the lack of recovery, but because customer frustration was increased after queueing, leading to more aggression and complaints from customers:

It takes a life time for [customers] to get through [the initial

automated system], so when they find they've got anything

between a 2 minute to 10 minute wait, they're already narked.

They've had time to think about [how] they're going to explode

at you before they come through - they've planned out their

whole speech. [P7, female, call handler]

Lack of information on changes at work was also felt to make interactions with

customers more difficult, since it made it more difficult to give clear and definitive

information to customers:

[We're] told one thing, then another... we have to feed it to the

customer with extremely large gaps in knowledge, because

there isn't an answer for a lot of things… That increased my

stress level … I find it really difficult to be very firm with

customers on the phone that this is the way it's going to be,

because they are going to ask why, and I can't tell them why.

[P13, female, call handler]

Job demands and resources were also reported to interact in specific ways. For

example, the pace of work and ability to take breaks between calls was felt to

impact on employees' ability to access support from colleagues:

Today was quite a nice day. We had a few breaks in calls,

which allowed me to have a chat with my colleagues. This helps

break up the boredom of taking calls and we also have a laugh,

so it did make me feel happier. It takes the pressure off a bit

when there is a break in calls and you can speak to your team. I

wasn't so bothered by the irate customers. [P2, female, call

handler]

While hot desking was a less commonly reported demand, it was also felt to

impact on employees' ability to access support from colleagues:

The hot desking is a nightmare. You never know where you're

going to be, you could be way away from your team, so you're

out of the loop - you haven't got people to go and ask when you

get stuck, which we do… It's all about teamwork here, you

know, and you want to be a part of that team. If you're over the

other side, it's not nice. [You're] in a team where nobody is

going to speak to you and you're a bit isolated. [P1, female, call

handler]

Previous studies of the combined effects of job demands and resources on

wellbeing outcomes have found consistent support for additive effects of job

demands and resources, while less evidence of moderation has been found (e.g.,

Hu et al., 2011). The DRIVE model predicts interactions between job demands

and support, although little evidence of this has been found in tests of the model

(Margrove & Smith, 2022), including in Study 1 of this thesis. However, the

qualitative findings reported in this chapter have highlighted several instances

where the effect of one demand or resource was dependent on another demand or

resource. It may, therefore, be more useful to consider individual interactions

between specific job demands and resources, rather than seeing resources as

moderating the impact of job demands more generally. Interactions between job

demands and resources may occur in complex and multifaceted ways and the

qualitative exploration of these relationships may allow these complexities to be explored and understood in depth. Future studies could also develop specific hypotheses about which demands and resource may interact and test these quantitatively.

5.5 Key findings and conclusions

5.5.1 Summary of key findings

This chapter aimed to address two goals: 1) to explore the relationship between daily job demands and resources and mental health-related outcomes using multi-level modelling and 2) to explore in depth the demands and resources experienced by call centre staff using qualitative interviews. In relation to the first goal, Study 2 identified that daily job demands and resources predicted mental health-related outcomes, with both high demands and low resources predicting higher stress and lower positive mood and low daily resources also predicting higher negative mood. A fixed slope random intercept model was the best fit in each case, suggesting that while overall levels of stress and mood may vary, the impact of demands and resources on mental health-related outcomes was the same across individuals with good and poor mental health. This implies that primary interventions to address job demands and resources may be beneficial to all staff, regardless of their current levels of mental health. These findings help to extend and clarify the more mixed findings from Study 1 on the effect of job demands and resources on mental health. The findings suggest that demands and resources can impact mental health-related outcomes over a short timeframe, which is in contrast to Study 1 where mental illness did not appear to change straightaway as workplace stress increased. Two potential explanations were

identified for these contrasting findings. First, the reported demands and resources in Study 2 were self-generated in contrast to those in Study 1 which came from a generic questionnaire, meaning that Study 2 may have focused on demands and resources which are most salient to the staff in the call centre and, therefore, may have had a greater impact on mental health. Second, Study 2 focused on mental health-related outcomes which were most likely to change regularly and explored these on a daily basis, whereas Study 1 focused on more long term mental health outcomes, with relatively long time lags of six months to a year between time points. These two studies in combination have highlighted the importance of understanding the temporal relationships between job demands and resources and subsequent mental health outcomes. The findings suggest that the temporal relationships between job demands and resources, workplace stress and associated mental health outcomes are complex and vary according to the specific outcome of interest. Future research could explore these temporal relationships in greater detail, including how mental illness develops over time in response to workplace stress and the relationships between daily and longer term measures of mental health.

In relation to the second goal of this chapter, a number of common job demands and resources were identified in diaries and explored further in interviews, including the pace of work and lack of breaks, interactions with difficult customers, performance targets and relationships with colleagues and managers. Staff reported that the pace of work was consistently and relentlessly high, with few breaks in which to recover from difficult calls or to interact with co-workers. Interactions with difficult customers was another common demand, with call

handlers reporting their interactions with rude or abusive customers led to increased stress and negative mood, particularly as they were required to suppress their true emotions and display a positive and friendly demeanour. Performance targets were reported to lead to increased stress, especially when they were seen as arbitrary or were incompatible with one another. Both colleague and manager relationships were described as potential demands or resources, depending on the nature of the relationships. Support from both colleagues and managers was seen as an important resource, however, where relationships with colleagues or managers were strained, this was viewed as particularly distressing. Demands and resources were not experienced in isolation, and were reported to have combined effects. For example, a lack of breaks made it more difficult to recover from difficult calls and also did not allow for regular interaction with colleagues. While study 1 did not find any consistent moderation effects, these qualitative findings suggest that demands and resources may interact in specific ways, as well as having cumulative effects.

The findings in this chapter have a number of key implications:

- This was the first test of the DRIVE model using a daily diary approach. The combination of longitudinal findings over a longer period from Study 1 and daily findings from Study 2 has yielded new insights into the temporal relationships between the variables within the DRIVE model, highlighting their dynamic nature. This has implications for the DRIVE model, which does not currently make any predictions about how the relationships included in the model may vary over time. Future iterations of the model

should consider the changing nature of these relationships over time, which may improve its predictive power.

- These findings relating to the temporal relationships within the model also highlight the need to better understand how mental health changes over time in response to demands, resources and associated stress. This has methodological implications, suggesting a need for more longitudinal studies, which should carefully consider the most appropriate time lags between measurements of predictors and outcomes.

- The study found that daily job demands and resources predicted mental health-related outcomes, and that this relationship was similar for all staff. This finding suggests a need for primary interventions to address job demands and resources and that these may be beneficial to staff with good, as well as poor, mental health.

5.5.2 Conclusions and next steps

Findings from this chapter suggest that demands and resources do have an impact on mental health, supporting the DRIVE model, and this is true of all staff. This implies that primary interventions that target demands and resources may be required to meet the mental health needs of staff and that all staff would benefit from these interventions, and not just those with poorer mental health. Specific demands and resources which staff felt were impacting their mental health included the pace of work and lack of breaks, interactions with difficult customers, performance targets and relationships with colleagues and managers. Previous research has suggested that a participatory approach increases the effectiveness of primary workplace interventions (e.g., Holman et al., 2010), perhaps because it

allows interventions to target the workplace factors which are important to employees and which they perceive as having the biggest impact on their health and wellbeing (Holman & Axtell, 2016). Therefore, interventions could be tailored to target the specific demands and resources identified by staff in the call centre, which may increase their impact on mental health outcomes. For example, whilst it may not be possible to change job demands associated with customers, it may be beneficial to train staff in dealing with customer related demands, since staff in the call centre perceived this as a gap in their training.

Approaches to managing workplace stress and promoting mental health which focus on managing psychosocial risks, such as the HSE Management Standards (Mackay et al., 2004) generally advocate an assessment of psychosocial risks within a specific working environment prior to intervention (Nielsen et al., 2010). These hazards at work may increase the risk of physical, as well as mental, ill health (Abdel Hadi et al., 2021; Gilbert-Ouimet et al., 2014) and may lead to increased levels of disability among those with mental illnesses. The World Health Organisation (2013) has recommended taking physical health needs into account for those experiencing mental illness. The next study looks at the correlations between physical and mental health in call centre staff in order to identify any specific comorbidities which may need to be considered when planning mental health interventions for call centre staff.

Chapter 6: Physical health of call centre staff

6.1 Introduction

This chapter addresses the fourth research objective:

- To explore how mental health outcomes correlate with physical health and health behaviours

This objective will be addressed using data from Study 3 which assessed the physical health of call centre staff as well as data on levels of mental health as reported in Chapter 4. Two goals were identified for this chapter: 1) to assess levels of physical health and health behaviours in call centre staff, in order to identify their physical health needs; and 2) to explore the extent to which physical health outcomes correlate with mental health outcomes, in order to assess the extent to which physical health needs should be addressed alongside mental health needs. The methods used in Study 3 are outlined in Section 6.2. Results relating to the levels of physical health as well as the relationship between mental and physical health outcomes are reported and discussed in Section 6.3, in relation to each physical health outcome.

6.2 Methods Study 3: Assessment of Physical Health

6.2.1 Design

Study 3 assessed the physical health of call centre staff in a cross-sectional study. The physical health outcomes included in the study were those which have been found to be comorbid with mental health outcomes in the general population and are reviewed in Chapter 2 (e.g., Cohen et al., 2015; Ducat et al., 2014). The assessment of physical health in the current study used both physiological and

self-report measures of health. The choice of measures was based upon previous research on valid and reliable measures for each outcome as well as access to equipment and the feasibility of using specific measures in a cross-sectional study in a call centre environment. The chosen measures are outlined in detail in the Materials section of this chapter.

6.2.2 Participants
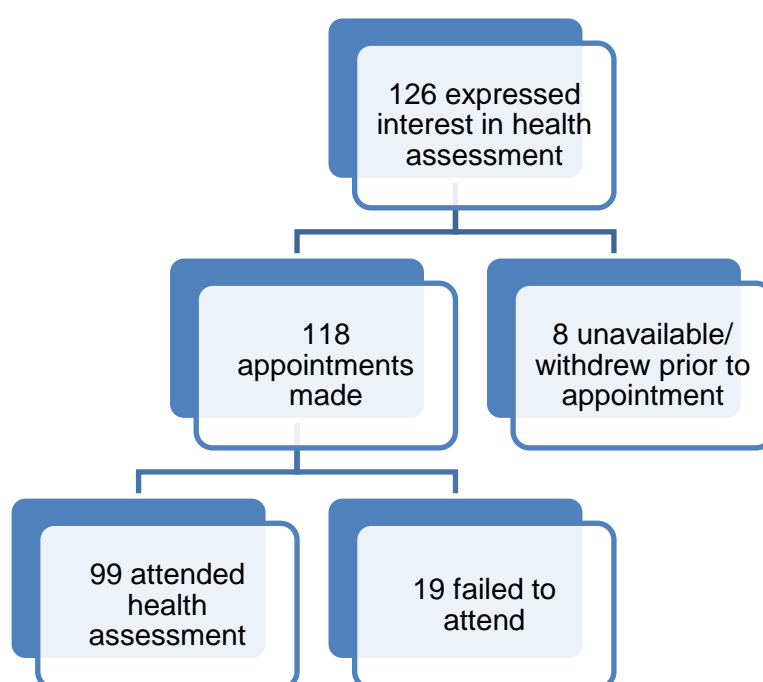
Figure 3: Recruitment of employees

Participants were recruited at the second time point of Study 1 (Chapter 4), where the questionnaire asked employees whether they were interested in taking part in a physical health check. Figure 3 shows a flowchart of the recruitment process. Those who stated that they were interested were all sent an invitation to attend a health assessment which provided the data for the current study. Inviting employees who had completed the survey to take part in the health assessment ensured that data on mental health could be compared and correlations between

physical and mental health could be explored. In response to the question, 126

employees stated that they would be interested in attending a health assessment

and included their name in order that they could be contacted. The list was sent to

an administrator in the call centre who sent email invitations to these employees,

inviting them to take part in a health check. Appointments were arranged for 118

employees as eight withdrew or were unavailable. Of these, 99 attended a health

assessment and 19 failed to attend. Demographic information about participants

and a comparison to the call centre is included in Table 12.

Table 12

Demographic information

	Participants	Call centre		Participants	Call centre
Gender			**Working pattern**		
Female	48 (48%)	529 (60%)	Full-time	84 (85%)	698 (79%)
Male	51 (52%)	352 (40%)	Part-time	15 (15%)	183 (21%)
Job grade			**Area of work**		
Call handler/ admin	93 (94%)	759 (86%)	Call area 1	49 (49%)	367 (42%)
Team leader	4 (4%)	92 (10%)	Call area 2	45 (45%)	396 (45%)
Manager	2 (2%)	30 (3%)	Support	5 (5%)	118 (13%)
Length of service			**Age**		
Less than a year	19 (19%)	195 (22%)	20 or under	1 (1%)	26 (3%)
1-3 years	49 (49%)	307 (35%)	21-30	55 (56%)	397 (45%)
3-5 years	7 (7%)	68 (8%)	31-40	20 (20%)	221 (25%)
5-7 years	9 (9%)	83 (9%)	41-50	15 (15%)	134 (15%)
7-10 years	10 (10%)	127 (14%)	51-65	8 (8%)	103 (12%)
More than 10 years	5 (5%)	101 (11%)			

Males, those aged 21-30 and staff working in Call area 1 were overrepresented in

the sample, while females, those aged 51 and over, part-time staff and those

working in support areas were underrepresented. The underrepresentation of

older staff may mean that physical health problems may be slightly

underestimated in the current study, however, were taken into account in

weighting of population comparisons.

6.2.2 Materials

The health assessments included measures of overweight and obesity, physical activity and sedentary behaviour, smoking and alcohol use, diabetes risk, cardiovascular risk and stress-related symptoms as well as additional symptoms which have previously been associated with working in a call centre environment.

6.2.2.1 Obesity, physical activity and sedentary behaviour

Two measures of overweight and obesity were used: BMI and waist circumference. In order to calculate BMI, height was measured using a stadiometer and weight using an electronic scales. BMI was chosen since it is the main way of measuring obesity. However, BMI is not a good measure of body fat and does not take into account differences in body composition related to age and sex, or differences in bone density and muscle mass (Rothman, 2008). Measures which are more indicative of central obesity have been found to be better predictors of obesity-related health problems, including waist circumference (Janssen et al., 2004). Waist circumference was, therefore, included as an additional measure of central body fat and these measures were compared to ensure that risk to staff health due to overweight and obesity were accurately categorised.

Physical activity and sedentary behaviour were measured using the short version of the IPAQ (International Physical Activity Questionnaire Short Version; Craig et al., 2003). This is a widely used measure of physical activity which has been found to have acceptable levels of validity and good levels of reliability in studies across 12 different countries (Craig et al., 2003). As with all self-report measures of

physical activity, it can be prone to misreporting due to problems with recall (Bauman et al., 2009). However, objective measures of physical activity such as accelerometers and heart rate monitoring are not always accurate, are expensive to use and place greater burden on respondents (Warren et al., 2010). In contrast, self-report measures such as the IPAQ offer a cheap, practical and low burden alternative. Warren et al. provided guidance on the type of physical activity measure which is appropriate according to the research question. They suggested that in order to categorise individuals according to level of physical activity, both objective and self-report measures of physical activity are appropriate tools, with the IPAQ being identified as one tool whose validity and reliability has been established internationally. Therefore, the short form of the IPAQ was felt to be an appropriate, valid and reliable measure of physical activity. Levels of physical activity were categorised in line with guidelines from the UK Chief Medical Officers (2019). Individuals were categorised as meeting physical activity guidelines (at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity physical activity), as engaging in some physical activity (at least 30 minutes of moderate or vigorous physical activity but not enough to meet guidelines) or inactive (less than 30 minutes of moderate or vigorous physical activity per week). The total amount of energy expended during physical activity was also calculated in Metabolic Equivalent of Task (METS; Craig et al., 2003).

6.2.2.2 Alcohol use

Alcohol use was measured using the FAST Alcohol Screening Test (Hodgson et al., 2002). This is a short version of the widely used AUDIT screening tool (Saunders et al., 1993), which identifies levels of health risk related to an

individual's alcohol use. The AUDIT screening tool has widely been found to be a valid and reliable measure of alcohol-related health risk (e.g., Barry & Fleming, 1993; Bohn et al., 1995). The FAST screening test was developed as a very short screening tool for use within busy health and social care settings and allows more than half of individuals to be categorised as hazardous or non-hazardous drinkers using one question, with an accuracy of more than 95% compared to the full AUDIT screening tool (Hodgson et al., 2002). The question 'How often do you have six drinks or more on one occasion?' was used to screen individuals for hazardous drinking. Those who responded 'never' were categorised as non-hazardous drinkers, while those who responded 'weekly' or 'daily or almost daily' were categorised as hazardous drinkers. Those who answered 'monthly' or 'less than monthly' were asked to complete four additional questions. Based on this, those who were categorised as at increased risk, were asked to complete the remaining AUDIT questions in order to get a more accurate risk score.

6.2.2.3 Diabetes and Cardiovascular Risk

Diabetes risk can be easily measured using a fasting blood glucose test and diabetes screening has been successfully carried out in workplace settings (e.g., Oberlinner, 2008). A glucose test using capillary bloods (i.e. requiring a finger prick rather than a venous blood sample and therefore less invasive) was included in the health assessment. Since the health assessment was conducted in the workplace, the use of portable testing devices which did not require a lab to conduct analyses was required. A portable Accutrend device was used to measure blood glucose, which has been found to exceed American Diabetes Association clinical criteria for accuracy and reliability of measurement using capillary samples

(Weitgasser et al., 1998). Blood glucose was measured in mmol/L and results were categorised in line with WHO (2019) guidelines as possibly indicating diabetes (fasting blood plasma of 7.0mmol/L or more), prediabetes (fasting blood plasma between 6.1 and 6.9mmol/L) and lower risk (fasting blood plasma less than 6.1mmol/L). For employees who did not fast, cut-off points for random blood glucose tests were used as follows: normal levels were considered to be less than 7.8mmol/L; levels between 7.8 and 11mmol/L were considered to indicate possible prediabetes; and levels of more than 11mmol/L were considered to indicate possible diabetes.

Assessing cardiovascular risk requires measuring a number of risk factors. There are several formulae for estimating cardiovascular risk. Most of these are derived from the Framingham score (Wilson et al., 1998) which was developed to predict risk of coronary heart disease, based on the classic Framingham study in the USA. Risk factors which were identified by this study included age, sex, smoking status, blood pressure and cholesterol (total and high density lipoprotein [HDL]). Further studies have adjusted this risk score to predict global cardiovascular risk rather than just coronary heart disease; to increase the accuracy of prediction and to tailor it to other populations (e.g., Conroy et al., 2003; Hippisley-Cox et al., 2008; Woodward et al., 2007). In the UK, the QRISK2 score (Hippisley-Cox et al., 2008) is often used since it has been developed for a British population. Most of the scores, including the QRISK2, require the measurement of HDL cholesterol in addition to total cholesterol. HDL cholesterol is sometimes referred to as "good" cholesterol, whereas LDL (low-density lipoprotein) cholesterol is referred to as "bad" cholesterol. Low levels of HDL cholesterol and high levels of LDL cholesterol

can increase the risk of cardiovascular disease. However, the measurement of HDL cholesterol typically involves taking venous blood samples and requires specialist lab equipment for analysis. This was not feasible in the present study due to the setting of the testing in the workplace and the resources available. Overall cholesterol can be measured using capillary blood samples and the Accutrend device which was also used to measure blood glucose has been found to reliably measure total cholesterol (Gottschling et al., 1995). The SCORE risk measurement (Conroy et al., 2003) is a cardiovascular risk score which can be calculated with total cholesterol only. Two risk scores were developed: one including HDL cholesterol and one using total cholesterol only. The two scores were found to be equally effective and, therefore, it seems that the exclusion of HDL cholesterol from the health assessment still allowed an accurate estimate of cardiovascular risk.

The risk score was developed for a European population after the Framingham score was found to overestimate risk in some groups of Europeans. The SCORE measurement was also adapted to predict global cardiovascular risk, allowing outcomes such as stroke to be identified in addition to coronary heart disease. The main drawbacks of this approach to measuring cardiovascular risk are that it is not as specific to a UK population as the QRISK2 score and that it only predicts fatal events over the next 10 years, meaning that individuals who are at risk of non-fatal cardiovascular disease may not be identified. However, it also included a 'relative risk' score, which gave an estimate of cardiovascular risk in relation to someone of the same sex and age group. This was felt to be useful given the relatively young age of the call centre staff. The SCORE measurement is, therefore, a practical

measure of cardiovascular risk given the setting of the study and its associated limitations. It was also appropriate to the population since it had been developed for use in European populations.

In order to calculate the SCORE, sex, age, smoking status and blood pressure were measured in addition to cholesterol. Sex, age and smoking status were measured via self-report. Blood pressure was measured using a Mobilograph machine, which has been found to meet clinical accuracy criteria of both the British Hypertension Society and the Association for the Advancement of Medical Instrumentation (Jones et al., 2000). As the main SCORE risk factor tables were only available for individuals aged 40 and above, the relative risk tables were used to measure the relative risk of cardiovascular disease for employees in comparison to those of the same age with no risk factors. Participants also completed a cardiovascular screening questionnaire (Thompson et al., 2007), which asked about previous history of cardiovascular disease or symptoms, other health issues including diabetes and asthma and risk factors such as smoking and previously diagnosed high cholesterol or high blood pressure.

6.2.2.4 Physical Symptoms
Stress-related physical symptoms were measured using the Physical Symptom Inventory (PSI; Spector & Jex, 1998). This is an 18-item measure which has been widely used in occupational research, found to be the most widely used measure of physical symptoms in a meta-analysis of the relationship between workplace factors and symptoms (Nixon et al., 2011). Little information is available about its psychometric properties, however, despite its widespread use. This may be

because it uses single item measures of each symptom, making estimates of validity and reliability more difficult. Despite this limitation, the PSI has been widely used in occupational research and a number of workplace factors have been found to relate to the symptoms measured (Nixon et al., 2011). The PSI also includes normative data, allowing an assessment of the levels of symptoms experienced within a given population. Therefore, it was felt to be a useful measure despite the need for validation of its psychometric properties.

6.2.3 Procedure

Participants who expressed an interest in taking part in a health assessment in response to a question in the wellbeing survey were invited by email to attend a health assessment. The email invitation included an information sheet explaining about the study and what would be involved in the health assessment. Participants were asked to fast prior to the blood test. Health assessments took place in a private room at the call centre. Consent was taken at the start of the health assessment. The participant was then asked to complete the questionnaire. Next, height, weight and waist circumference were measured. The employee was then asked to lie down. After the participant had been lying down for five minutes, blood pressure measurements were taken. Three measurements were taken for greater accuracy. Blood glucose and cholesterol measurements were taken while the employee was lying down to reduce the risk of fainting. Testing was carried out by the researcher and postgraduate students from the Physiology department of Cardiff Metropolitan University who had all been trained in administering physiological testing by staff in the Physiology department. Capillary blood tests were undertaken by a trained and competent person who had received

inoculations. Gloves were worn during the testing. Lancets were disposed of using a sharps bin and other clinical waste was disposed of using a clinical waste bag.

6.2.4 Ethical considerations

Ethical approval was gained from Cardiff Metropolitan University's School of Sport Ethics Committee. In addition, procedures and risk assessments were approved by managers at the call centre. A number of risks were identified, including fainting and blood borne infections. A risk assessment was therefore carried out and measures were put in place to reduce the risks. A copy of the risk assessment is included in Appendix 9. In order for participants to be able to give informed consent, they needed to understand the tests that would be carried out in the health assessment. The information sheet explained the physiological tests that would be carried out and that employees were able to withdraw from any or all of the tests at any time. The information sheet is included in Appendix 10.

6.2.5 Analysis

For each health outcome, descriptive statistics are reported along with correlations with anxiety, depression and positive mental health scores. Pearson correlation coefficients were calculated between mental health and physical health outcomes, where continuous measures were available (i.e. for number of symptoms, number of periods of sickness absence and presenteeism, physical activity in METS, sitting time in hours per day, BMI, blood glucose measurement in mmol/L, systolic blood pressure in mmHg, total cholesterol in mmol/L and relative cardiovascular risk from the SCORE).

Due to the number of statistical comparisons employed in the correlation analysis, the risk of a Type I error is increased. This means that false positive results are likely without correcting for the overall familywise error rate (i.e. the error rate across all analyses undertaken for this research objective; Abdi, 2007). However, by correcting the familywise error rate, statistical power is lost and the risk of making Type II errors is increased. For sickness absence and presenteeism which were measured within the longitudinal study, findings which are replicated at 3 of the 4 time points will be considered robust. In this way, the risk of Type I errors will be minimised while the risk of Type II errors is not increased (see Chapter 4 for a detailed explanation). For other variables which were only measured at one time point, a Dunn-Šidák correction is used to control for Type I errors, which controls the familywise error rate and is slightly more conservative than using a Bonferroni correction (Abdi, 2007).

6.3 Results and Discussion

This section summarises the prevalence of physical health problems identified by the research. Where possible, the measures are compared to population level data, including data from the Welsh Health Survey (Welsh Government, 2016), which was weighted by age and gender in line with the make-up of the sample in order to provide a more accurate comparison. Where no data was available for the Welsh population, other population comparisons have been included, focusing on UK populations where possible.

6.3.1 Obesity, physical activity and sedentary behaviour

Rates of obesity, physical activity and sedentary behaviour are summarised in Table 13.

Table 13

Obesity, physical activity and sedentary behaviour

Outcome	Category	No of participants (%)	Correlation with anxiety	Correlation with depression	Correlation with positive mental health	Correlation with workplace stress
Body Mass Index	Obese	35 (35.4%)				
	Overweight	31 (31.3%)				
	Healthy	33 (33.3%)	0.12	0.11	0.24	-0.16
	Underweight	0				
Physical activity in last week	Meets recommended levels	43 (43.4%)				
	Some activity (at least 30 mins)	19 (19.2%)	-0.21	-0.13	-0.22	-0.04
	Inactive (<30 mins)	37 (37.4%)				
Sedentary behaviour (hours sitting)	7 hours or less	10 (10.3%)				
	8-9 hours	35 (36.1%)				
	10-11 hours	37 (38.1%)	-0.17	-0.17	0.11	-0.19
	12 or more hours	15 (15.5%)				

* $p < .05$ ** $p < .01$ ***$p < .001$

Obesity in the call centre workers was much higher than Welsh average. Thirty-five percent of staff fell into the obese category using BMI, compared with 22 percent of the Welsh population adjusted for age and gender (Welsh Government, 2016). Obesity as categorised by BMI was compared to waist circumference in order to assess how accurately this reflected body fat of participants. All call centre staff who were categorised as obese had waist circumferences which were above the healthy limit, suggesting an increased health risk due to central obesity. Rates

of overweight were similar to the Welsh average, with 31 percent of staff being classed as overweight compared to 35 percent of the Welsh population. No significant correlations were found between BMI and mental health outcomes.

Rates of obesity in call centres have received little research attention. Nevertheless, the findings of this study are in contrast to two previous studies in calls centres within other European countries, which both found similar rates of obesity in comparison to the general population (Mannocci et al., 2014; Toomingas et al., 2012). The reason for the discrepancy in findings is not clear. It may be that differences in types of work and working environments across studies can explain the differences in findings. Mannocci et al.'s (2014) study was conducted with temporary call centre workers in Italy, while participants in the present study were mainly on permanent contracts. There may have been a discrepancy in the average length of service within call centres between the studies, with temporary workers potentially having had less time to gain weight that permanent staff. Toomingas et al.'s (2012) study was conducted with call centre workers in Sweden, 70% of whom had access to a sit-stand workstation. Participants in the current study only had access to a sit-stand workstation where this was recommended by Occupational Health for medical reasons, and therefore there was likely to be a difference in sedentary time between studies. Alternatively, risk of obesity in call centre staff may vary by country within Europe. Further research is required to see to what extent the greater risk of obesity is replicated in other call centres across the UK and Europe more widely, and to explore working patterns and environments which are associated with higher levels of obesity in call centre workers. No significant associations were found between obesity and

mental health outcomes, suggesting that comorbidity between obesity and mental illness does not need to be taken in to account when developing interventions for mental health outcomes.

Forty-three percent of staff met recommended levels of physical activity (UK Chief Medical Officers, 2019). This level is lower than that for the population levels, where 64% of the Welsh population met recommended levels, when weighted for age and gender (Welsh Government, 2016). The levels varied according to age and gender. Men undertook more physical activity than women with 49 percent of men in the sample meeting recommended levels of physical activity compared to 38 percent of women. This gender difference is in line with national trends. Employees at the call centre reported sitting for a mean of 9.4 hours daily. Ninety percent of the current sample sat for more than seven hours per day, with more than half of staff reporting being sedentary for ten or more hours per day. Population figures for England (NHS Digital, 2017) show that on weekdays, adults sit or stand for an average of 4.7 hours at work and are sedentary for an average of 4.7 hours on weekdays outside of work. Population figures for total sedentary time are not available.

The Stormont Study (Clemes et al., 2016) looked at total sitting time in Civil Servants in Northern Ireland. They found similar average sitting times to those found in the current study, with average sitting times of more than 10 hours on working days and close to 8 hours on non-working days. This suggests that sedentary behaviour among call centre staff is similar to that of other office workers. However, research from Australia has suggested that call centre workers

are more sedentary than other office workers during work hours (Thorp et al., 2012). Future research is needed to clarify whether call centre staff show similar or higher rates of sedentary behaviour than office workers. Nevertheless, call centre staff report low levels of physical activity and long periods of sedentary behaviour, which are risk factors for a wide range of health problems and are both independently associated with obesity (Chau et al., 2012), cancer risk (Kerr et al., 2017) and cardiovascular disease (Chomistek et al., 2013).

Sedentary behaviour is a risk factor even for those meeting recommended levels of physical activity, with longer sitting times being associated with poorer health outcomes. A meta-analysis of the impact of sedentary behaviour on mortality (Chau et al., 2013) found that each additional hour of sitting was associated with a two percent increase in mortality, and for those who sat for more than seven hours, each additional sedentary hour was associated with a five percent increase in all-cause mortality. Those who sat for ten hours per day had a 34 percent higher risk of mortality compared to those who sat for one hour. Recommendations from an expert statement released several years ago (Buckley et al., 2015) suggested that workers should increase standing and light activity at work to four hours. This may be more difficult in a call centre environment where employees are required to be at their desks and taking telephones calls for most of the day and may require organisations to invest in sit-stand desks, which have previously been used to reduce sedentary behaviour in call centres, allowing workers to increase standing while carrying out their duties (Straker et al., 2013). No significant correlations between physical activity or sedentary behaviour and mental health

outcomes were found, suggesting that these factors do not specifically need to be taken into account in the development of mental health interventions.

6.3.2 Alcohol use and smoking

Smoking rates and risk related to alcohol use is reported in Table 14. Around 17% of call centre staff reported smoking, which was similar to the population smoking rate of 19% (Welsh Government, 2016). Around a third of staff were found to be at increased or high risk of health problems due to alcohol use. This was higher than the prevalence of hazardous drinking identified in the English population by the Adult Psychiatric Morbidity Survey (NHS Digital, 2016), which was around 26% after weighting for comparison with the current sample. No significant correlations between smoking or alcohol risk and mental health were found.

Table 14

Smoking and alcohol use

Health behaviour		No of participants (%)	Correlation with anxiety	Correlation with depression	Correlation with positive mental health	Correlation with workplace stress
Current or recent smoker	Yes No	17 (17.2%) 82 (82.8%)	0.14	0.11	-0.21	-0.03
Alcohol related risk	Lower risk Increased risk High risk	65 (65.7%) 31 (31.3%) 3 (3.0%)	0.17	0.23	-0.15	-0.1

* p<.05 ** p<.01 ***p<.001

Around a third of staff were found to be at increased risk of health problems due to alcohol use. This was higher than the prevalence of hazardous drinking in the English population (NHS Digital, 2016). High levels of alcohol consumption can

increase the risk of a range of diseases, including liver cirrhosis (Rehm et al., 2010), a number of cancers (Bagnardi et al., 2015), stroke (Patra et al., 2010) and coronary heart disease (Corrao et al., 2000) as well as increasing the risk of injury (Zeisser et al., 2013). Overall, the World Health Organisation estimates that around 1 in 20 deaths worldwide can be attributed to harmful use of alcohol (WHO, 2018). The increased risk of alcohol-related health problems in call centre staff is, therefore, of great concern. Interventions may be required in order to address harmful and hazardous alcohol use. Nevertheless, as no significant correlations were found between alcohol risk and mental health outcomes, these interventions do not need to be developed in conjunction with mental health interventions.

6.3.3 Diabetes and cardiovascular risk

A summary of the data relating to diabetes and cardiovascular risk is included in Table 15. No employees were found to have blood glucose levels of 7mmol/L or more after fasting. One employee was found to have a blood glucose level within the range for possible prediabetes. This individual is at very high risk of developing diabetes in future (American Diabetes Association, 2004). Eight employees had not fasted prior to the health assessment. All the non-fasted participants had blood glucose levels which fell within the normal range. No significant correlations between diabetes risk and mental health outcomes were found. Nineteen percent of staff were found to have high blood pressure, 27 percent were found to have borderline high blood pressure and 52 percent had normal blood pressure.

Table 15

Diabetes and cardiovascular risk factors

Outcome	Category	No of participants (percentage)	Correlation with anxiety	Correlation with depression	Correlation with positive mental health	Correlation with workplace stress
Diabetes risk (blood glucose)	Lower risk	97 (99%)				
	Possible prediabetes	1 (1%)	0.13	0.05	0.1	-0.05
	Possible diabetes	0				
Blood pressure	High (>140/90)	19 (19.2%)				
	Borderline (>120/80)	27 (27.3%)	0.01	-0.06	0.12	-0.37*
	Normal (120/80)	52 (52.5%)				
Cholesterol	Very high (>6.5)	7 (7.1%)				
	High (5.1-6.5)	38 (38.4%)	0.01	0.02	-0.05	-0.17
	Normal (5 or less)	52 (52.5%)				
Relative cardiovascular risk	1	57 (57.6%)				
	2	30 (30.3%)				
	3	5 (5.1%)	-0.02	-0.05	0.01	-0.12
	4	5 (5.1%)				
	5	2 (2%)				

* $p<.05$ ** $p<.01$ ***$p<.001$

This is approximately in line with the Welsh population where around 20 percent of the population report being treated for high blood pressure (Welsh Government, 2016). Fifty-three percent of employees had normal cholesterol levels, with the remaining 47 percent having cholesterol levels above normal. This includes seven percent of employees with very high cholesterol levels of more than 6.5mmol/L. These figures are broadly in line with rates of high cholesterol in the population (Welsh Government, 2016). Relative cardiovascular risk was calculated using smoking status, blood pressure and cholesterol. The relative risk score ranges between 1 and 12 where someone with a score of 12 is at twelve times greater risk than a person with a score of 1. Relative risk scores calculated for employees ranged between 1 and 5 (with a score of 5 indicating that the individual is 5 times more at risk than a person with no risk factors. Fifty-eight percent of staff had a

relative risk score of 1 (i.e. they had no increased risk compared to others of their age and gender). Thirty percent of staff had a risk score of 2, indicating a doubling of their risk. Twelve percent of staff had risk scores of between 3 and 5, indicating that their risk was at least tripled, and for two percent of employees, was quintrupled. No significant correlations between cardiovascular risk factors and mental health were found.

Proximal risk factors for diabetes and cardiovascular disease such as blood glucose, cholesterol and blood pressure did not appear to be greater than the general population. Increased relative risk of cardiovascular disease was identified for 42% of staff, with around 12% of staff having at least a 3 times higher risk of cardiovascular disease than their peers with no risk factors. This risk calculation does not take into account obesity, physical activity, sedentary behaviour or alcohol use. As such, the true risk may be higher, since call centre staff were often found to have low levels of physical activity, to sit for long periods and had higher rates of obesity than the wider population. These factors are likely to put them at risk of both type 2 diabetes and cardiovascular disease in the longer term (Hu et al., 2001; Mozaffarian et al., 2008). In addition, higher rates of harmful and hazardous alcohol use increase the risk of cardiovascular disease (Corrao et al., 2000). Given these multiple risk factors and the fact that staff over 30 were underrepresented in the sample of staff attending health assessments, further research to understand the longer-term risk to cardiovascular health in call centre staff is required. Longitudinal studies with long follow up periods could help to assess the risks of working in call centres long-term. Future studies should ensure that older staff are adequately represented in sampling. No significant correlations

were found between diabetes or cardiovascular risk and mental health outcomes, suggesting that comorbidities with diabetes and cardiovascular disease do not need to be taken into account when developing interventions for improving mental health in call centre staff.

6.3.4 Overall measures of health

Overall health of staff was measured using overall number of symptoms and sickness absence and presenteeism. Self-reported physical symptoms over the past 30 days are summarised in Table 16 along with the correlation of symptoms with anxiety, depression and positive mental health at Time 2. Most commonly reported symptoms were headache (reported by around 63% of staff), tiredness or fatigue (57%), trouble sleeping (49%), upset stomach or nausea (39%) and backache (38%). Staff reported between zero and 16 symptoms, with a mean of 4.71 symptoms (S.D. 3.12). In order to compare the numbers of symptoms to the norms from the PSI (Spector & Jex, 1998), the three newly added items were removed and the mean and standard deviation for the original 18 items was calculated. This gave a mean of 4.09 symptoms and a standard deviation of 2.85. This is lower than the PSI norms (based on population data from the USA), which have a mean of 5.4 symptoms with a standard deviation of 3.6. This study found no evidence that call centre staff report more symptoms than those in other occupations. There was no significant correlation between the number of symptoms and mental health scores.

Table 16

Physical symptoms reported by call centre staff

Symptom	Prevalence [no. (%)]
Headache	62 (62.6%)
Tiredness or fatigue	56 (56.6%)
Trouble sleeping	48 (48.5%)
Upset stomach or nausea	39 (39.4%)
Backache	38 (38.4%)
Other musculoskeletal pain	29 (29.3%)
Acid indigestion or heartburn	21 (21.2%)
Eye strain	20 (20.2%)
Voice symptoms (loss of voice, voice strain, change in pitch)	17 (17.2%)
Diarrhoea	17 (17.1%)
Stomach cramps (Not menstrual)	16 (16.1%)
Shortness of breath	15 (15.1%)
Loss of appetite	15 (15.1%)
Hearing loss, ringing in ears	15 (15.1%)
Fever	10 (10.1%)
Constipation	10 (10.1%)
An infection	10 (10.1%)
Heart pounding when not exercising	8 (8.1%)
Dizziness	8 (8.1%)
A skin rash	8 (8.1%)
Chest pain	6 (6%)
Overall number of symptoms	**Mean 4.71** **S.D. 3.12**

Correlation of overall number of symptoms with mental health and wellbeing outcomes	
Anxiety	**0.22**
Depression	**0.08**
Positive mental health	**-0.02**
Workplace stress	**0.05**

* $p < .05$ ** $p < .01$ *** $p < .001$

The number of periods of sickness absence and presenteeism were measured within the longitudinal study of mental health. Frequency of self-reported sickness absence and presenteeism is summarised in Table 17.

Table 17

Sickness absence and presenteeism

Outcome	Time 1	Time 2	Time 3	Time 4
Sickness absence				
No sickness absence	190 (48.3%)	163 (42.2%)	149 (54.2%)	113 (45.7%)
Some sickness absence (1-2 periods)	165 (42.0%)	177 (45.9%)	92 (33.5%)	96 (38.9%)
High sickness absence (3 periods +)	38 (9.7%)	46 (11.9%)	33 (12.0%)	38 (15.4%)
Presenteeism				
No presenteeism	167 (48.0%)	125 (35.9%)	81 (29.7%)	70 (28.3%)
Some presenteeism (1-3 times)	130 (37.4%)	155 (44.5%)	153 (56.0%)	130 (52.6%)
High presenteeism (4 times +)	51 (14.7%)	68 (19.5%)	39 (14.3%)	47 (19.0%)

The proportion of staff reporting high levels of sickness absence increased over the period of the research, from less than 10% at Time 1 to more than 15% at Time 4. The largest increase was seen at Time 4. Sickness absence for the government agency studies within this research was higher than the average for the wider Civil Service, suggesting poor levels of overall health (Cabinet Office, 2021). This finding is in line with data from the Office for National Statistics which reported that, in 2017, call centre staff lost an average of 3.7% of working hours per person to sickness, in comparison to a UK average of 1.9% (ONS, 2018; 2021). In addition, those reporting some presenteeism tended to increase over the time points and the proportion of staff reporting no presenteeism fell from 48% at Time 1 to around 28% at Time 4. This could suggest that the proportion of staff experiencing poor health tended to increase over the period of the research as work stress increased. However, the picture was complicated, with the proportion of staff reporting some sickness absence and the proportion reporting high presenteeism being more variable over time. In the current study, presenteeism prevalence within the previous year ranged from 52% to 72%. Population estimates of presenteeism vary widely. A systematic review of studies of

presenteeism found that in non-healthcare settings, presenteeism estimates

ranged from 35% to 88.6% (Webster et al., 2019). There is some evidence that

prevalence of presenteeism varies between cultures (Lu et al., 2013) and,

therefore, an estimate of presenteeism across industries in the UK is required, in

order to make meaningful population comparisons. While the CIPD annual survey

of health and wellbeing (2021) reports levels of presenteeism across a range of

UK workplaces, this is measured at an organisational rather than an individual

level. Most organisations (89%) reported observing presenteeism within their

organisation, although the prevalence among individuals is currently unknown.

Correlations between sickness absence and presenteeism and mental health

outcomes were calculated and are reported in Table 18.

Table 18

Correlation of sickness absence and presenteeism with mental health outcomes

Outcome	Sickness absence				Presenteeism			
	Time 1	Time 2	Time 3	Time 4	Time 1	Time 2	Time 3	Time 4
Anxiety	0.15**	0.06	0.18**	0.19**	0.11*	0.17**	0.23**	0.32**
Depression	0.17**	0.18**	-0.02	0.18**	0.08	0.17**	0.31**	0.35**
Positive mental health	-0.13*	-0.05	0.03	-0.21**	-0.04	-0.13	-0.31***	-0.41***
Workplace stress	0.08	0.09	0.19**	0.12	0.28**	0.34**	0.24**	0.34**

* p<.05 ** p<.01 ***p<.001

At most time points, there was a small positive correlation between sickness

absence and both anxiety and depression. The correlation between presenteeism

and both anxiety and depression increased over time, with very small correlations

at Time 1, increasing to correlations of more than 0.3 by time 4. The relationship of

sickness absence and presenteeism with positive mental health also changed over

time, with larger negative correlations at Time 4, as well as Time 3 for presenteeism.

The number of symptoms reported by staff was slightly lower than reference values, although the average age of employees who contributed to these reference values was not clear in reporting and findings were based on studies from the USA. Therefore, it is not clear to what extent demographic differences in the current sample contributed to this difference. There is a need for norms to be developed for other countries and demographic groups in order to make meaningful comparisons within studies outside the USA. The overall number of physical symptoms was not significantly correlated with mental health outcomes, suggesting that mental health interventions may not affect the number of physical symptoms experienced by call centre staff.

High levels of sickness absence were reported by call centre staff and a majority reported presenteeism over the previous 12 months. This suggests that call centre staff may experience poor health in comparison to the general population. The increasing size of the correlation of both sickness absence and presenteeism with mental health outcomes over time implies that mental health related absence and presenteeism were increasing problems within the call centre. Mental health conditions are the third most common reason for absence in the UK behind minor illnesses and musculoskeletal problems (ONS, 2021), which suggests that interventions for mental health may have a positive impact on overall levels of sickness absence and presenteeism.

6.4 Key findings and conclusions

6.4.1 Summary of key findings

This chapter aimed to address two goals: 1) to assess levels of physical health and health behaviours in call centre staff, in order to identify their physical health needs; and 2) to explore the extent to which physical health outcomes correlate with mental health outcomes, in order to assess the extent to which physical health needs should be addressed alongside mental health needs. In relation to the first goal, the study found evidence of a number of physical health risks to staff including high levels of obesity, low levels of physical activity and high levels of sedentary behaviour, high risk of health problems related to alcohol use, a substantial proportion of staff who are at increased risk of cardiovascular disease, high levels of sickness absence and increases in presenteeism. While the sedentary nature of call centre work has previously been identified as a risk (Thorp et al., 2012), findings from this study suggest that call centre staff are at risk of a much wider range of physical health problems. Future research could look at these risks longitudinally, in order to assess the impact of working within call centres on physical health, particularly for staff working in these environments over many years. In relation to the second goal, small to medium sized correlations were found with sickness absence and presenteeism, but overall there was little evidence that mental health was related to specific physical health outcomes in call centre staff.

This was the first study to assess a wide range of physical risks to call centre staff and investigate comorbidities, and as such, adds to our understanding of the wider

health impacts of working in a call centre. The findings in this chapter have some important implications for intervention:

- The correlations between mental health, sickness absence and presenteeism suggest that intervening to improve mental health of call centre staff may have a positive impact on levels of sickness absence and presenteeism. Call centre managers should take note of this and provide appropriate interventions, in line with the recommendations set out in Section 7.5.2 of this thesis (pages 249-253).

- The range of physical health risks identified in these findings is of concern, and call centre managers should ensure that appropriate support is in place, including primary health promotion interventions and secondary and tertiary interventions for staff experiencing physical health problems. The impact of the call centre environment on physical health should be considered, both in health and safety risk assessments and in future research.

- There does not appear to be a need to address specific comorbidities with physical health when planning mental health interventions for staff within the call centre. This suggests that physical and mental health interventions should be planned separately and the impact of any comorbidities considered on a case by case basis.

6.4.2 Conclusions and next steps

The findings from this chapter suggest that staff in the call centre are at high risk of a wide range of physical health issues and, therefore, would benefit from health

promotion interventions, including promotion of physical activity and healthy eating and interventions to reduce harmful alcohol use. As no specific comorbitiies between physical and mental health were identified, it does not appear that interventions need to take into account any specific comorbidities with physical health. However, given that comorbid physical and mental health conditions are likely to result in greater disability (WHO, 2013), assessment of comorbidities is likely to still be important on an individual level. In the next chapter, the final study (Study 4) will evaluate the support that was available to staff at the call centre. Mental health needs identified from the first three studies will be summarised and compared to the findings on the available support from Study 4, allowing unmet needs to be established.

Chapter 7: Evaluation of existing employee support for mental health

7.1 Introduction

This chapter addresses the fifth research objective to:

- Evaluate the mental health support and resources currently provided for call centre staff.

The objective is addressed in the current chapter by Study 4 which was an assessment of the existing support within the call centre, using an online questionnaire, and by comparing the findings of Study 4 to the mental health needs identified across the other three studies of the thesis (Chapters 4 to 6). Three goals were identified for this chapter in order to meet the research objective: 1) to summarise the mental health needs of call centre staff identified in studies 1 to 3, 2) to evaluate the current support provided by the call centre by considering staff awareness, acceptability, access, current use and usefulness of the support on offer, and 3) to identify unmet mental health needs and make recommendations for improving the support offered to call centre staff. Section 7.2 addresses the first goal of the Chapter by summarising the mental health needs identified in the first three studies which should be addressed by the support provided by the call centre. Section 7.3 outlines the methods for Study 4. The second goal of the chapter is addressed in Section 7.4, where the results of Study 4, including the levels of awareness, acceptability, access, use and usefulness of the existing support are set out and discussed. The third goal of the chapter is addressed in the last part of Section 7.4, which identifies unmet mental health needs and in Section 7.5, where conclusions are drawn and a number of recommendations for improving support are set out.

7.2 Summary of identified mental health needs

The first three studies of this thesis (Chapters 4 to 6) have identified a number of

mental health needs in call centre staff which are likely to require support. These

are summarised in Table 19 along with their implications for intervention. The

needs will also be discussed later in this chapter in comparison to the findings

from the evaluation of existing support to help identify unmet mental health needs.

Table 19
Key findings from Studies 1 to 3 and implications for intervention

Key findings	Implication for interventions
Individual differences and workplace factors both contribute to mental health outcomes	A comprehensive package of interventions, addressing both individual and workplace factors is required
Individual differences (coping styles and positive personality) were the strongest predictors of mental health outcomes	Individual secondary and tertiary interventions which develop coping strategies to manage stress and regulate emotions are advised
Job demands and resources predict workplace stress, which in turn predicts mental health outcomes	Primary interventions to address stress by targeting job demands and resources would be beneficial
Commonly experienced demands are the fast pace of work and lack of breaks, and dealing with difficult customers. Commonly experienced resources are manager and colleague support	Primary interventions could target commonly experienced demands and support commonly experienced resources
Additional support needs identified by staff were adequate breaks from calls and additional training to help call handlers deal with difficult customers	Interventions should include support requirements identified by staff
No significant comorbidities of mental health with physical health or health behaviours were identified	Comorbidities should be addressed in intervention on a case-by-case basis

Findings from the first three studies of this thesis suggest that call centre staff are

at high risk of common mental illnesses and are likely to benefit from mental health

interventions. These studies have also identified that both individual differences

and workplace factors contribute to mental health outcomes. This suggests that a

comprehensive package of interventions, addressing both of these types of factors, may be required. The strongest predictors of mental health outcomes were individual differences, which suggests that individual interventions which develop the skills and abilities to manage stress and regulate emotions, may be warranted. Previous research has suggested that CBT-based interventions are one of the most effective workplace interventions for mental health (e.g., Joyce et al., 2016), and this type of intervention may help build the required stress and emotion management skills. Job stress was identified as another important target for intervention, with analysis of daily diaries in Study 2 suggesting that all staff, regardless of their level of mental health, experience higher stress in response to increases in job demands and reductions in available resources. This implies that primary interventions to address stress by targeting job demands and resources experienced by all staff may be beneficial. These could target the most impactful job demands and resources which were identified in Study 2 (Chapter 5), including addressing the fast pace of work and lack of breaks, as well as stress and distress associated with dealing with difficult customers and by encouraging greater manager and colleague support. Using a participatory approach would allow staff involvement in and ownership of the intervention (Holman et al., 2010). Resources also had some direct effects and interventions targeting job resources, particularly control, have been previously used successfully in call centre settings, with positive impacts on mental health outcomes being mediated by increased employee control (e.g., Bond, et al., 2008). Additional support needs identified by staff in Study 5 (Chapter 5) included ensuring adequate breaks from calls and additional training to help call handlers deal with difficult customers. No significant comorbidities with physical health or health behaviours were identified, suggesting

that when planning mental health interventions, call centres should consider comorbidities on a case-by-case basis, rather than taking into account any specific comorbidities as standard.

7.3 Methods

7.3.1 Design

This study used a cross-sectional survey design. In order to make recommendations about the additional interventions which may be required to address call centre staff's mental health needs, a review of the existing support services and facilities provided by the call centre was conducted in order to identify met and unmet needs. Mattke et al. (2013) identified five facilitators of successful employee wellness programmes:

1. Effective communication strategies to promote the service to ensure that employees are aware that a service exists and the types of problem that it can assist with.

2. Accessibility of the service, ensuring that employees know how to access the service and are able to make use of the services offered.

3. Senior managers need to consider that their employees' health and wellbeing is an organisational priority and create a culture which is supportive of health and wellbeing. Managerial support may help increase the acceptability of interventions to staff, that is, the extent to which staff view the intervention as appropriate and their likelihood of therefore accepting the support offered (Sekhon et al., 2017), as well as encouraging greater take up of services.

4. Organisations should expand their organisational wellness programme offer by using existing resources and relationships. However, this was linked to the use of employer-provided health insurance in the USA, where improved employee health may reduce employer costs on health plans (Chapman, 2012) and this finding may not be generalisable to the UK context where healthcare is not funded via the employer.

5. Organisations with successful wellness programmes should elicit feedback from staff to ensure that the services met the needs of users. Therefore, employees who have used the service should view its support as useful.

The current evaluation of support at the call centre was based on Mattke et al.'s facilitators of successful employee wellness programmes, excluding number four, which was not deemed to be relevant in the UK context. Staff awareness of services and staff awareness of the support offered was used to assess the effectiveness of communication strategies in the call centre; employees were asked for their feedback on the accessibility of the services; staff views on the acceptability of the services and actual take-up were used in order to assess whether there is a culture which is supportive of health and wellbeing; staff perceptions on the usefulness of the services were used to assess whether the services met the needs of users; and, finally, take up of the services was used as an overall measure of success.

A survey on support services and facilities was developed in order to allow all staff to express their views and for levels of awareness of, and use of, services to be estimated across the call centre. The development of this survey required an

understanding of the support available within the call centre so that the evaluation could be tailored to the context. It was, therefore, developed in conjunction with the call centre (described in more detail in the materials section), based around the indicators of usefulness described. The questionnaire included open questions on barriers to accessing services and additional support required and an option to provide any other comments. This was followed up by the inclusion of some questions on staff support in interviews as part of Study 2 (methods are reported in Chapter 3 but the relevant findings are reported in the current chapter). This allowed the employees to describe their experiences of support services and explain the quantitative findings in more depth.

7.3.2 Participants

All call centre employees (941 at the time of the study) were invited to complete the online survey. Email invitations were sent to all employees with an information sheet attached (see Appendix 11) and a link to the electronic survey. The inclusion criteria were being an employee of the call centre at the time of the study. Exclusion criteria were being absent from work at the time of the study (e.g., those taking annual

Table 20

Demographic information

Demographic	Participants	Call centre	Demographic	Participants	Call centre
Responses (response rate)	234 (25%)	941	**Gender**		
			Female	144 (61.5%)	573 (60.9%)
			Male	89 (38%)	368 (39.1%)
Age			**Length of service**		
16-24	29 (12.4%)	186 (19.8%)	Less than a year	28 (12%)	168 (17.9%)
25-34	107 (45.7%)	372 (39.5%)	1-3 years	73 (31.2%)	284 (30.2%)
35-44	44 (18.8%)	184 (19.6%)	3-5 years	23 (9.8%)	91 (9.7%)
45-54	36 (15.4%)	148 (15.7%)	5-7 years	23 (9.8%)	96 (10.2%)
55-64	15 (6.4%)	49 (5.2%)	7-10 years	43 (18.4%)	186 (19.8%)
65+	1 (0.4%)	2 (0.2%)	More than 10 years	30 (12.8%)	116 (12.3%)
Job grade			**Working pattern**		
AA/AO	192 (82.2%)	815 (86.6%)	Full-time	175 (74.8%)	749 (79.6%)
EO	29 (12.4%)	94 (10%)	Part-time	43 (18.4%)	192 (20.4%)
HEO and above	13 (5.6%)	32 (3.4%)			
Area of work			**Education**		
Call area 1	96 (41%)	411 (43.7%)	Vocational	54 (23.1%)	-
Call area 2	115 (49.1%)	415 (44.1%)	GCSE/O level	57 (24.4%)	
Support	23 (9.8%)	115 (12.2%)	AS/A level	52 (22.2%)	
			Undergraduate	33 (14.1%)	
			Postgraduate	16 (6.8%)	
			Professional qualification	16 (6.8%)	
			Other	5 (2.1%)	

leave, sickness absence or maternity leave at the time of the study were not able to access email or the questionnaire which was hosted on the organisational intranet). A total of 234 responses were received (25%). Demographic information is included in Table 20. The sample was fairly representative of the call centre in terms of gender and age, although 25-34 year olds appeared to be slightly overrepresented in the sample compared to the call centre, whereas the under 25 year olds were slightly underrepresented. The sample was broadly representative in terms of job grade, area of work, working pattern and length of service although those in higher grades and those working in the vehicles area appeared to be slightly overrepresented in the sample compared to the call centre as a whole.

7.3.3 Materials

The survey was designed specifically for this study and was tailored for the context. It is described here and included in full in Appendix 12. Based upon Mattke et al.'s (2013) five facilitators of successful employee wellness programmes, the survey was designed to assess five areas of service success: awareness, accessibility, acceptability, use and usefulness. The services to be reviewed were agreed in conjunction with the call centre wellbeing support managers, who advised on the support that was available to staff at that time. The services available for review were identified as the occupational health department, the employee assistance programme, the stress assessment process and the Expert Patient and Looking After Me programmes, which provide support for individuals with chronic conditions and for carers. The study aimed to assess the five identified areas in as short a time as possible since the time available to complete the survey was limited. For each service identified, an initial question

was included which asked about awareness of the service. Where employees indicated that they were aware of the service, a further question was asked. For those who were not aware of the service, this question was not included since it was not relevant. The second question aimed to assess awareness of the type of support offered, accessibility, acceptability, use and usefulness. This was done in order to limit the length of the survey. The question was designed using a multiple response question format so that participants could tick as many statements as applied to them. An example of a question with responses is given below:

Please indicate your views on the Occupational Health service. Tick all that apply.

I know what kind of support this service offers

I know how to access this service

I would use this service if needed in future

I would not use this service even if I needed the type of support it offers

I have used this service previously and it was useful

I have used this service previously and it was not useful

The first response relates to awareness of the type of support available. The second relates to accessibility. The third and fourth statements relate to acceptability whilst the final two relate to use and usefulness. Allowing employees to choose as many responses as apply to them within one question enabled a large amount of information to be gathered within a short questionnaire.

The gym on the main site and the canteen at the call centre were identified as the main facilities which were available to support health and wellbeing. Two questions were included regarding the gym. The first assessed the extent of staff use of the gym, asking whether staff used the gym regularly, occasionally or not at all. The second asked about barriers to use. Response options were based on barriers identified in previous research (Edmunds et al., 2013) and included employee attitudes and interest in physical activity, lack of time and poor facilities. Following piloting of the questionnaire, as the gym was not on-site and incurred a cost, difficulty of accessing the gym and cost were added as additional barriers. In order to capture barriers not already identified, respondents were able to add their own barriers in an 'other' category, with an open ended response option. Four questions were included about the food at the canteen. The first asked about frequency of use and ranged from 'daily or most days' to 'never'. The second and third questions related to making healthy choices at the canteen. The first of these assessed the ease of making healthy choices and used a five point likert scale (from very easy to very difficult) in addition to a 'don't know' option. The second assessed satisfaction with the healthy choices available and also used a five point likert scale (from very good to very poor) in addition to a 'don't know' option.

Four general questions were also included in the questionnaire. The first related to barriers to accessing services or resources. This question aimed to further understand any issues with accessibility and acceptability of services and used a free text response option. The second asked staff to rate how good the support available for health and wellbeing was overall using a five point likert scale (from very good to very poor) in addition to a 'don't know' option. The third asked

whether any additional support was needed in order to identify unmet needs, using a free text response option. A fourth asked for any additional comments in order to identify any issues which had not been anticipated by the researcher. The questionnaire was piloted with two members of staff at the call centre. As a result of piloting, two response options were added to the question on barriers to gym use. The question on additional support for health and wellbeing was slightly reworded for clarity. No questions were added or deleted.

7.3.4 Procedure

All employees within the call centre were invited to complete the questionnaire by email. The email invitation included an information sheet covering the purpose of the study, how it would be completed and information about confidentiality (see Appendix 11). A link to the questionnaire was included in the email. The questionnaire was administered electronically via the organisation's intranet. Consent was taken electronically prior to the study being launched. The questionnaire was available to complete for a two week period in June 2014. The questionnaire took approximately 10 minutes to complete and employees were asked to complete it in their own time.

7.3.5 Ethical considerations

Ethical approval was gained from Cardiff Metropolitan University's School of Sport Ethics Committee. Arrangements for maintaining the confidentiality of employees prior to the anonymisation of the data were agreed with the call centre managers and HR department at the executive agency. The participant information sheet (Appendix 11) addressed concerns that participants may have had about

anonymity due to the study taking place at work. Staff numbers were used in order to identify individuals, but data was anonymised prior to it leaving the call centre site in the same way as for the longitudinal study (see Section 4.2.5 for details of how data was anonymised). Therefore, no identifiable information was held with the data. The information sheet contained information about support available to staff who had concerns about issues at work or their health.

7.3.6 Analysis

Quantitative findings were summarised into descriptive statistics and compared to the needs identified in the other studies. Qualitative findings from interviews were analysed as described in Chapter 5. For open ended questions, an inductive thematic analysis was used to group responses into themes. Since question responses were typically short (one or two sentences), a simplified version of the thematic analysis process described in Chapter 5 was used. Comments were individually coded and organised into themes using Microsoft Excel. Where comments included multiple codes, they were included in more than one theme as relevant. Comments and themes were compared to one another in order to refine the themes and ensure that they were coherent, that each theme was independently identifiable and there was no excessive overlap. Themes from interviews and open ended survey questions were compared and combined into one coherent set of themes. Themes are presented in the results section with summary text and quotations.

7.4 Results and Discussion

7.4.1 Awareness and accessibility of support services

Call centre staff were asked about their awareness of the services on offer, the support each service delivered and how to access the support and facilities offered by the call centre. Findings from the online survey are summarised in Table 20. Awareness of the existence of the occupational health department was high, with 207 employees (89%) being aware of its existence, 142 (61%) staff knowing about the services it offers and 129 (55%) being aware of how to access it. However, awareness of other services was generally low, with 93 (40%) of staff being aware of the employee assistance programme, 79 (34%) being aware of the use of stress assessments, and 26 (14%) being aware of the 'Expert Patient Programme' for those with chronic illnesses and 'Looking After Me' intervention for carers.

Table 21

Awareness and accessibility of support services

Service	Aware of service		Aware of support offered		Know how to access service	
	N	%	N	%	N	%
Occupational Health	207	88.5	142	60.7	129	55.1
Employee Assistance Programme	93	39.7	76	32.5	70	29.9
Stress Assessment	79	33.8	66	28.2	58	24.8
Expert Patient/ Looking After Me Programme	33	14.1	26	11.1	21	9

Staff identified some key barriers to accessing support services in response to an open ended question, which most commonly included a lack of awareness of the services available and services being perceived as inaccessible since most services were not based at the call centre site. Comments and interview discussions on staff awareness of services suggested that information on the

services available, and how to access them, was not perceived to be easily obtainable. It was suggested that improvements could be made to the accessibility of information via the intranet, with suggestions that it "should be easier to navigate the intranet to avoid searching and not finding the relevant services available".[1] The processes for referral to the available services were sometimes reported to be unclear, which made it difficult for staff to access the support they needed:

> With OH you were advised it [a referral] had to be done through your manager, then [under a previous policy] you could do it yourself and now it is back to manager referral. There doesn't seem to be any clear guidelines on how to be referred for a stress assessment, OH etc. I have personally experienced barriers in this process, which has actually impacted on my medical condition.[1]

In addition to the lack of awareness and guidance, the location of services at the main office of the agency was perceived to be a barrier to accessing the services, both in terms of distance and of employees' familiarity with the site:

> I'm based at [the call centre site], never been up to the main site where everything is, so I wouldn't have a clue where to go or park, this then puts me off from using the facilities up there.[1]

Mattke et al. (2013) highlighted that coherent, consistent and timely information and accessibility of services were key to their utilisation. The call centre health and

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[1] These quotations are taken from responses to an open-ended survey question, which asked about barriers to accessing support. Responses to this question were analysed in combination with qualitative data from interviews on the same subject, and common themes were identified.

wellbeing team were responsible for communications about the support services. Their communication strategy was developed centrally by the organisation and was based around national health and wellbeing campaigns and events, rather than regularly promoting internal support services. Mattke et al.'s findings suggest that developing a bespoke communication strategy for the call centre around support services and how to access them, and placing facilities on-site or nearby, could help to increase awareness and usage of support.

7.4.2 Acceptability, use and usefulness of support services

Call centre staff were asked about their perceptions of the acceptability of the support on offer, whether they had used the services available services and, if so, whether these were useful. Findings from the online survey are summarised in Table 21. The percentage of staff rating services as acceptable ranged between 59 percent of those who were aware of the service for the Employee Assistance Programme and 92 percent of those who were aware of the service for the Stress Assessment.

Table 22

Acceptability, use and usefulness of support services

Support Service	Those aware of service who would access		Staff who used service		Those who used service who felt service was useful	
	N	%	N	%	N	%
Occupational Health	137	66.2	81	34.6	66	81.5
Employee Assistance Programme	55	59.1	20	8.5	13	65
Stress Assessment	73	92.4	19	8.1	13	68.4
Expert Patient/ Looking After Me Programme	22	66.7	5	2.1	4	80

When asked about use of the support services, occupational health was the service most frequently reported to be used by staff, with over a third of employees reporting that they had used the service. The other support services were less widely used with 20 employees (9% of respondents) having used the employee assistance programme, 19 (8%) having had a stress assessment and 5 (2%) having accessed the 'Expert Patient' or 'Looking After Me' programmes. The number of staff utilising the support services available appears to be relatively low in comparison to those reporting moderate to severe symptoms of depression (up to 37%) and anxiety (up to 44%). Whilst occupational health usage was higher than for the other support services, this related to overall usage rather than that specifically for mental health issues. Use of the employee assistance programme, which includes access to counselling, and of stress assessments, which allow job demands to be identified and mitigated, appeared to be particularly low. This may indicate that staff with mental health needs are not accessing workplace support services to address their needs.

Comments on barriers to accessing support suggested that there was a perceived lack of organisational support for accessing services. In particular, there was a perception that there were "limitations on accessing services due to telephone demand"[2], with a lack of time for staff to access support services due to the pressure of work. Some staff reported that business needs were often prioritised above staff health and wellbeing and that staff "never get any time or instruction to access the various services and [are] always told the business needs come first".[2]

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[2] These quotations are taken from responses to an open-ended survey question, which asked about barriers to accessing support, and were analysed in combination with qualitative interview data.

Organisational processes for accessing support could also be a barrier, with a perception that support was only available when problems became more severe, including reports that "in order to be referred to OH [staff] have to take time off sick first"[3]. In some cases, organisational processes were seen as punitive and based on suspicion rather than supportive and could lead to reluctance among staff to access services due to concerns about the impact on their career:

> There seems to be a stigma attached to visiting OH. The stress assessment apparently impacts on your ability to move into another role for promotion or level transfer. I'm not sure how you have to act in order for it to be accepted that an employee is stressed. [There is a] lack of support as usual, it is easier to just keep under the radar rather than voice your opinion.[3]

Mattke et al. (2013) identified that a key facilitator of the success of organisational support is the organisational culture, and particularly the importance that senior managers place on their employees' health and wellbeing. Low take-up of interventions, even amongst those who are aware of the services, may be partly linked to the lack of perceived organisational support for health and wellbeing. This is discussed in more detail later in this chapter, alongside the findings on unmet mental health needs.

Those staff who did access support services generally reported finding them useful. Almost two thirds of staff (65%) rated the overall support at the call centre as 'good' or 'very good', while a quarter (25%) rated it as 'poor' or 'very poor'. Of

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[3] These quotations are taken from responses to an open-ended survey question, which asked about barriers to accessing support, and were analysed in combination with qualitative interview data.

the 81 employees who had accessed occupational health, the vast majority (82%) reported finding it useful; while around two thirds of those who had accessed the employee assistance programme or stress assessment reported finding them useful. There is surprisingly little previous research which examines the effectiveness of these types of commonly used workplace interventions for improving wellbeing. Previous research has found that employee assistance programmes are effective in reducing presenteeism, and to a less extent absenteeism. However, less is known about the impact on health and wellbeing outcomes, since they are rarely measured (Joseph et al., 2018). The lack of research evaluating the effectiveness of occupational health provision was pointed out over twenty years ago by Hulshof et al. (1999), and this issue does not appear to have been addressed in the intervening years. The current findings suggest that these services can be useful to staff, although more robust evaluations of the effectiveness of services, such as randomised controlled trials, are difficult to carry out on established services. There is a need for more in-depth evaluations of the types of interventions which are most commonly offered by employers to assess whether these resources are being targeted effectively. Given the applied nature of these interventions and the complexity of evaluating existing support, this could include process evaluations (Cox et al., 2007) and the use of mixed methods (Nielsen et al., 2010).

7.4.3 Facilities to support good mental health

There is good evidence that physical activity is an effective intervention to improve mental health (Aylett et al., 2018; Cooney et al., 2013), and there is some limited evidence that interventions to improve diet can be effective in improving

depression symptoms (Jacka et al., 2017; Parletta et al., 2019). The call centre did not provide exercise or dietary interventions, but did provide access to a gym at the main site and canteen at the call centre site. The questionnaire asked about use of the gym and barriers to accessing it, as well as use of the canteen and access to healthy food.

No respondents reported regularly using the gym and almost all (98%) reported never using it. The main barrier to using the gym was accessibility, due to it not being located at the call centre site (reported by 49% of staff). Other reasons for not accessing the gym included a lack of interest (23%), the expense involved (12%), belonging to another gym (12%), a lack of time (4%) and poor facilities (2%). The canteen was more frequently used, with 38 percent of respondents reporting using it at least once a week and another 20 percent using it at least once a month. Staff reported difficulty in accessing healthy choices in the canteen as well as poor quality of healthy options. Excluding those who selected 'don't know', 64 percent of staff reported that it was difficult or very difficult to make healthy choices in the canteen, and 63 percent reported that the quality of healthy options was poor or very poor.

There is evidence that health promotion interventions to improve diet and encourage physical activity at work can be effective at increasing activity and improving diet (e.g., Maes et al., 2012, Malik et al., 2014), and there is some evidence of their effectiveness for mental health and wellbeing outcomes (Abdin et al., 2018; Proper & van Oostrom, 2019). Health promotion interventions may, therefore, be beneficial to call centre staff, and would be likely to have benefits on

the physical health needs identified in Chapter 6 (for example, on weight and physical activity [Section 6.3.1]) as well as mental health.

7.4.4 Unmet mental health and wellbeing needs

To some extent, the services available to call centre staff appeared to be appropriate to meet their needs. The importance of individual differences in predicting mental health outcomes of call centre staff suggested that individual level interventions to develop coping strategies may be warranted. Counselling services were available to call centre staff via Occupational Health or the Employee Assistance Programme. The role of stress in mediating the relationships between job demands and resources and mental health outcomes suggested that primary interventions which address stress by targeting job demands and resources may also be beneficial to staff. The stress assessment addresses job demands which are causing most stress to an employee and makes adjustments to the job with the aim of reducing stress, although this is a secondary intervention which is only available to staff reporting very high levels of stress. These services were felt to be beneficial by staff who had used them. However, awareness and accessibility of these services is an issue, with low awareness of all services apart from occupational health and the discrepancy between proportions of staff reporting poor mental health and uptake of services suggesting that the mental health needs of staff are not being met. Given the relatively high levels of acceptability and perceived usefulness of the services, it appears that improving staff awareness and accessibility of services, as well as ensuring that staff health and wellbeing is prioritised by the organisation, would likely be beneficial in increasing uptake of services. Staff awareness could be increased by developing a

bespoke communication strategy for the call centre (Mattke et al., 2013), with information on the services available and how to access them. Strategic communications have been found to increase participation in organisational health and wellbeing interventions (e.g., Seaverson et al., 2009), with tailored, targeted and multichannel communication strategies being delivered at appropriate times having been identified as the most effective approach (Kent et al., 2016). Findings from the current study on barriers to accessing services suggest that in addition to a lack of awareness, the location of services and a lack of organisational support are the main barriers to staff accessing services. It appears that if the call centre were to provide services at the call centre site and place a greater priority on staff health and wellbeing, this may encourage greater take-up of services.

Staff were asked about additional support they would like to be offered within the call centre. The most common type of support that was perceived to be unavailable was organisational-level support for workplace stress. It was felt that the organisation could place a greater priority on health and wellbeing of staff and that greater support from managers was required:

> Better stress management [is needed] as the telephone advisor role is very stressful and this is not always recognised by management, particularly where some managers have no experience of working in the telephone advisor role themselves.[4]

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[4] This quotation is taken from responses to an open-ended survey question, which asked about additional support that was needed, and were analysed in combination with qualitative interview data.

Suggestions to improve manager support included helping managers to develop greater understanding and empathy for call handlers experiencing stress and incorporating discussions on wellbeing into monthly performance discussions, since "if someone is stressed it is better to know sooner rather than later"[5]. Mental health first aid is one intervention which has been found to be effective in prompting helping behaviour towards those with mental health problems (Morgan et al., 2018). Although this is not specifically a workplace intervention, it has been used successfully in a range of workplaces (e.g., Kitchener & Jorm, 2004; Reavley et al., 2018), and has been found to help line managers support staff showing signs of mental distress (Brandling & McKenna, 2010). Given that the intervention was developed for the general population and not specifically for the workplace, Bovopoulos et al. (2016) suggested that additional guidance on adapting the approach when using it with supervisees would be beneficial.

Another suggestion to improve support was to provide more frequent coaching sessions from managers:

> Myself, I have not been coached for months and neither have members of my team. This would help our wellbeing in work as we would feel that we are being supported.[6]

Boini et al. (2013) found that lower supervisor control and regular staff debriefing with line managers were associated with lower effort-reward imbalance in call

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[5] This quotation is taken from responses to an open-ended survey question, which asked about additional support that was needed, and were analysed in combination with qualitative interview data.

[6] This quotation is taken from responses to an interview question, which asked about additional support that was needed, and were analysed in combination with qualitative survey data.

centre staff. A meta-analysis of interventions for line managers to support mental health (Gayed et al., 2018) found that training for managers resulted in increased knowledge about mental health, reduced stigmatising attitudes and increased supportive behaviours, although the impact on employee's symptoms of mental illness is currently unclear. This suggests that manager training could make a significant difference to the quality of support for staff, although staff experiencing mental illnesses may require additional intervention in order to reduce their symptoms.

It was also suggested that organisational support could aim to address job demands and working conditions and processes which were felt to be detrimental to staff mental health. Previous research has suggested that One key area where staff felt a more supportive approach was required was in relation to sickness absence processes, which were felt to be punitive and to add to employee stress, since "added pressure to return, or lose your job, from sickness can result in people returning before they are ready and adds extra unnecessary stress to the recovery process"[7]. Staff reported feeling that punitive sickness processes could make them feel that they were not trusted by management and that there was an assumption that sickness absence was not genuine. As a result, this could lead staff to be reluctant to disclose or seek help for their health and wellbeing:

> Punishing people who take sick by refusing them development
> opportunities, etc., suggests that the contact centre believes all sick
> leave to be false, which discourages you from wanting to seek support

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[7] This quotation is taken from responses to an open-ended survey question, which asked about additional support that was needed, and were analysed in combination with qualitative interview data.

for any type of medical issue, as presumably this would also be seen as a lie to avoid work.[8]

Munir et al. (2008) found that organisational sickness management policies were associated with health risks for employees with chronic health conditions, since they led to staff attending work while unwell (presenteeism) in order to avoid disciplinary action, while support services were often only available to staff taking long-term absence. This meant that employees may not be able to access the support they need due to not meeting the criteria for referral. In other cases, punitive policies could lead to fears about job loss or stigma, leading staff to be reluctant to disclose their illness to their employer. There is some evidence that presenteeism is a risk factor for future poor health and sickness absence (Bergström et al., 2009; Taloyan et al., 2012), which suggests that more supportive sickness absence policies may be beneficial in supporting staff health and retention in the longer term. A change to the organisational support for health and wellbeing, including policy change, is likely to require a wider change in the organisational culture around health and wellbeing. Staff suggested that the prevailing culture within the call centre was one of suspicion and punishment. A number of studies have highlighted the importance of organisations developing a culture which is supportive of employee health and wellbeing in order to ensure the effectiveness of their interventions (e.g., Goetzel et al., 2014; Kent et al., 2016; Payne et al., 2018). This is likely to require a change in the approach of senior leaders to supporting staff health and wellbeing (Kent et al., 2016).

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[8] This quotation is taken from responses to an open-ended survey question, which asked about additional support that was needed, and were analysed in combination with qualitative interview data.

Other suggested improvements from staff included improving opportunities to take leave at short notice. Difficulties with taking leave were felt to have a negative impact on wellbeing and could lead to stress-related absence from work, with a suggestion that staff would like "more consideration when refusing to allow holidays when we need them and prevent people going off sick with stress, etc."[9] It was felt that greater opportunity for staff to move into different types of work or to apply for other jobs within the organisation, including opportunities for promotion, would be beneficial, "because [staff] are so busy, which is very stressful, the chance to move to a different role/site would keep morale up and motivate people to perform better"[9]. A number of staff also suggested that they would like improved access to support for increasing activity and healthy eating, including better gym access, availability of healthy food and increasing opportunities to move at work, such as "advice on desk exercising and other ways of moving around whilst working at a desk".[9]

The support services available within the call centre were mainly reactive and targeted at the individual level. Whilst the stress assessment addressed job demands, it only did so for the individual involved in a reactive way. Given the high levels of anxiety and depression identified in the call centre and their association with work stress, preventative interventions which address common job demands across the whole organisation may have a greater impact than the current individual-level interventions which only target those individuals who are most severely affected. LaMontagne et al. (2014) have argued that an integrated approach to intervention for mental health at work could help the prevention and

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[9] These quotations are taken from responses to an open-ended survey question, which asked about additional support that was needed, and were analysed in combination with qualitative interview data.

reduction of mental illnesses at work. They proposed that this integrated approach could comprise three strands: first, to protect mental health by addressing job demands, either by changing the work environment or increasing employee coping; secondly, to promote mental health by increasing work resources and the strengths of employees; and, thirdly, to address mental illness using a medical approach and by encouraging a supportive workplace culture. These themes are consistent with the findings of this study, which suggest that individual interventions to support coping and increase the strengths of employees, as well as organisational level interventions to address job demands, resources and the wider work environment would benefit staff. LaMontagne et al. suggested that this should include both proactive primary interventions targeting all staff, and secondary and tertiary interventions to address symptoms for staff experiencing mental illness.

7.5 Key findings and recommendations for improving mental health support

7.5.1 Summary of key findings

The current chapter aimed to address 3 goals: 1) to summarise the mental health needs of call centre staff identified in studies 1 to 3; 2) to evaluate the current support provided by the call centre by considering staff awareness, acceptability, access, current use and usefulness of the support on offer; and 3) to identify unmet mental health needs and make recommendations for improving the support offered to call centre staff. In relation to the first goal, Study 1 highlighted that individual differences (positive personality and negative coping styles) were strongly predictive of mental health outcomes, suggesting that individual level interventions to teach coping strategies relating to stress and emotion

management would be beneficial. Study 2 found that job demands and resources impacted on stress and mental health-related outcomes in all staff, regardless of whether they were high or low in mental health, and identified a number of demands and resources which staff felt were impacting their mental health. This suggests that primary interventions to reduce stress by addressing relevant job demands and resources could be beneficial to all staff in the call centre and that demands and resources which staff felt were most impactful could be targeted in these interventions. Study 3 found that staff in the call centre had a range of physical health needs, but found no evidence of significant comorbidities with mental health, suggesting that these physical needs do not need to be considered within mental health interventions as standard.

In relation to the second goal of this chapter, the evaluation of support within the call centre found that a range of support services were available to staff, however, these were not widely utilised. Findings suggested that there was a lack of awareness of services, suggesting that a strategic communication plan to improve employee awareness is required. Staff viewed services as difficult to access, due to them not being offered at the call centre site as well as due to a perceived lack of organisational support for accessing services, including difficulty taking time away from telephones to attend appointments and limitations on who was able to access support services. This suggests that there is a need to improve the accessibility of services by making appointments available at the call centre site and by reviewing organisational policies to ensure that staff are able to access the support they require. Organisational processes were seen as punitive, and staff perceived that there was a stigma associated with attending support services. This

suggests that a wider change to the organisational culture is required, which previous research has suggested is an important element in ensuring that organisational health and wellbeing interventions are effective (e.g., Goetzel et al., 2014). In terms of facilities to support mental health and wellbeing more broadly, they were generally seen as lacking, with the gym facilities being seen as inaccessible since they were not located on the call centre site, and healthy food being both difficult to access and of poor quality in the on-site canteen. This suggests that improved health-related facilities on the call centre site may be beneficial to staff health and wellbeing and may help to support mental health as well as address some of the physical health needs identified in Chapter 6 (e.g., obesity and lack of physical activity).

In relation to the third goal of this chapter, a number of unmet mental health needs were identified. While individual level interventions to increase coping skills were available via occupational health and the employee assistance programme, a lack of awareness and poor accessibility meant that these interventions were not widely utilised. As such, the needs of many staff, who would benefit from these types of intervention, remained unmet. Existing support was largely reactive and provided at an individual level. Organisational-level support for stress was seen as a gap in provision by staff. It was suggested that this should include greater support for mental health from line managers. There was a perception that existing organisational policies were punitive, with staff suggesting that there was a stigma associated with accessing support and that sickness was a barrier to career progression.

This study is the first in-depth assessment of the health and wellbeing support available to call centre staff. The findings have a number of practical implications for call centres in relation to the interventions they provide:

- As an integral part of support provision, call centre managers should consider how transparent and accessible their services are to staff, which should inform communication and location planning as well as policies around accessing support services during working hours.

- Call centre managers should ensure that their package of interventions includes organisational-level support for stress, including manager support for mental health, which may necessitate additional training.

- Staff suggested that wider changes to the organisational culture were required, including a review of organisational policies to ensure a more supportive approach to sickness absence. This implies that senior leaders need to prioritise staff health and wellbeing and adopt a supportive approach, setting the tone for the wider organisational culture.

Recommendations for improving mental health support in the call centre are summarised in the next section.

7.5.2 Recommendations for improving mental health support in the call centre

Recommendations for improving mental health support in the call centre were developed based on findings across the four studies in this thesis and previous research. Recommendations relate to staff awareness, accessibility and acceptability of services and addressing the unmet needs of staff. With the

exception of the occupational health service, staff awareness of the support available to them was low. In addition, staff reported that they were not always clear on referral criteria or routes to support services. This suggests that more effective communication about the support available to staff is required. Previous research has found that a strategic and targeted approach to communication is most effective and can increase uptake of services (Kent et al., 2016; Seaverson et al., 2009). In a study of health messages to NHS staff, Ruck et al. (2017) found that employees felt it was important to receive health information in a variety of ways, with web-based information, email and text message being rated by staff as the most useful ways of receiving information. Some staff suggested that this information was more effective when combined with face-to-face communication, although this varied across individuals. This suggests that a communication strategy should incorporate a variety of channels in order to increase its effectiveness. These findings lead to the first recommendation for improving mental health support in the call centre:

- Develop a bespoke communication strategy relating to support services in the call centre and how to access them, utilising a variety of communication channels.

A number of barriers were identified to accessing services, including services not being provided at the call centre site and a perception that referral criteria were overly narrow. This suggests that accessibility of services could be improved, which informs the second recommendation for improving support in the call centre to:

- Increase the accessibility of support services by providing support on the call centre site and ensuring referral criteria are sufficiently broad for staff to access the support they need

Ratings of intervention acceptability were high, with the majority of staff reporting that they would be willing to access the available services if needed. However, there was a perceived lack of organisational support for staff wellbeing, particularly relating to stress. Some staff reported feeling that there was a stigma around accessing services, and that organisational policies tended to be punitive and to prioritise organisational needs over staff health and wellbeing. Staff suggested that they would benefit from increased support from managers as well as for more supportive organisational policies. Previous research has highlighted the importance of a supportive organisational culture in facilitating effective organisational health and wellbeing interventions (e.g., Goetzel et al., 2014). Kent et al. (2016) found that important aspects of a supportive organisational culture are: creating a physical environment which is supportive of employee health (e.g., fitness facilities and healthy eating options); a social environment which supports positive health messages and behaviours, including modelling of healthy behaviours and promotion of health messages from senior leaders and support from line managers; and involvement of staff in decisions around health interventions. This leads to the third recommendation for improving support for mental health in the call centre to:

- Create an organisational culture which is supportive of mental health, including reviewing organisational policies to ensure they facilitate access to support and support health rather than punish illness; training

managers to support staff mental health; improving facilities to support

health including fitness facilities and healthy eating options; and taking

a more proactive approach to mental health promotion, underpinned by

support from senior leaders.

Study 2 (Chapter 5) found that daily job demands and resources impacted stress

and mood for all staff, and not just those who report poor mental health. Staff also

identified a number of job demands and resources which were felt to impact on

their mental health. This informs the fourth recommendation to:

- Provide organisational level interventions which target stress via

    changes to job demands and resources and consider targeting the most

    impactful job demands and resources identified by staff.

The most impactful job demands and resources could be addressed, for example,

by ensuring staff take adequate breaks and providing training and support to deal

with difficult customers. Some staff may still experience high levels of stress

following primary intervention. For these individuals, it may be beneficial to ensure

they can access the stress assessment process. This process helps to identify

particular demands or lack of resources that are affecting the individual and

facilitate the development of a plan to address them. This proposition is in line with

the second recommendation provided above.

Adding primary interventions to the secondary and tertiary support already

available could allow a more integrated and holistic approach to supporting the

mental health of call centre staff, as recommended by LaMontagne et al. (2014),

while underpinning these interventions with a supportive organisational culture

should increase the likelihood that they will improve the health and wellbeing of staff in the call centre (Goetzel et al., 2014). These recommendations are summarised in Figure 4.

Primary interventions (targeted at all staff)

- Organisation-level interventions to reduce stress by addressing the most impactful job demands and resources
- Health promotion supported by a healthy physical environment (e.g., promoting physical activity and healthy eating)

Secondary and tertiary interventions (targeted by need)

- Provide access to stress assessment process for those in need
- Continue to offer individual interventions to support coping strategies via Occupational Health and Employee Assistance Programme

Supportive and health promoting organisational culture

- Prioritisation of staff health and wellbeing by senior leaders
- Training for managers in supporting employee mental health
- Facilitating access to services (e.g. by providing support on the call centre site; allowing time away from telephone to attend appointments; widening eligibility criteria for services)
- Review of policies to ensure they are supportive of staff (e.g. sickness absence, criteria for access to services)
- Communication strategy which aims to increase awareness of available support and makes routes to accessing services clear.

Figure 4: Summary of recommendations for primary, secondary and tertiary interventions, underpinned by a supportive organisational culture

Chapter 8: General Discussion

8.1 Introduction

This chapter is a general discussion of the findings of the research in this thesis. It begins in Section 8.2, by setting out what is known about mental health in call centre staff and the contribution of the current research to this body of knowledge. Section 8.3 highlights the strengths and limitations of the research within the thesis and suggests some potential future research directions in relation to three areas: the methodological approach adopted, the use of the DRIVE model of workplace stress and health to underpin the research, and the focus of enquiry being on a single call centre. Section 8.4 is a reflective section, discussing some key themes arising from a reflective diary kept by the researcher over the course of the project. These relate to the relationships built with managers and staff within the call centre and considerations around the impact of the research. Section 8.5 then sets out some practical implications of the research to address the mental health needs of staff within the call centre in future.

8.2 Contribution to the understanding of mental health in call centre staff

Previous research on mental health in call centre staff has highlighted high risk of mental illness (e.g., Holdsworth & Cartwright, 2003; Sprigg et al., 2003). This was confirmed by the research within this thesis, which found high levels of anxiety and depression among the population studied. Previous studies have also found that a range of job demands and resources predict mental health in call centre staff. For example, workload demands were often driven by workplace targets and enforced by monitoring, both of which are related to poorer mental health (e.g., Charbotel et al., 2009; Sprigg et al., 2003). Similar job demands and resources were

highlighted across the quantitative and qualitative elements of the research in this thesis. The current research has, however, added to these findings by providing a more in-depth and nuanced understanding of how these job demands and resources contribute to the poor mental health of call centre staff (Chapter 5). In addition, the research in this thesis has emphasised the importance of considering individual differences in the study of mental health within call centres (Chapter 4). Regarding the relationship between mental and physical health, the research within this thesis has found that there do not appear to be any specific physical comorbidities associated with depression and anxiety which need to be taken into account when designing interventions for call centre staff (Chapter 6). Finally, the research has identified a number of organisational barriers to accessing the mental health support which exists in the call centre (Chapter 7), some of which may be specific to the call centre setting. These contributions to our understanding of the mental health of call centre staff will be discussed in this section.

8.2.1 The impact of demands and resources on mental health

The current research explored the impact of job demands and resources on mental health in a number of different ways, the outcomes of which has added to our understanding of the complexity of the relationships between job demands and resources and mental health outcomes. The findings of the longitudinal study of mental health (Chapter 4) found that resources predicted depression and positive mental health but not anxiety, while demands predicted depression and positive mental health at two of the four time points but did not predict anxiety. These mixed findings on the relationship between demands and mental health may be due to the stronger effect of individual differences being included in the model,

since demands was significantly correlated with all mental health outcomes at all time points. Alternatively, it could be due to the generic measurement of job demands and resources, which means the demands and resources measured in Study 1 may not have been those which were most salient to staff. The findings from the daily diaries of call centre staff (Chapter 5) could support either interpretation, with self-generated daily job demands and resources predicting mental health-related outcomes (stress and positive and negative mood) on a daily basis. An extensive search of the existing literature did not identify any previous diary studies that explored the relationships between job demands and resources and mental health-related outcomes in call centre staff. Therefore, the use of this approach in the current thesis is believed to be the first. This approach demonstrates not only the relationships between job demands and resources and mental health-related outcomes, but also the within-person variation in daily demands and resources and associated stress and mood. Differences in the relationships between predictors and outcomes for different individuals or groups can also be drawn out using this approach. In Study 2, the effect of demands and resources on mental health-related outcomes was similar for all individuals, suggesting that all staff would benefit from interventions to reduce the impact of job demands and improve job resources, and highlighting the inadequacy of delivering solely secondary and tertiary interventions for those staff who are experiencing poor mental health.

Qualitative results supported the quantitative findings in indicating that call centre staff believed that a range of job demands and resources impacted on their mental health. Staff felt that job demands such as the pace of work and lack of breaks,

difficult customers and performance targets added to their stress and could have had a resulting effect on their mental health. Consistent with the Job Demands-Control-Support Model (Johnson & Hall, 1988), key job resources identified by staff were relationships with colleagues and managers, which were seen as buffering the negative effects of the job demands they faced. While the quantitative analysis found no consistent evidence of moderation, the qualitative findings found that job demands and resources interacted in specific ways. For example, the lack of breaks made it difficult for staff to access support from their colleagues. Based on extensive literature searches, this is believed to be the most in-depth qualitative investigation of mental health in call centre staff to date. The findings help to explain and extend the findings of the quantitative element of the research, highlighting how call centre staff experience the job demands and resources they face and the complex ways in which they affect stress and mental health (both individually and in combination). Whilst the themes identified have been mirrored in previous quantitative studies, the qualitative findings describe the richness and complexity of call centre employees' experiences, which may be difficult to fully capture using quantitative approaches alone (Schonfeld & Mazzola, 2013). In this way, the mixed-methods approach to this body of research has allowed a more in-depth understanding of the job demands and resources which impact call centre staff than would be developed via any one method alone.

Findings from both the interviews and diaries highlight the benefits of using multiple methods to explore job demands and resources. Based on the longitudinal study of mental health, the research could have concluded that job demands and resources were of less importance than individual differences and,

therefore, recommended a greater focus on individual level interventions to support coping strategies. The findings of the in-depth diary and interview study highlight, however, that job demands and resources do have an important impact on the mental health of call centre staff, which should be addressed by the support offered.

8.2.2 Stress as a mediator

Previous tests of the DRIVE model have suggested that stress mediates the relationships of demands and resources with mental health outcomes (Mark, 2008; Galvin & Smith, 2015; Nelson & Smith, 2016; Vallone et al., 2020). Study 1 in this thesis (Chapter 4) found inconsistent evidence that stress mediates the relationships between job demands and resources and mental health outcomes in call centre staff, with mediation being found at the first two time points but not the later time points. This may be due to an increase in workplace stress over the period of the research, while no corresponding change in anxiety and depression was seen, although there was a decrease in positive mental health. At the final time point the amount of variance in anxiety and depression which was explained by stress decreased compared to the earlier time points, whereas the amount of variance in positive mental health which was explained by stress increased. This may be due to the chronic nature of mental illness, meaning that it may take some time for an increase in stress to translate into increased mental illness. In contrast, positive mental health may be quicker to change, since it includes aspects such as positive and negative mood, which might be expected to vary more over short periods (as discussed in more detail in the methods section of Chapter 5). Had the data collection continued, an increase in mental illness might have been

expected to follow at a later time, if the higher levels of stress had continued. By tracking these relationship longitudinally, it is possible to see how stress and mental health outcomes change and covary in response to changing workplace factors in a way which would not be possible in a cross-sectional study. This highlights the importance of considering the temporal relationships between predictors and outcomes within the DRIVE model, which will be discussed later in this chapter (Section 8.3.2) in relation to the strengths and limitations of using the DRIVE model as a framework for the research in this thesis.

Stress, or proxy measures of stress such as job strain, are often used as outcome variables in studies of the impact of job demands and resources in call centres, but stress is rarely considered as a mediator of their relationship with health outcomes. Where stress is included as an outcome, it is not always clear to what extent high stress is a problem, since the measurement of stress varies across studies and cut-off points for stress 'caseness' are often arbitrary, leading to variation in estimates of the prevalence of work-related stress across studies (Houdmont, 2009). Including stress as a mediator between work factors and health outcomes can help to identify when stress is problematic, since health outcomes, including mental illness, have clearer clinical descriptions. Cut-off points for questionnaire measures of common mental health outcomes are typically validated against clinical criteria or the 'gold standard' of clinical interview (e.g., Bjelland et al., 2002), allowing more consistency in cut-off points compared to measures of stress. Stress may be considered problematic where it puts staff at increased risk of mental or physical health problems (Cox et al., 2006). By framing stress as a mediator rather than an end in itself, it is possible consider the entire

process by which workplace and individual factors lead to poorer health outcomes via stress, and allow a better understanding of the stress-related health risks to employees.

8.2.3 The importance of individual differences

This research has highlighted the importance of considering individual differences when studying the mental health of call centre staff. The individual difference variables of positive personality and negative coping were the strongest predictors of mental health outcomes cross-sectionally and also predicted mental health longitudinally, adding support for this being a causal relationship, as hypothesised by Mark and Smith (2008). This key finding supports Mark and Smith's assertion that individual differences need to be considered more consistently within occupational health psychology research. While previous studies of call centre staff have sometimes incorporated individual difference variables, their inclusion and the choice of variables used has been inconsistent across studies. This problem has been described by Schaufeli and Taris (2014) in relation to the similar, but narrower, concept of individual resources, which have been incorporated in studies using the Job Demands-Resources model (Demerouti et al., 2001) in varying ways (see Section 2.3.5 for more detail). This research within this thesis used the DRIVE model to inform how individual differences were incorporated, based on the established effects identified by Smith (2021), meaning that individual differences can be incorporated into studies in consistent ways. The model predicts both direct and moderating effects of individual differences. The findings of this research support the direct effects of individual differences on mental health, but found little evidence of moderation effects. The hypothesised

moderation effects have rarely been tested in studies using the DRIVE model and the few studies which incorporated them have had mixed findings. Some studies have found some evidence of moderation (Vallone et al., 2020; Williams & Smith, 2016), while Mark (2008) found little evidence of moderation. The current study, therefore, adds to the existing evidence on the DRIVE model suggesting that individual differences have direct effects on mental health outcomes but do not consistently moderate the relationships between job demands and resources and mental health outcomes. This may be due to the variety of demands, resources and individual differences which can be included within the model. The qualitative findings (reported in Chapter 5), along with the mixed findings from previous research, suggest that some individual differences may interact with some job demands and resources some of the time. Future tests of the DRIVE model could consider developing specific hypotheses about which individual differences might be expected to moderate the relationships between particular job demands and resources, rather than testing for moderation as a general rule.

8.2.4 Physical comorbidities with mental health

Study 3 (Chapter 6) found that there do not appear to be any specific physical comorbidities with depression and anxiety, which are consistently found in call centre staff. This may be due to the variety of health problems which are associated with stress. Employees may experience different health outcomes as a result of their exposure to stress for a variety of complex reasons (Shirom, 2003). Therefore, it may be that very large samples are required to detect a correlation between mental health outcomes and any specific physical health condition. Nevertheless, a variety of physical health problems appeared to be more prevalent

in call centre staff than in the general population, including high rates of obesity, low levels of physical activity and high levels of sedentary behaviour, increased risks associated with alcohol use and high levels of sickness absence. Given these findings, and since work-related stress can increase the risk of both physical and mental illness (Bonde, 2008; Sohail & Rehman, 2015), it is important to ensure that the health needs of call centre staff are fully met. Those with comorbid physical and mental illness may require interventions which address these comorbidities in order to ensure they can function effectively at work (McIntyre et al., 2011). These findings suggest that any comorbidities in call centre staff should be taken into account on a case-by-case basis, rather than needing to be incorporated as standard into interventions to improve mental health of call centre staff.

8.2.5 Organisational support for mental health

Previously, little was known about the support that call centres offered to their staff for health and wellbeing. This research in this thesis has identified that, on the surface, the call centre studied appeared to offer a wide range of support to staff (Chapter 7), but this was not underpinned by organisational support, with a number of organisational barriers to accessing existing support being identified. This highlights the importance of organisational support within a call centre setting in order to enable staff to make use of the support available to them. Recommendations for improvements to the support available for staff within the call centre, based on the findings of the research in this thesis, are set out in Chapter 7. Due to the focus on a single call centre, it is not clear to what extent the findings of the research within this thesis and associated recommendations are

generalisable to all call centre staff. However, the findings of the research correspond with previous studies of mental health within call centres, in finding high levels of stress and associated mental illness, which were predicted by job demands and resources (e.g., Sprigg et al., 2003). Key job demands highlighted in the current research as being related to mental health have been identified in previous studies of call centres, including high workloads and a lack of breaks (e.g., Visser & Rothman, 2008), lack of control over work pace (e.g., Taylor et al., 2003), interacting with rude and abusive customers (e.g., Charbotel et al., 2009) and performance targets and monitoring (e.g., Sprigg & Jackson, 2006). This suggests that the findings and recommendations within this thesis may be generalisable to call centre staff more widely, particularly the need for organisational-level interventions to reduce stress by addressing job demands and resources.

8.3 Strengths and limitations and future research recommendations

In this section, several strengths and limitations of the current research are set out and recommendations for future research are made. Strengths and limitations are discussed in relation to three areas: the methodological approach taken in the current body of research, the use of the DRIVE model of workplace stress and health, and the in-depth focus on a single call centre. In addition, since the data for the studies in this thesis was collected between 2013 and 2015, the relevance of the findings to the current call centre context is considered.

8.3.1 The methodological approach

The current research took a multi-method approach, which included longitudinal and mixed methods elements. Based on an extensive literature search, it is believed that this is the first time this approach has been used to investigate the mental health of call centre staff. This approach has a number of advantages. The previous section has highlighted how the methodological approach has allowed a more in-depth understanding of the demands and resources experienced by call centre staff to be developed. The approach also allows the triangulation of results. The comparison of findings across the studies has facilitated an overall understanding of mental health in call centre staff, which goes beyond the findings from each approach alone. Including a longitudinal element in the research has allowed stronger conclusions to be drawn about the causal relationship between individual differences and mental health. The longitudinal analysis was limited by a small sample, however, which precluded the use of structural equation modelling in analysis, and limited the conclusions which could be drawn based on the longitudinal data. Carrying out longitudinal research in call centres has long been recognised as difficult, due to high turnover within the industry (Sprigg et al., 2003). Sprigg et al. (2003) suggested using a cross-call centre approach to longitudinal research with this group, following up individuals as they move jobs across call centres. Future research should, therefore, consider using this approach in longitudinal studies of call centre staff to allow a larger sample to be followed over time. However, this approach would require the participation of all or most call centres within a geographical area or for individuals to participate in a personal capacity, which would require significant investment of time and resources in maintaining these relationships as well as highly motivated

participants to avoid high levels of attrition over time. In practice, longitudinal research in call centres is likely to remain challenging. As discussed in Chapter 2, previous research in call centres has used a narrow set of methods, with most studies being correlational and questionnaire-based. Given the insights generated by using a wider range of methods within the research in this thesis, future research in call centres should consider adopting a wider range of methods, as used successfully in this programme of work, in order to develop a more holistic understanding of mental health in this group of employees.

8.3.2 The DRIVE model as a framework

A second strength of this research is its use of the DRIVE model (Mark & Smith, 2008) as a framework for the research. This model goes beyond the Job Demands-Resources model in its inclusion of individual differences as a separate category of variables to job demands and resources as well as including stress as a mediator of the relationships of demands and resources with health outcomes. The research in this thesis (Chapter 4) has supported the importance of individual differences as the strongest predictor of the mental health of call centre staff. The inclusion of individual differences as a separate category of predictor which includes both personality traits and coping styles is perhaps the key defining feature of the DRIVE model. The strong support for the effects of individual differences on mental health both cross-sectionally and longitudinally supports the greater prominence given to these factors within the DRIVE model compared to other models of stress and health (e.g., the Job-Demands Resources model; Demerouti et al., 2001).

The findings across Studies 1 and 2 mainly support the hypotheses of the DRIVE model in suggesting that job demands and resources predict mental health outcomes, although the findings are somewhat mixed and perhaps suggest that the relationships between job demands and resources and mental health outcomes are more complex than predicted. In Study 1 of this thesis (Chapter 4), the effects of job demands and resources on mental health were inconsistent, as they have been in other tests of the DRIVE model (e.g., Galvin & Smith, 2015; Mark & Smith, 2012a; 2012b). One possible explanation for this could be the way in which job demands and resources are measured within the wellbeing process questionnaire (WPQ; Williams & Smith, 2012), with standardised questions on demands and resources, which were combined in line with Smith (2021). The existence of the WPQ as a measurement tool for the DRIVE model is an advantage that allows measures to be used consistently across studies and, therefore, facilitates comparison and integration of findings. However, the findings of the research in this thesis have raised questions over the utility of a standardised approach to measuring job demands and resources within call centres. Study 2 allowed employees to identify the job demands and resources which they felt were impacting them on a specific day and found that daily job demands and resources predicted mental health-related outcomes, in contrast to Study 1 which used a more standardised approach with mixed findings. A more standardised approach may mean that the demands and resources which are most salient to staff may be missed or may be combined with demands and resources which are less relevant, which may lead to the effects of demands and resources being underestimated.

A number of researchers (e.g., Bakker & Sanz-Vergel, 2013; Mazzola & Disselhorst, 2019) have argued that it is important to measure appraisals of demands in order to understand their meaning to employees and therefore their impact. Future tests of the DRIVE model should consider the inclusion of appraisals when measuring job demands and resources, in order to ensure that the demands and resources included in the research are relevant to the groups of employees being studied. For example, Bakker and Sanz-Vergel (2013) measured appraisals in relation to the extent to which demands were interpreted as challenges or hindrances. A similar approach may be taken in future tests of the DRIVE model. Alternatively, ratings could relate to the importance of the measured demands and resources to the employee, so that those which are salient to staff could be identified and their impact measured.

The research in this thesis also found mixed evidence on whether workplace stress mediates the relationships between job demands and resources and mental health outcomes. Study 1 (Chapter 4) identified an increase in workplace stress at the final time point of the longitudinal study. This was mirrored by a decrease in positive mental health, but no increase in mental illness. This appeared to weaken the relationship between workplace stress and mental illness at this time point, with less of the variance in mental illness being accounted for by workplace stress. It may be that these findings reflect the chronic nature of mental illness and may indicate a time lag between increases in stress and subsequent mental illness, although positive mental health did not seem to lag behind in the same way. This could suggest that pathways between predictors and outcomes via stress can develop over different timescales according to the outcome being measured. This

highlights the need to understand the temporal nature of the relationships in the DRIVE model.

The importance of the temporal relationships between variables in the DRIVE model was also highlighted by Study 2 (Chapter 5). The findings of this study indicated that the relationships between demands and resources and mental health-related outcomes can be seen on a daily basis, expanding on the findings of Study 1 which considered more stable aspects of the call centre environment. These proximal effects of demands and resources experienced on a daily basis have been less frequently studied than the more stable effects of the demands and resources associated with specific jobs or workplaces (Bakker & Demerouti, 2017). Based on a comparison of diary studies and questionnaire-based studies of the Job Demands-Resources model, Demerouti and Bakker (2011) have suggested that the impact of job demands on outcomes may vary according to whether they are considered on a daily or on a long-term basis. The findings reported in this thesis go beyond this, by indicating that the differing short and long-term impacts of job demands and resources on outcomes will vary according to the specific outcome being measured. For example, positive mental health seemed to vary in relation to stress over shorter periods, compared to mental illness outcomes.

Future research using the DRIVE model should consider exploring temporal relationships between job demands and resources and mental health outcomes in a number of ways. They may employ longitudinal studies in order to establish how pathways from job demands and resources to mental health outcomes via stress

develop over time, as well as to establish the most appropriate time lags between measurements within longitudinal studies, according to the mental health outcome(s) of interest. In addition, studies looking at daily variability in demands and resources and subsequent mental health-related outcomes may be used to further explore how daily job demands and resources relate to within person variation in mental health-related outcomes. For example, lagged effects of daily demands and resources may be considered. This could involve exploration of whether increases in stress or negative mood, as a result of daily high demands or low resources, persist into the following day. The qualitative findings from Study 2 (Chapter 5) suggested that the relentlessness of high workloads and a lack of breaks lead to increased stress and exhaustion. Daily diary studies may also be used to look at how daily variability in demands affects mental health between individuals. These studies could consider whether employees exposed to relentlessly high demands with fewer quiet periods experience poorer outcomes than those who experience times of high demands interspersed with quieter periods.

8.3.3 Focus on a single call centre

The current research focused on a single call centre. The advantage of this approach is that it has allowed an in depth and comprehensive assessment of the mental health needs of call centre staff within this setting to be carried out. While it is not fully clear to what extent these findings are generalisable to other call centres, the findings are often in line with those from previous research, suggesting that they may be relevant to other call centre settings. Nevertheless, this approach is linked to an important limitation, which is the lack of a control

group within this body of research. Where possible, normative data has been used as a comparison, however, this was not available in all cases. For example, no normative data was available on levels of positive mental health. The use of a control group would have allowed comparisons to be made and, therefore, more conclusions to be drawn on levels of positive mental health in call centre staff. Future research should consider extending the approach used in the research within this thesis to other call centres and include a comparison to other occupational groups. This would allow a better understanding of the comparative levels of positive mental health to be developed, as well as facilitating comparisons of the job demands and resources and organisational support experienced across settings. Wider testing of the WPQ (Williams & Smith, 2012) across occupational groups could support the development of normative scores for outcomes such as positive mental health and workplace stress, facilitating these types of comparison across settings.

8.3.4 Relevance of the research to the current call centre context

Data collection for the studies reported in this thesis was carried out between 2013 and 2015. Since this time, a number of changes have taken place in call centres which may impact on how relevant the findings are to contemporary workplaces. Firstly, there has been technological change within the sector, which may impact on call centre staff (ContactBabel, 2021b). One key change has been a decrease in the proportion of customer interactions taking place via telephone, as interactions via other channels such as webchat and social media increase. However, the change has been gradual, with ContactBabel reporting that around 71% of customer interactions took place via telephone in 2014, compared to an

estimated 64% in 2022. Other technological changes, such as self-service and the use of AI (e.g. chatbots) have also been adopted gradually. This suggests that while the nature of call centre work may change with advancing technology, most customer interactions still take place via telephone, meaning that the findings of the current research are likely to remain relevant. Future research should consider the impact of changing technologies on the nature of call centre work and subsequently on the mental health of call centre staff. For example, customers may be more likely to carry out straightforward transactions via self-service, webchat or social media but may require telephone support for more complex transactions. This could have a range of implications, for example, on call volumes and lengths, the skills and knowledge required by call centre staff and customer behaviour during telephone interactions. It is currently unknown whether these changes will be beneficial or detrimental to call handlers' mental health.

A second change which has affected workers, including call centre staff, since the Covid-19 pandemic began is an increase in home working. The call centre focused on in the current research did not use home working at the time the data was collected, but moved to home working as a result of the pandemic, along with much of the wider call centre industry (ContactBabel, 2021c). There is currently limited evidence on the impact of working from home on mental health, with some research conducted during the pandemic suggesting that working from home had a detrimental effect on mental health (Xiao et al., 2021). Reduced mental health was associated with a lack of physical exercise, poorer diet, reductions in communication with co-workers, more distractions while working, and lower satisfaction with the home working environment. In contrast, research conducted

prior to the pandemic suggested a more complex picture, with reviews of the evidence identifying both positive and negative impacts of working from home, with positive impacts including increased flexibility, better work-life balance, higher morale and job satisfaction, and an avoidance of office politics, while negative impacts could include a blurring of boundaries between work and home life, working longer hours, social isolation and a lack of support (Tavares, 2017). Many studies focused on employees working from home only part of the time, with some studies suggesting that greater amounts of time spent working from home were associated with poorer mental health outcomes (Oakman et al., 2020). Support from managers and colleagues was found to be important in leading to positive wellbeing impacts of working from home, and could be less available for those spending more time working from home (Oakman et al., 2020). The specific impacts of working from home on call centre workers are currently unknown, however, the current evidence suggests that some of the demands identified in the current research, such as a lack of interaction with colleagues, may be exacerbated. In addition, long periods of sedentary behaviour and difficulty in accessing support services are likely to continue to be problems when call centre staff are working from home. Future research should consider the impacts of working from home on the mental health of call centre staff and identify ways of mitigating any negative effects.

8.4 Implications of the research

8.4.1 Practical implications of the research

In this section, the practical implications of the research are discussed. These consider the recommendations which were made to the call centre to improve the

mental health of their staff and discuss these within the wider context of research and practice within call centres. The findings of the research suggested that both individual factors and workplace factors contribute to mental health outcomes in call centre staff. Recommendations included the provision of a comprehensive package of interventions, which should incorporate secondary and tertiary individual interventions to increase coping strategies, as well as primary organisational interventions targeting job demands, resources and stress. Organisational support for stress was seen as a particular gap in the current support for call centre staff. While the findings come from a single call centre, similarities with findings from previous studies (e.g., Sprigg et al., 2003) suggest that they may be generalisable to call centre staff more widely (see Section 8.2.5 for a more detailed discussion on this).

Sprigg et al. (2003) made a number of recommendations for reducing stress in call centres, including increasing the autonomy of staff by removing scripting and providing more training for dealing with customer queries, as well as by increasing employee control over work scheduling (e.g., by staff choosing their own breaks). They also suggested that skills utilisation could be increased by increasing task variety. For example, staff could take a range of types of call rather than groups of staff repeatedly taking similar queries. Furthermore, they suggested that role conflict could be reduced by ensuring that managers set clear strategic goals, such as identifying whether quality of advice or quantity of calls taken is their main focus. To some extent, these recommendations by Sprigg et al. (2003) align with the recommendation in Chapter 7 to implement organisational-level interventions targeting demands and resources. However, given that the findings of the

research within this thesis are similar to those of previous studies, it appears that little has changed since these recommendations were made. Since these recommendations were published in a report by the Health and Safety Executive (HSE), rather than in an academic journal, it appears likely that the call centre industry would be aware of them. This raises the question of why these HSE recommendations have not been implemented across the call centre industry. Several studies have looked at facilitators and barriers to assessment of and implementation of health and safety advice relating to workplace stress (e.g., Broughton et al., 2009; Egan et al., 2009; Mellor et al., 2011). Important factors identified in these studies to some extent mirror those which are important for a workplace culture which is supportive of health and wellbeing (Kent et al., 2016; Mattke et al., 2013). These include support from senior management (Broughton et al., 2009; Mellor et al., 2011), line manager support (Egan et al., 2009; Mellor et al., 2011) and competence (Broughton et al., 2009), regular communications (Mellor et al., 2011) and a supportive environment which takes into account staff wellbeing (Broughton et al., 2009; Egan et al., 2009). This reinforces the need for interventions to improve mental health within call centres to be underpinned by a supportive culture, which is embedded and communicated at all levels of the organisation.

While interventions to change organisational cultures have been carried out in a number of settings (e.g., Johnson et al., 2016; Ogbonna & Harris, 2002), implementing cultural change is very challenging (Ogbonna & Harris, 2002). Interventions have shown mixed outcomes (Johnson et al., 2016), however, Willis et al. (2016) identified a number of principles which make successful cultural

change more likely. These principles are: to ensure that planned actions are aligned with the overall vision for change; to make changes in increments, with each element building on one another, as part of a comprehensive transformation strategy; to promote change at a range of levels by creating distributed leadership (i.e. where responsibility for success is shared across the organisation); to engage staff, so that they feel able to influence the change process; to promote collaboration across individuals and groups and to assess cultural change on an ongoing basis, using the data collected to influence further change. This suggests that any programme of change the call centre implements needs to be carefully planned in line with these principles to increase the likelihood of success. Willis et al. (2016) suggested that contextual factors are important in influencing the success of culture change interventions. This includes the extent to which change programmes are in line with existing employee values, readiness for change and the influence of existing bureaucratic structures. Within call centre organisations, implementing cultural change may be even more complex, since call centres generally serve wider organisations (Sprigg et al., 2003) and may be subject to the same policies and decisions as the overarching organisation. The call centre studied within the research in this thesis sat within a government executive agency, which, in turn, was part of a larger civil service department. Those leading the call centre were not part of the senior management of the wider organisation, and, as such, it is not clear to what extent the call centre was considered in decisions made at the top of the organisation. Furthermore, call centre managers may have limited discretion to make the types of changes required to promote a more positive health and wellbeing culture. Willis et al.'s findings suggest that the bureaucratic structure, within which the call centre sits, may be a barrier to

effective cultural change. It may, therefore, be important to ensure that senior managers in the wider organisation are supportive of change, and, perhaps, allow the call centre a certain level of autonomy in order to bring about the cultural change required to support staff health and wellbeing.

8.4.2 Theoretical and methodological implications of the research

This is the first test of the DRIVE model within a call centre so expands the use of the model to a new group of staff. It is also one of the few to test the full model, including all proposed moderation relationships. Study 1 found that individual differences were the strongest predictor of mental health, providing support for Mark and Smith's (2008) assertion that individual differences need to be considered alongside demands and resources in research in the occupational health psychology field. While individual differences have been considered in studies using other theories and models, such as the Job Demands-Resources Model, in comparison to these models, the DRIVE model incorporates individual differences in a more consistent and comprehensive way. This suggests that wider use of the DRIVE model is indicated, while studies using other models should consider individual differences as part of their research design. A second implication concerning the DRIVE model relates to the temporal relationship between the included variables. The findings of Study 1 suggested that there may be a lag between increases in demands and associated stress, and subsequent mental illness, while Study 2 suggested that daily demands and resources can lead to a rapid change in other mental health-related outcomes such as mood. This implies that we need to better understand the pathways from job demands and resources to different mental health outcomes over time. Currently, the

hypothesised relationships between the variables in the DRIVE model do not consider how these relationships may develop over time, for example, the findings of the research suggest that high demands, low resources and associated high stress levels may need to be chronic in order to lead to mental illness, but may more quickly lead to reductions in positive mental health. Future iterations of the model should consider the temporal relationships between the variables, and may need to distinguish between short-term and long-term outcomes.

Previous studies of mental health in call centres have tended to rely on a narrow set of methods, primarily using cross-sectional questionnaire-based designs. The lack of longitudinal research in the area has long been recognised as a gap (Sprigg, 2003). The research in this thesis used a range of methods to explore the mental health needs of call centre staff. This has included investigation of how demands and resources lead to stress and other mental health-related outcomes over time. Study 1 looked at these relationships over longer periods, while Study 2 looked at daily variation in demands, resources and mental health-related outcomes. The use of these methods has led to new insights about the relationship between the variables in the DRIVE model over time. These temporal relationships are currently not fully understood and require further investigation. This suggests that there is a need for more longitudinal research in this area, both over short and long time periods. The most appropriate time lags between measurements of predictors and outcomes are currently unclear, and future longitudinal studies should explore these relationships over different time periods in order to assess the most appropriate time lags between measurements, bearing

in mind that these may vary according to the specific mental health outcome being examined.

8.5 Reflection on researching within the call centre environment

A reflective diary was kept throughout the data collection to aid reflexivity on the impact of the investigator in the study as well as reflect on some of the challenges of working within the call centre environment. A summary of some of the reflections from the diary is included here in relation to three main themes: building relationships with call centre managers and considering business needs; building trust with staff and maintaining independence; and developing recommendations and considering research impact. Lessons learned from each of these themes are then discussed.

8.5.1 Relationships with managers and business needs

The content of the research was, to some extent, negotiated with the managers of the call centre, who were interested in reducing sickness absence and had some concerns about work-related stress. It was important for me to take into account a range of considerations when designing the research which balanced both the academic requirements of the PhD as well as the organisational needs and constraints. It was important to design a piece of research which was academically rigorous and provided an original contribution to knowledge, but also allowed the development of practical and realistic recommendations for the call centre on improving the health and wellbeing of their staff. As I had no previous experience of a call centre work environment, I had little understanding at the start of the project about the business needs and organisational drivers of the research from

the perspective of managers. It became apparent over the course of the project that to some extent, there was a culture gap between academia and the business which led to different expectations and assumptions about the research. For example, as a PhD project with a longitudinal element, the research project was planned to span several years, including around two years of data collection and relatively long periods set aside for analysis, while the expectation from the call centre managers was that they would see a fast turnaround of results. As a result, I adapted my approach over the course of the project to ensure I was regularly offering the call centre 'quick wins', by feeding back interim findings and recommendations which then informed their health and wellbeing planning. In addition, early discussions with call centre managers highlighted that they believed that most of the stress that staff faced was not work-related, but rather that stress at home could make the demands of work difficult to cope with. This preconception meant that findings relating to workplace stress sometimes seemed to be unwelcome, particularly where the potential causes were an integral part of the call handler job and, therefore, difficult to address. My assumption was that mental illness and stress would have multiple causes, including workplace factors. Where this assumption was supported by the findings, this led to my role involving being a 'bearer of bad news' to the call centre managers. This brought some tension to this relationship and may have contributed to a reduction in 'buy in' from managers in the later stages of the study, where less time was given to staff to complete the research and response rates reduced. However, work pressures were also likely to be a factor in this, since the call centre took on additional work from a number of sources over the course of the research project (see the description of the research setting in Section 3.2).

This call centre culture and the relationships with managers had some impact on how I approached the interpretation of my qualitative results. Due to some negative reactions from managers in the early stages about the impact of demands and resources on workplace stress and subsequent mental health, I felt some pressure to make the qualitative findings more 'palatable' to managers in order to avoid further negative reactions. On the other hand, I was aware of the importance of maintaining my independence and integrity as a researcher and honestly reporting the findings of the qualitative research as I understood them. I felt that it was important that I didn't bow to any pressure to downplay the extent to which I believed (based on the research results) the call centre environment was contributing to employees' poor mental health, for example, by selecting quotations with less strong language. However, I felt that I could allow my understanding of the call centre's managerial culture to influence how I approached my development and description of my themes. I felt that the way that the results were presented and the language I used could make a difference to whether the findings of the research and recommendations were accepted or rejected by managers. In addition, I considered the reactions of the call centre managers in my choice of language in describing my themes. I aimed to use language which was familiar and easily understandable to managers as well as sufficiently 'corporate' for them to feel familiar with. I aimed for a neutral tone in my language, and tried to avoid appearing critical of the call centre or the managers. I tailored my outputs for my academic and corporate communications, for example, by taking the discussion of academic literature out of communications for the call centre and ensured they were succinct. However, I compared my outputs to

ensure that the main messages I wanted to convey were consistent across the academic and corporate messaging, to ensure that I was not overly 'sanitising' my results for the call centre managers.

8.5.2 Relationships with call centre staff

Since I was collaborating with call centre managers in order to develop the research and consider business needs, I felt it was important that in addition to this relationship not compromising my independence as a researcher, it should not have a negative impact on my perceived independence among call centre staff, since this could potentially undermine the trust of staff in the research. As a result, this could potentially affect the participation rates, as well as employee's willingness to respond openly and honestly to the research. This led to me taking a few actions to demonstrate my independence. I felt that it was important to get input from a wider range of sources within the call centre rather than just managers when designing the research. Therefore, I set up meetings with trade union leaders within the organisation as well as the staff support team who developed the staff health and wellbeing plan within the call centre. This allowed me to take into account a range of views when planning the research and in the interpretation of my results. I also engaged directly with staff by attending team meetings to talk about the research, and, in particular, to emphasise that the research was confidential and that no identifiable information would be shared with managers or in results reporting. This helped me to build relationships and trust with the staff, with a range of employee volunteering to take part in the research. In addition, one difference I noticed between senior managers and other staff within the call centre was the difference in what they wore to work. Senior

managers tended to dress in business attire, while call handlers tended to dress casually, in jeans and t-shirts. In order to identify myself as independent of senior managers, who I spent a lot of time with while in the call centre while still maintaining a professional appearance, I decided to dress in smart-casual wear. I felt that this approach was relatively successful, since staff who participated in the research provided sensitive information about their mental health. Although participation rates were a problem at times, I felt this was more related to organisational support, since when staff were given time during work hours to complete the research, participation levels increased.

At the time of data collection, many of the staff working in the call centre were in a similar demographic to me - women in their 20s and 30s. I had also had a recent negative experience of a workplace that I left immediately prior to starting the PhD. As a result, I felt an affinity with the call centre staff. I used the reflective diary to consider the similarities and differences between my workplace experience and the experiences of the call centre staff I interviewed. I felt I needed to separate these experiences in my mind so that my analysis did not overly emphasise the experiences of staff that were similar to mine and underemphasise those that were different. I identified a number of similarities and differences in our experiences. For example, both the call centre employees and I had experienced stress associated with high workloads. However, I had a very negative experience of a previous manager whereas this was not a common experience among the call centre staff. Nevertheless, my own experiences inevitably shaped my response to and interpretation of the experiences of the call centre staff and I approached the analysis from a mainly empathetic stance, partly as a result of my feelings of

affinity with staff. My own negative experience, and the failure of my organisation to adequately support me, underpinned my motivation to ensure that action was taken as a result of the findings of the research, as discussed in the next section.

8.5.3 Development of recommendations and consideration of the impact of the research

In my qualitative analysis, I considered the potential impact of the research in the way that I framed my findings. In developing my themes, I decided to organise the results around specific demands and resources which were described by staff, rather than around staff responses and feelings. This has resulted in 'concrete' themes, which are strongly influenced by previous quantitative research, although their development included both inductive and deductive approaches. As such, the themes are a practical way of understanding demands and resources in an applied setting. I felt that by describing the workplace factors and their impacts in concrete ways, this would facilitate the understanding of the problems call centre staff faced, particularly for managers, and make it easier to link findings to recommendations on addressing demands and increasing resources. In my presentation of results to the call centre, I included a short description of each theme with linked recommendations, in order to present a 'solution-focused' message. By presenting my analysis in this way, I aimed to facilitate the process of the call centre acting on the recommendations, and, as such, my analytical approach was strongly influenced by pragmatism and my desire for the research to have as great an impact as possible.

I was keen that the recommendations I made as part of the research should be realistic and that the research should have an impact on staff experiences and, ultimately, improve the mental health of staff in the call centre. I noticed that in previous studies in call centres, researchers have often recommended wholesale change, such as job redesign (e.g., Sprigg et al., 2003), which would require a fundamental rethink of how call centre work was structured. These recommendations do not appear to have had an impact on how call centre work is currently designed. After developing a relationship with managers within the call centre, I felt that these types of recommendations were unlikely to be implemented since call centre managers did not necessarily have the level of influence to make this kind of wholesale change. I aimed to provide realistic recommendations for change which were more likely to be taken on board, based on my discussions with managers and the health and wellbeing team. These could include suggestions for improving the accessibility of services and providing more organisational support for stress. However, I was concerned that I shouldn't provide recommendations which were too 'watered down' in order to make them palatable and which may ultimately do little to improve the mental health or stress levels of call centre staff. I, therefore, decided it was most appropriate to provide a suite of recommendations which included some which were potentially easier to implement (e.g., improving communication and information about the available support services). Others may have been more time and resource intensive to put into place, and potentially less likely to be implemented (e.g., implementing primary interventions for stress which address the most commonly experienced job demands). I felt that this approach provided the best balance in terms of maximising the potential practical impact of the research, while maintaining my

integrity as an independent researcher and presenting honestly the less palatable implications of the research.

The recommendations set out at the end of Chapter 7 (pages 250-254) were put forward to the call centre managers and were used to inform changes to the call centre's health and wellbeing plan. Some of these recommendations were taken on board. In particular, the first recommendation to develop a bespoke communication strategy helped to inform improvements to the communication plan developed by the health and wellbeing team, which was adapted with the aim of improving awareness of the support available. The recommendation to create an organisational culture which was supportive of mental health was partially taken on board, and managers were encouraged to support the mental health of their team, via wellbeing discussions in team and individual meetings. Communications to managers were also adapted to incorporate information on supporting mental health, with the aim of improving manager awareness of the mental health needs of their staff. The communication plan also included health promotion messages, with the aim of encouraging beneficial health behaviours such as exercise and healthy eating, and healthy options in the canteen were reviewed with the contracted provider. These changes were relatively easy to implement and were in the direct control of call centre managers. Despite this, they may have beneficial impacts on staff mental health. However, other recommendations proved more difficult for call centre managers to implement and were not taken on board. This included the recommendations to provide access to support services on the call centre site, to review organisational policies to make them more supportive of health and wellbeing and less punitive of sickness absence, and to provide

organisational level interventions to reduce stress by targeting job demands and resources. The recommendations which were not implemented were sometimes not within the direct control of call centre managers, and the findings of the research were not acted on by more senior managers in the wider organisation. This made it difficult to implement the cultural and organisational change that was needed in order for staff mental health to be prioritised by managers. Furthermore, call centre managers may have been reluctant to implement recommendations which they felt may have a negative impact on the business, in particular, by addressing the job demands that staff reported were affecting their mental health. It is not known what impact the recommendations that were implemented have subsequently had on the mental health of staff, due to changes to the management team within the call centre since the research was conducted. The new managers deemed that it was not appropriate to share further staff information with the research team.

8.5.4 Lessons learned

The experience of researching within the call centre environment has revealed a number of useful lessons which may be beneficial to other researchers working in a similar environment. The learning I have taken from collaborating with call centre managers and understanding the needs of the organisation highlights the importance of close and effective collaboration with stakeholders and of ensuring that practical implications from research are regularly communicated to stakeholders and customers to ensure ongoing 'buy in'. This project has also illustrated the importance of researchers not compromising their integrity and independence in order that participants and customers can have confidence in the

outcomes of the research. It has also underscored the need to consider carefully

how to frame recommendations in order that they are appropriate for the setting

and audience. An awareness of these issues may be beneficial to those

undertaking future studies within call centres, in order to maximise the impact of

their research.

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Appendices

Appendix 1. Wellbeing Process Questionnaire

Questions in italics were excluded at Time 4.

Demographic information	
Employee number	[free text box]
Age	[free text box]
Gender	Male/ Female
Area of work	Drivers/ Drivers Medical/ Vehicles/ Support/ Other
Team number (if applicable)	[free text box]
Job grade	AA/ AO/ EO/ HEO/ SEO/ Grade 7/ Grade 6
Length of service	_____ years	_____months
Working pattern	Full time/Part time

Mental illness		
Item	**Question**	**Rating**
Depression	On a scale of one to ten, how depressed would you say you are **in general**? (For example, feeling 'down', no longer looking forward to things or enjoying things that you used to).	Rating 1-10 (1 = Not at all Depressed, 10 = Extremely Depressed)
Anxiety	On a scale of one to ten, how anxious would you say you are **in general**? (For example, feeling tense or 'wound up', unable to relax, feelings of worry or panic).	Rating 1-10 (1 = Not at all Anxious, 10 = Extremely Anxious)

Positive mental health		
Item	**Question**	**Rating**
Positive mood	Thinking about myself and how I normally feel, **in general**, I mostly experience positive feelings (for example, I feel alert, inspired, determined, attentive).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Negative mood	Thinking about myself and how I normally feel, **in general**, I mostly experience negative feelings (for example, I feel upset, hostile, ashamed, nervous).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Life satisfaction	**Overall**, I feel that I am satisfied with my life (for example, in most ways my life is close to my ideal, so far I have gotten the important things I want in life)	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Eudaimonic wellbeing	I feel that I lead a purposeful and meaningful life (for example, I am engaged and interested in my daily activities, I actively contribute to the happiness and well-being of others, I am a good person and live a good life).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)

Stress		
Item	**Question**	**Rating**
Home stress	**Overall**, how stressful is your life outside of work?	Rating 1-10 (1 = Not at all Stressful, 10 = Very stressful)
Workplace stress	**Overall**, how stressful do you find your job?	Rating 1-10 (1 = Not at all Stressful, 10 = Very stressful)

Positive Personality		
Item	**Question**	**Rating**
Emotional stability	I feel that I can get on well with others (for example, I'm usually relaxed around others, I tend not to get jealous, I accept people as they are).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Self-esteem	**Overall**, I feel that I have positive self-esteem (for example, on the whole I am satisfied with myself, I am able to do things as well as most other people, I feel that I am a person of worth).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Self-efficacy	*I am confident in my ability to solve problems that I might face in life (for example, I can usually handle whatever comes my way, If I try hard enough I can overcome difficult problems, I can stick to my aims and accomplish my goals).*	*Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)*
Optimism	**In general**, I feel optimistic about the future (for example, I usually expect the best, I expect more good things to happen to me than bad, It's easy for me to relax).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)

Negative coping		
Item	**Question**	**Rating**
Self-blame	When I find myself in stressful situations, I blame myself (for example, I criticise or lecture myself, I realise I brought the problem on myself).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Wishful thinking	*When I find myself in stressful situations, I wish for things to improve (for example, I hope a miracle will happen, I wish I could change things about myself or circumstances, I daydream about a better situation).*	*Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)*
Avoidance	When I find myself in stressful situations, I try to avoid the problem (for example, I keep things to myself, I go on as if nothing has happened, I try to make myself feel better by eating/drinking/smoking).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)

Job Demands		
Item	**Question**	**Rating**
Task-related demands	I feel that my work is too demanding (for example, I have to work very fast, I have to work very hard, I have conflicting demands).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Effort	I feel that I do not have the time I need to get my work done (for example, I am under constant time pressure, interrupted in my work, or overwhelmed by responsibility or work demands).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Consultation about change	I feel that I am not consulted about changes at work (for example, there is no opportunity to question managers about change, I am unclear about how change will work out in practice).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)

Job Resources		
Item	**Question**	**Rating**
Control	I feel that I get adequate control over my work (for example, I have a choice in what I do or how I do things, I am able to learn new things, I am able to be creative).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Reward	I feel that I have been rewarded for my efforts (for example, the respect, role, and job prospects I receive are suitable for my efforts and achievements).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Colleague support	I feel that I am supported by my colleagues (for example, there is a good atmosphere at work, I get along with my colleagues, my colleagues understand me).	Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)
Supervisor support	*I feel that I get along well with my supervisor (for example, I know where I stand in terms of their opinion of me, my supervisor understands me, my supervisor recognises my potential).*	*Rating 1-10 (1 = Strongly Disagree, 10 = Strongly Agree)*

Sickness absence and presenteeism		
Item	**Question**	**Rating**
Sickness absence	How many different occasions of sickness absence have you had **over the last 12 months** (that is, the number of times you have had sick leave).	[free text box]
Presenteeism	**In the past 12 months**, how often have you gone to work despite feeling that you really should have taken sick leave due to the state of your health?	[free text box]

Appendix 2. Information sheet and consent form: Study 2

Contact Centre Wellbeing Survey

You are being invited to take part in a survey. All staff working within the contact centre are being invited to take part. The survey is *completely voluntary* and you can refuse to complete it without any negative outcomes.

The purpose of this survey is to understand more about wellbeing among staff in the [organisation's] contact centre. This survey is the first part of a larger research project on stress, mental health and wellbeing within the contact centre.

What do I have to do if I decide to take part?
You will be asked questions about your *work,* your *health*, your *personality* and your *feelings*. The survey will take approximately *15 minutes* to complete.

Are there any risks?
We don't think there are any major risks to you if you decide to take part. The way you respond to this survey *will have no impact on your job*. There is a chance that thinking about work, your health or your feelings may be upsetting. If you begin the questionnaire but do not want to continue, *you may stop at any time* by closing the questionnaire on your screen.

Are there any benefits?
Taking part will give you the opportunity to tell us about your feelings and experiences. We will report our findings to the [organisation] and we hope that this will lead to changes that will benefit contact centre staff in future.

Is it confidential?
The information you provide us with is *confidential* and will be managed in line with the Data Protection Act. The data will be collated by [name], Communications Manager but will only be used by the research team for the purposes of understanding staff wellbeing. The data will be stored in a password protected electronic format. Results of the research that are reported to management at the [organisation] or others will be summaries of results for groups of employees and nothing will be reported which could reveal your personal responses.

You will be asked to provide your *staff number* when completing the survey. We ask for this information as it will allow us to follow up some staff in the next phase of the research.

Who is involved?
The research is being carried out by Helen McFarlane as a PhD project with Cardiff Metropolitan University. The project is being overseen by Dr Rich Neil and Dr Karianne Backx at Cardiff Metropolitan University and Prof Andy Smith at Cardiff University.

Further information

If you would like further information about the research, please contact Helen McFarlane (hemcfarlane@cardiffmet.ac.uk). You may also contact Dr Rich Neil who is supervising the project (rneil@cardiffmet.ac.uk).

Who can I contact for help?
If there are **issues at work** which you believe are having a negative effect on your wellbeing, you may wish to discuss these with your line manager or your union representative [contact no for union office]. For confidential advice and counselling, you can contact the [organisation's] Employee Assistance Programme on [phone] or by emailing [email address]

If you have any **concerns about your health and wellbeing,** please contact your GP if you believe you are unwell. You can get general advice on health from NHS Direct on 0845 46 47. Your line manager can refer you to Occupational Health if you have a health condition which is affecting your work.

Please click the button below to indicate that you agree with the following statements and begin the survey

I have read the above information

I understand that my participation in the survey is voluntary

I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.2

I agree to take part

Appendix 3. Multiple regressions: testing assumptions

Depression

Multicollinearity
Correlation matrix was examined for collinearity
Time 1: No excessive collinearity (>.8)
Time 2: No excessive collinearity (>.8)
Time 3: No excessive collinearity (>.8)
Time 4: No excessive collinearity (>.8)

Variance inflation factor (VIF) and tolerance
Time 1: No VIF >10, no tolerance <.02, Average VIF =1.22
Time 2: No VIF >10, no tolerance <.02, Average VIF =1.22
Time 3: No VIF >10, no tolerance <.02, Average VIF = 1.21
Time 4: No VIF >10, no tolerance <.02, Average VIF =1.45

Independent errors
Durbin Watson Test
Time 1: d= 1.905, greater than the upper critical value of 1.783 (p=.01, k=3, n=390), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =2.095, greater than the upper critical value of 1.783 (p=.01, k=3, n=390), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.
Time 2: d= 2.025, greater than the upper critical value of 1.753 (p=.01, k=3, n=300), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =1.975, greater than the upper critical value of 1.753 (p=.01, k=3, n=300), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.
Time 3: d= 2.025, greater than the upper critical value of 1.732 (p=.01, k=3, n=260), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =1.975, greater than the upper critical value of 1.732 (p=.01, k=3, n=300), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.
Time 4: d= 1.893, greater than the upper critical value of 1.732 (p=.01, k=3, n=260), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =2.107, greater than the upper critical value of 1.732 (p=.01, k=3, n=300), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.

Homoscedasticity, linearity and outliers
Time 1: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity. One outlier was removed. All of Cook's distances were below 1.
Time 2: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots

also suggested homoscedasticity and linearity with no obvious outliers. All of Cook's distances were below 1.

Time 3: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers.

Time 4: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers.

Normally distributed errors

Time 1: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying relatively close to the diagonal line.

Time 2: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Time 3: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals

Time 4: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Anxiety

Multicollinearity
Correlation matrix was examined for collinearity
Time 1: No excessive collinearity (>.8)
Time 2: No excessive collinearity (>.8)
Time 3: No excessive collinearity (>.8)
Time 4: No excessive collinearity (>.8)

Variance inflation factor (VIF) and tolerance
Time 1: No VIF >10, no tolerance <.02, Average VIF =1.22
Time 2: No VIF >10, no tolerance <.02, Average VIF =1.22
Time 3: No VIF >10, no tolerance <.02, Average VIF = 1.21
Time 4: No VIF >10, no tolerance <.02, Average VIF =1.45

Independent errors
Durbin Watson Test
Time 1: d= 1.927, greater than the upper critical value of 1.783 (p=.01, k=3, n=390), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =2.073, greater than the upper critical value of 1.783 (p=.01, k=3, n=390),

therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.

Time 2: $d=$ 2.016, greater than the upper critical value of 1.753 (p=.01, k=3, n=300), therefore there is no evidence of positive autocorrelation of errors. $4 - d$ =1.984, greater than the upper critical value of 1.753 (p=.01, k=3, n=300), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.

Time 3: $d=$ 1.885, greater than the upper critical value of 1.732 (p=.01, k=3, n=260), therefore there is no evidence of positive autocorrelation of errors. $4 - d$ =2.115, greater than the upper critical value of 1.732 (p=.01, k=3, n=260), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.

Time 4: $d=$ 2.053, greater than the upper critical value of 1.732 (p=.01, k=3, n=230), therefore there is no evidence of positive autocorrelation of errors. $4 - d$ =1.947, greater than the upper critical value of 1.732 (p=.01, k=3, n=230), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.

Homoscedasticity, linearity and outliers
Time 1: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity. One outlier was removed. All of Cook's distances were below 1.

Time 2: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers. All of Cook's distances were below 1.

Time 3: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers. All of Cook's distances were below 1.

Time 4: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers. All of Cook's distances were below 1.

Normally distributed errors
Time 1: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying relatively close to the diagonal line.

Time 2: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Time 3: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot

showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Time 4: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Positive mental health

Multicollinearity
Correlation matrix was examined for collinearity
Time 1: No excessive collinearity (>.8)
Time 2: No excessive collinearity (>.8)
Time 3: No excessive collinearity (>.8)
Time 4: No excessive collinearity (>.8)

Variance inflation factor (VIF) and tolerance
Time 1: No VIF >10, no tolerance <.02, Average VIF =1.22
Time 2: No VIF >10, no tolerance <.02, Average VIF =1.22
Time 3: No VIF >10, no tolerance <.02, Average VIF = 1.21
Time 4: No VIF >10, no tolerance <.02, Average VIF =1.41

Independent errors
Durbin Watson Test
Time 1: d= 2.173, greater than the upper critical value of 1.783 (p=.01, k=3, n=390), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =1.827, greater than the upper critical value of 1.783 (p=.01, k=3, n=390), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.
Time 2: d= 2.095, greater than the upper critical value of 1.753 (p=.01, k=3, n=300), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =1.905, greater than the upper critical value of 1.753 (p=.01, k=3, n=300), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.
Time 3: d= 1.924, greater than the upper critical value of 1.732 (p=.01, k=3, n=260), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =2.076, greater than the upper critical value of 1.732 (p=.01, k=3, n=260), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.
Time 4: d= 2.050, greater than the upper critical value of 1.732 (p=.01, k=3, n=230), therefore there is no evidence of positive autocorrelation of errors. 4 - *d* =1.950, greater than the upper critical value of 1.732 (p=.01, k=3, n=230), therefore there is no evidence of negative autocorrelation of errors. Therefore we can assume that the errors are independent.

Homoscedasticity, linearity and outliers
Time 1: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots

also suggested homoscedasticity and linearity. One outlier was removed. All of Cook's distances were below 1.

Time 2: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers.

Time 3: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers.

Time 4: A plot of standardised residuals against standardised predicted values was examined. Points appeared randomly and evenly dispersed, giving no indication of heteroscedasticity or non-linear relationships. Partial regression plots also suggested homoscedasticity and linearity with no obvious outliers.

Normally distributed errors
Time 1: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying relatively close to the diagonal line.

Time 2: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Time 3: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Time 4: A histogram of standardised residuals was examined and showed an approximately bell-shaped and symmetrical shape. A normal probability plot showed the points lying close to the diagonal line. Both plots indicated normal distribution of residuals.

Appendix 4. Correlation matrices: Study 1

Time 1

Variable	Job demands	Job resources	Positive personality	Negative coping	Anxiety score	Depression score	Positive mental health	Home stress	Workplace Stress
Job demands	-								
Job resources	-.31***	-							
Positive personality	-0.08	.43***	-						
Negative coping	.27***	-.12*	-.18***	-					
Anxiety score	.26***	-.23***	-.30***	.48***	-				
Depression score	.27***	-.30***	-.28***	.42***	.74***	-			
Positive mental health	-.26***	.43***	.58***	-.32***	-.42***	-.44***	-		
Home stress	.02	.03	-.09	.27***	.32***	.29***	-.19***	-	
Workplace Stress	.57***	-.32***	-.12*	.25***	.46***	.47***	-.24***	0.06	-

Time 2

Variable	Job demands	Job resources	Positive personality	Negative coping	Anxiety score	Depression score	Positive mental health	Home stress	Workplace Stress
Job demands	-								
Job resources	-.41***	-							
Positive personality	-.19***	.35***	-						
Negative coping	.25***	-.16**	-.34***	-					
Anxiety score	-.25***	.38***	.79***	-.43***	-				
Depression score	.30***	-.34***	-.40***	.34***	-.46***	-			
Positive mental health	.25***	-.27***	-.43***	.43***	-.46***	.63***	-		
Home stress	.13*	-0.02	-.26***	.31***	-.36***	.37***	.36***	-	
Workplace Stress	.44***	-.31***	-.19***	.31***	-.30***	.35***	.44***	.20***	-

Time 3

Variable	Job demands	Job resources	Positive personality	Negative coping	Anxiety score	Depression score	Positive mental health	Home stress	Workplace Stress
Job demands	-								
Job resources	-.40***	-							
Positive personality	-.2***	.39***	-						
Negative coping	.21***	-.11	-.45***	-					
Anxiety score	-.38***	.47***	.80***	-.48***	-				
Depression score	.32***	-.40***	-.60***	.49***	-.65***	-			
Positive mental health	.28***	-.33***	-.52***	.50***	-.58***	.69***	-		
Home stress	.09	-.16**	-.23***	.23***	-.23***	.39***	.37***	-	
Workplace Stress	.51***	-.33***	-.33***	.21**	-.35***	.36***	.33***	.17**	-

Time 4

Variable	Job demands	Job resources	Positive personality	Negative coping	Anxiety score	Depression score	Positive mental health	Home stress	Workplace Stress
Job demands	-								
Job resources	-.49***	-							
Positive personality	-.40***	.44***	-						
Negative coping	.27***	-.26***	-.50***	-					
Anxiety score	-.35***	.48***	.79***	-.55***	-				
Depression score	.33***	-.35***	-.64***	.48***	-.68***	-			
Positive mental health	.31***	-.26***	-.52***	.44***	-.59***	.74***	-		
Home stress	-.01	-.11	-.28***	.27***	-.40***	.32***	.31***	-	
Workplace Stress	.52***	-.41***	-.41***	.30***	-.36***	.31***	.29***	.04	-

Appendix 5. Full multiple regression model testing with all predictors, mediator and interactions

	Depression Time 1			Depression Time 2			Depression Time 3			Depression Time 4		
	Effect	SE	CI	Effect	SE	CI	Effect	SE	CI	Effect	SE	CI
Constant	0.19	1.89		4.64	3.96		4.4	5.44		-0.09	5.27	
Job Demands	0.14	0.11	-0.09 to 0.36	-0.05	0.13	-0.3 to 0.2	-0.15	0.18	-0.49 to 0.2	0.13	0.16	-0.19 to 0.44
Job Resources	0.03	0.06	-0.09 to 0.15	0.05	0.1	-0.14 to 0.25	0.05	0.14	-0.23 to 0.33	0.12	0.15	-0.17 to 0.41
Job Demands x Job Resources	-0.01	0.00	-0.01 to -0.00	0.00	0.00	-0.00 to 0.01	-0.00	0.00	-0.01 to 0.00	-0.00	0.00	-0.01 to 0.01
Positive Personality	0.04	0.07	-0.09 to 0.18	-0.14	0.1	-0.35 to 0.08	-0.14	0.13	-0.39 to 0.11	0.02	0.25	-0.48 to 0.51
Job Demands x Positive Personality	0.00	0.00	-0.00 to 0.01	0.00	0.00	-0.01 to 0.01	0.01	0.00	-0.00 to 0.01	-0.00	0.01	-0.02 to 0.01
Job Resources x Positive Personality	-0.00	0.00	-0.01 to 0.00	-0.00	0.00	-0.01 to 0.00	-0.00	0.00	-0.01 to 0.01	-0.01	0.01	-0.02 to 0.01
Negative Coping	0.07	0.1	-0.11 to 0.26	0.24	0.12	0.01 to 0.48	0.18	0.14	-0.11 to 0.46	0.45	0.24	-0.03 to 0.93
Job Demands x Negative Coping	-0.01	0.00	-0.01 to 0.00	0.00	0.00	-0.01 to 0.00	0.01	0.00	-0.00 to 0.01	-0.01	0.01	-0.02 to 0.01
Job Resources x Negative Coping	0.00	0.00	-0.00 to 0.01	-0.01	0.00	-0.01 to -0.00	-0.00	0.00	-0.01 to 0.00	-0.01	0.01	-0.02 to 0.01
Workplace Stress	0.24	0.26	-0.27 to 0.75	0.1	0.33	-0.54 to 0.74	0.76	0.48	-0.19 to 1.72	0.4	0.41	-0.41 to 1.21
Workplace Stress x Job Resources	0.01	0.01	-0.01 to 0.02	-0.00	0.01	-0.02 to 0.01	0.00	0.01	-0.02 to 0.02	0.00	0.01	-0.02 to 0.02
Workplace Stress x Positive Personality	-0.01	0.01	-0.03 to 0.00	0.01	0.01	-0.01 to 0.03	-0.01	0.01	-0.03 to 0.01	-0.03	0.02	-0.06 to 0.01
Workplace Stress x Negative Coping	0.02	0.01	0.00 to 0.03	-0.01	0.01	-0.02 to 0.01	-0.02	0.01	-0.04 to 0.00	-0.01	0.02	-0.04 to 0.02
R^2		0.38			0.31			0.5			0.45	
F		18.08***			12.9***			19.05***			14.02***	

	Anxiety Time 1			Anxiety Time 2			Anxiety Time 3			Anxiety Time 4		
	Effect	SE	CI	Effect	SE	CI	Effect	SE	CI	Effect	SE	CI
Constant	0.88	1.91		0.25	3.81		3.22	6.51		1.99	5.89	
Job Demands	0.27	0.12	0.04 to 0.5	0.13	0.12	-0.12 to 0.37	-0.18	0.21	-0.59 to 0.23	0.17	0.18	-0.18 to 0.53
Job Resources	-0.07	0.06	-0.19 to 0.06	0.08	0.09	-0.1 to 0.27	0.13	0.17	-0.21 to 0.47	0.08	0.17	-0.25 to 0.4
Job Demands x Job Resources	-0.01	0.00	-0.01 to 0.00	0.00	0.00	-0.01 to 0.01	-0.00	0.00	-0.01 to 0.00	-0.00	0.00	-0.01 to 0.01
Positive Personality	0.05	0.07	-0.09 to 0.19	-0.09	0.1	-0.29 to 0.11	-0.12	0.15	-0.42 to 0.17	-0.04	0.28	-0.59 to 0.52
Job Demands x Positive Personality	-0.00	0.00	-0.01 to 0.00	-0.00	0.00	-0.01 to 0.01	0.01	0.01	-0.00 to 0.02	0.00	0.01	-0.02 to 0.02
Job Resources x Positive Personality	-0.00	0.00	-0.00 to 0.00	0.00	0.00	-0.00 to 0.00	-0.00	0.00	-0.01 to 0.01	-0.00	0.01	-0.02 to 0.01
Negative Coping	0.11	0.1	-0.08 to 0.3	0.37	0.11	0.15 to 0.6	0.19	0.17	-0.15 to 0.53	0.3	0.27	-0.24 to 0.84
Job Demands x Negative Coping	-0.01	0.00	-0.01 to -0.00	-0.01	0.00	-0.01 to 0.00	0.00	0.01	-0.01 to 0.01	-0.00	0.01	-0.02 to 0.01
Job Resources x Negative Coping	0.00	0.00	-0.00 to 0.01	-0.01	0.00	-0.01 to -0.00	-0.00	0.00	-0.01 to 0.01	-0.00	0.01	-0.02 to 0.01
Workplace Stress	-0.1	0.26	-0.61 to 0.42	0.3	0.31	-0.31 to 0.92	0.74	0.57	-0.39 to 1.86	0.11	0.46	-0.79 to 1.02
Workplace Stress x Job Resources	0.02	0.01	0.01 to 0.04	0.00	0.01	-0.01 to 0.02	-0.00	0.01	-0.03 to 0.02	0.01	0.01	-0.02 to 0.03
Workplace Stress x Positive Personality	-0.02	0.01	-0.03 to -0.00	0.00	0.01	-0.02 to 0.02	-0.01	0.01	-0.04 to 0.01	-0.02	0.02	-0.06 to 0.02
Workplace Stress x Negative Coping	0.02	0.01	0.00 to 0.03	-0.00	0.01	-0.02 to 0.01	-0.01	0.01	-0.03 to 0.02	0.00	0.02	-0.03 to 0.03
R^2		0.42			0.36			0.42			0.33	
F		21.04***			15.79***			13.81***			8.5***	

	Positive mental health Time 1			Positive mental health Time 2			Positive mental health Time 3			Positive mental health Time 4		
	Effect	SE	CI	Effect	SE	CI	Effect	SE	CI	Effect	SE	CI
Constant	6.2	4.96		-12.68	6.89		-12.41	11.9		-2.62	9.53	
Job Demands	-0.46	0.3	-1.05 to 0.13	-0.09	0.22	-0.53 to 0.35	-0.51	0.38	-1.27 to 0.24	0.53	0.28	1.89
Job Resources	0.23	0.16	-0.09 to 0.55	0.36	0.17	0.03 to 0.7	0.54	0.31	-0.08 to 1.15	-0.1	0.27	-0.64 to 0.44
Job Demands x Job Resources	0.01	0.01	-0.00 to 0.02	-0.00	0.00	-0.01 to 0.01	-0.01	0.01	-0.02 to 0.01	-0.00	0.01	-0.02 to 0.01
Positive Personality	0.36	0.18	0.01 to 0.72	1.01	0.19	0.64 to 1.38	0.87	0.28	0.33 to 1.42	0.99	0.46	0.09 to 1.89
Job Demands x Positive Personality	-0.01	0.01	-0.02 to 0.01	0.00	0.01	-0.01 to 0.01	0.02	0.01	0.01 to 0.04	-0.02	0.01	-0.05 to 0.00
Job Resources x Positive Personality	-0.00	0.00	-0.01 to 0.01	-0.01	0.00	-0.02 to -0.00	-0.01	0.01	-0.02 to 0.00	0.01	0.01	-0.02 to 0.03
Negative Coping	-0.19	0.25	-0.68 to 0.31	0.14	0.21	-0.27 to 0.54	0.04	0.31	-0.57 to 0.65	-0.43	0.43	-1.28 to 0.43
Job Demands x Negative Coping	0.02	0.01	0.00 to 0.03	0.01	0.01	-0.01 to 0.02	-0.01	0.01	-0.03 to 0.01	-0.02	0.01	-0.04 to 0.01
Job Resources x Negative Coping	-0.00	0.01	-0.02 to 0.01	-0.01	0.01	-0.02 to 0.00	-0.00	0.01	-0.02 to 0.01	0.01	0.01	-0.01 to 0.03
Workplace Stress	-0.07	0.67	-1.39 to 1.26	0.07	0.57	-1.04 to 1.18	1.06	1.06	-1.03 to 3.15	-0.93	0.71	-2.32 to 0.46
Workplace Stress x Job Resources	-0.03	0.02	-0.06 to 0.01	0.02	0.01	-0.01 to 0.05	0.02	0.02	-0.02 to 0.06	0.02	0.02	-0.02 to 0.06
Workplace Stress x Positive Personality	0.05	0.02	0.01 to 0.08	-0.01	0.02	-0.04 to 0.02	-0.05	0.02	-0.09 to -0.00	0.01	0.03	-0.05 to 0.07
Workplace Stress x Negative Coping	-0.03	0.02	-0.07 to 0.01	-0.03	0.02	-0.06 to -0.00	-0.00	0.02	-0.05 to 0.04	0.03	0.03	-0.02 to 0.08
R^2		0.45			0.69			0.73			0.69	
F		23.82***			62.83***			50.93***			37.07***	

Appendix 6. Daily diary: Study 2

Date_____   Time_____

What happened in work today (this might include positive or negative events or interactions)?

How did the events of working day affect you (this might include thoughts, emotions and physical feelings)?

What did you do to cope with the events of the working day? What difference did this make?

How stressed are you feeling today?

      0   1   2   3   4   5   6   7   8   9   10

Not at all   Moderately   Extremely
stressed   stressed   stressed

How often have you felt positive in mood today?

      0   1   2   3   4   5   6   7   8   9   10

Not at all   Some of the   Nearly all of the
                         time   time

How often have you felt negative in mood today?

      0   1   2   3   4   5   6   7   8   9   10

Not at all   Some of the   Nearly all of the
                         time   time

Appendix 7. Interview schedule: Study 2

Interview topics

1. **Introductory Questions**
    - Tell me about your job
    - What does wellbeing mean to you?

2. **Elaboration on Diary.**
    - Discuss the contents of the diary and ask for clarification and elaboration on the experiences recorded.
    - Were the events and experiences in the diaries typical of average daily experience of working in the contact centre? Explore any differences.

3. **Experiences in the Contact Centre**
    - How would you describe your experience of working in the contact centre? (Prompts: a typical day, demands, resources, the job, working environment, colleagues, managers)
    - How does it compare to any previous workplace experience?
    - What advice would you give to new recruits in the contact centre?

4. **Stress, wellbeing and coping**
    - How would you describe your levels of wellbeing?
    - What impact does your job have on your wellbeing? (Prompts: demands, resources)
    - What impact does your working environment have on your wellbeing?
    - What impact does the equipment you use have on your wellbeing?
    - What impact does home/family life have on your wellbeing?
    - On days/periods when you experience high/low wellbeing, what factors make a difference?
    - How do you cope with the demands of the job? Which of your strategies are helpful/unhelpful?

5. **Support and facilities**
    - What type of support have you received for wellbeing at work? (Prompts: support from managers, colleagues, wellbeing services)
    - How would you describe the facilities available to you? How well do they support your wellbeing?
    - Would you like any additional support or facilities?

Appendix 8. Information sheet and consent form: Study 2.

Wellbeing project: Information on diaries and interviews

The [organisation's] Contact Centre has formed a partnership with Cardiff Metropolitan University which aims to understand and improve your wellbeing.

You took part in a survey which aimed to understand more about the mental health and wellbeing of staff. **You are now invited to take part in another study which involves completing a diary for two weeks about your experiences at work and taking part in a follow-up interview.** A small number of employees in the contact centre are being invited to take part. **Taking part in this study is completely voluntary and you can decide not to take part without any negative outcomes.**

The purpose of the study is to understand what leads to positive and negative wellbeing for employees of the contact centre. It is part of a larger project on staff mental health and wellbeing.

Why have I been invited to take part?
When you completed a previous wellbeing survey, you indicated that you were interested in taking part in further research. We are inviting some of the people who volunteered to take part in the study.

What if I decide I don't want to take part?
Taking part is voluntary. If you don't want to take part, that is totally fine. It would help if you let us know so we can offer someone else your space. If you decide to take part and then change your mind, you are free to withdraw from the research at any time. There are no negative consequences to deciding not to take part.

What do I have to do if I decide to take part?
We will ask you to complete a daily diary in work for two weeks and to attend an interview. The diary will ask about your experiences in work that day, how you feel and how you have coped with the demands of the day. A copy of the diary sheet is attached. The interview involves answering questions about your job, the environment you work in, your feelings about your work, how you cope with the demands on you and your wellbeing. The interview will be held with one researcher (Helen McFarlane) in a private room at the contact centre. The interview will take approximately one hour and will be recorded. You will need to talk about your experiences, thoughts and feelings.

Are there any risks to taking part?
We don't think there are any major risks to you if you decide to take part. The way you respond to this the interview questions will have no impact on your job. There is a chance that thinking about work, your health or your feelings may be upsetting. If you begin the interview but do not want to continue, you may stop at any time by letting the researcher know that you would like to end the interview.

Are there any benefits?
Taking part will give you the opportunity to tell us about your feelings and experiences. We will report our findings to the [organisation] and we hope that this will lead to changes that will benefit Contact Centre staff in future.

Is it confidential?
The information you provide us with will be managed in line with the Data Protection Act. Any personal data will be stored in a password protected electronic format. Your responses will only be used for the purpose of the research in order to improve wellbeing. Only the researcher (Helen McFarlane) will look at the diary entries and listen to the taped interviews. When the interviews are transcribed (written up), names will be removed along with other information which could identify you. Quotations will be used in reports. Every effort will be made to ensure that any information which could identify individuals is removed from quotations.

Who is involved?
The research is being carried out by Helen McFarlane as a PhD project with Cardiff Metropolitan University. The project is being overseen by Dr Rich Neil and Dr Karianne Backx at Cardiff Metropolitan University and Prof Andy Smith at Cardiff University.

What happens following the interviews?
Following the analysis of the diaries and interviews, we will look at the results alongside the results of the surveys and health MOTs to gain a fuller understanding of employee wellbeing and to put together recommendations to the contact centre to improve the wellbeing of staff.

Further information
If you would like further information about the research, please contact Helen McFarlane (hemcfarlane@cardiffmet.ac.uk). You may also contact Dr Rich Neil who is supervising the project (rneil@cardiffmet.ac.uk).

Who can I contact for help?
If there are **issues at work** which you believe are having a negative effect on your wellbeing, you may wish to discuss these with your line manager or a senior manager. For confidential advice and counselling, you can contact the [organisation's] Employee Assistance Programme on [phone number].

If you have **concerns about your health and wellbeing,** please contact your GP if you believe you are unwell. You can get general advice on health from NHS Direct on 0845 46 47. Your line manager can refer you to Occupational Health if you have a health condition which is affecting your work.

Appendix 9. Risk assessment for health assessments: Study 3

☐☐☐☐RISK ASSESSMENT (RA99) (V3/07)		Page 1 - (Hazards)	
School / Unit and Area:	Sport/Physiology	**Assessment Number:**	
Risk Assessment undertaken by: Recommended to be 2 or more people	Helen McFarlane	Karianne Backx	
Description of the work activity being assessed:	Health MOTs		
Persons Affected:	Staff ☐X☐ Students ☐X☐		Others ☐X☐
Details of Others:	[Organisation] Contact Centre Staff		

HAZARD IDENTIFICATION Please provide details of the hazards associated with the area or task. **EXAMPLES INCLUDE:** Working at height, Manual Handling, Electricity, Fire, Noise, Contact with moving parts of machinery, Dust etc		RISK RATING - <u>without</u> Controls The Risk Rating **(RR)** and Degree of Risk are determined by multiplying the Severity **(S)** of injury by the Likelihood **(L)** of occurrence. Please see UWIC Risk Rating Matrix for details			
		S	**L**	**RR**	**Degree of Risk**
1	Blood pressure: Risk of fainting/dizziness due to the maximal nature of the test.	4	2	**8**	**High**
2	Forced Vital Capacity: Breathing irregularities/difficulties when using mouth pieces/valves.	2	2	**4**	**Moderate**
3	Forced vital Capacity: Mouth piece hygiene related issues	2	2	**4**	**low**
4	Blood testing: Cross contamination	4	2	**8**	**High**
5	Blood testing: Blood diseases	4	2	**8**	**High**
6	Blood testing: Stab wounds	1	2	**2**	**Low**
7	Blood testing: Fainting	3	2	**6**	**Moderate**
8	Blood testing: Hygiene	1	3	**3**	**Low**
9					
Once all potential hazards have been identified and a Risk Rating has been applied, please go to page 2 and provide details of the control measures required to reduce the risk to an acceptable level.					

CONTROLS TO BE APPLIED **Examples Include:** Elimination, Substitution for something less hazardous, Barriers or fixed guards, standard operating procedures and personnel protective equipment		Date Applied	RISK RATING - <u>with</u> Controls			
			S	**L**	**RR**	**Degree of Risk**
1	Blood pressure: Minimise time brachial artery is restricted.	07/02/14	4	1	**4**	**Moderate**
1	Blood pressure: Ensure subjects are lying down throughout procedure	07/02/14	3	1	**3**	**Low**
2	Forced Vital Capactiy: Instruction and familiarisation of/with mouthpiece and associated equipment	07/02/14	2	1	**2**	**Low**
3	Forced Vital Capacity: Follow RA 11 controls, sterilisation procedures	07/02/14	2	1	**2**	**Low**
4	Blood testing: Immediate disposal of sharps in a medical sharps bin.	07/02/14	4	1	**4**	**Mod**
4	Blood testing: Immediate disposal of clinical waste (soft) contaminated with bodily fluids in clinical waste bags.	07/02/14	4	1	**4**	**Mod**
4, 5	Blood testing: Non-allergic gloves must be worn.	07/02/14	4	1	**4**	**Mod**
5	Blood testing: Samples only taken by people with a current Hepatitis b vaccination.	07/02/14	4	1	**4**	**Mod**
6	Blood testing: Sample only to be taken by a competent person	07/02/14	1	1	**1**	**Low**
7	Blood testing: Subject to lie down when blood is sampled.	07/02/14	3	1	**3**	**Low**
1, 7	Blood pressure/blood testing: Trained first aiders to be available if necessary	07/02/14	3	1	**3**	**Low**
8	Blood testing: Work surfaces must be cleaned with disinfectant.	07/02/14	1	2	**2**	**Low**
	Informed consent forms must be completed by all subjects prior to sampling.	07/02/14				
Date of First Assessment:	07/02/14	Review Date of overall Assessment:	07/02/15			

Appendix 10. Information sheet and consent form: Study 3

Contact Centre Health MOT

What is a Health MOT?
This sheet provides information about what is involved in the Health MOT offered to employees of the [organisation's] Contact Centre.

The Health MOT is comprised of several tests which assess different areas of health.
The tests are completely voluntary and you can choose to opt out of any of the tests should you so wish.

The results of the tests will be compared to typical normal ranges and feedback will be given to you at the end of the session.

If any of your tests results are a cause for concern, you will be advised to make an appointment with your GP to get this checked further. You will also receive a copy of your results.

More details on the tests are below. Some tests have exclusion criteria for your safety so please take note of these and inform the tester should any of the conditions apply to you.

Body Mass Index (BMI) calculation
Your height and weight will need to be taken for this. This data is then put into a calculation to work out your BMI, which is a measure used for obesity.

Waist Circumference
A tape measure will be used to measure your waist circumference. This will be done directly on your skin. Waist circumference is a good measure of central fat distribution which is linked to increased risk of heart disease and diabetes.

Blood Pressure
A cuff will be placed on your upper arm. You will need to roll up your sleeve for this.
The cuff will gradually inflate and tighten around your arm and then deflate again within a couple of minutes.

Blood analysis
It is required that you fast for 2-3 hours before this test (with the exception of water) for more accurate results. Finger prick blood samples will be taken and analysed for glucose and cholesterol.

Raised blood glucose levels can indicate diabetes. Raised cholesterol levels indicate an increased risk of heart disease.

You will not be permitted to do this test if you have previously been advised by your GP not to give blood for your safety.

Lung Function
This test involves forcibly blowing through a cardboard tube attached to a machine several times. This test assesses the health of your lungs.
You will not be permitted to do this test if you have any of the following conditions:
- Pregnancy
- High blood pressure
- Have had a recent eye, chest or abdomen operation
- Have had a recent asthma attack
- If you are feeling unwell for example with a cold, cough or chest infection

Artery Stiffness Test
Stiffening of the arteries and blood vessels occurs naturally and gradually with age however, it can sometimes happen prematurely as a result of lifestyle and/or genetic factors.

Artery stiffness measurement involves resting for around 5 minutes whilst a blood pressure cuff will be used to take the measurement. Increased artery stiffness is strongly associated with an increased risk of heart disease.

How long will it take?
A health MOT takes around 30 to 45 minutes of your time, depending on which tests you opt out of. As the Health MOT is part of the [organistion's] work with Cardiff Metropolitan University on staff health and wellbeing, you should be given time during the working day to attend one of these sessions.

What will happen to my results?
All the information about you will be treated as highly confidential and will not be used against you in any way.

Your records will be held in a locked filing cabinet at Cardiff Metropolitan University, and you will also be given a copy for yourself. Personal information held electronically will be password protected.

If you agree, your results will be used for research purposes led by Cardiff Metropolitan University. This research will help us to understand more about the health of call centre workers and the relationship between psychological wellbeing and physical health. Only a small number of researchers directly involved in the research will have access to your data.

Overall results for all staff will be communicated to the [organisation] and recommendations will be made to the [organisation] on ways of addressing any health risks found. Your results will be used anonymously as part of a PhD thesis and may also be included in research papers, which may be published.

You may change your mind about the use of your data at any time by contacting Helen McFarlane, the researcher or Dr Rich Neil or Dr Karianne Backx who are overseeing this project. Also use these details if you should require any further information.

Contact Details:

Helen McFarlane
PhD Researcher, Cardiff Metropolitan University
Email: hemcfarlane@cardiffmet.ac.uk

Dr Rich Neil
Senior Lecturer in Sport Psychology, Cardiff Metropolitan University
Email: rneil@cardiffmet.ac.uk

Dr Karianne Backx
Principal Lecturer in Sport and Exercise Physiology, Cardiff Metropolitan University
Email: kbackx@cardiffmet.ac.uk

_____

Participant Name:

Participant Number:

I confirm that I have read the information sheet and understand what   YES/NO

is involved and have answered the health screening questions honestly.

I have had the opportunity to consider the information, ask questions

and have had these answered satisfactorily.

I understand that my participation is voluntary and that I am free to   YES/NO

withdraw from any or all tests at any time, without giving reason.

I agree to take part in the Health MOT.   YES/NO

I am willing for my results to be used anonymously for research by   YES/NO

Cardiff Metropolitan University

Signature of Participant   Date

_____   _____

Name of person taking consent

_____   _____

Signature of person taking consent

_____   _____

Appendix 11. Information sheet and consent form: Study 4

The partnership between the [organisation's] Contact Centre and Cardiff Metropolitan University is continuing and aims to understand and improve your wellbeing.

This is a unique opportunity to be involved in research within a UK Contact Centre environment.

You are being invited to take part in a survey. All staff working within the Contact Centre are being invited to take part. The survey is *completely voluntary* and you can refuse to complete it without any negative outcomes.

The purpose of this survey is to review the support that is available to staff in order to assess how useful the current support is and whether anything else is needed.

Why another survey?

The wellbeing survey which many of you completed previously aimed to understand the wellbeing of staff working in the contact centre. This survey aims to evaluate the support staff receive.

What do I have to do if I decide to take part?

You will be asked questions about your awareness and experiences of support services which are available to staff in the contact centre. The survey will take approximately *10 minutes* to complete.

Are there any risks?

We don't think there are any major risks to you if you decide to take part. The way you respond to this survey *will have no impact on your job*. There is a chance that thinking about work, your health or your feelings may be upsetting. If you begin the questionnaire but do not want to continue, *you may stop at any time* by closing the questionnaire on your screen.

Are there any benefits?

Taking part will give you the opportunity to tell us about how well the current support is working. We will report our findings to the DVLA and we hope that this will lead to changes that will benefit Contact Centre staff in future.

Is it confidential?

The information you provide us with will be managed in line with the Data Protection Act. *Your responses will only be used for the purpose of the research in order to improve wellbeing. Only the researcher (Helen McFarlane) and administrators from the Customer Research Team will see the data from the survey.* You will be asked to provide your staff number, which

will only be used to match your data to previous wellbeing questionnaires and to contact individuals who volunteer for future research. The data will be stored in a password protected electronic format. Results of the research that are reported to the DVLA or others will be summaries of results for groups of employees and *nothing will be reported which could reveal your personal responses.*

Who is involved?

The research is being carried out by Helen McFarlane as a PhD project with Cardiff Metropolitan University. The project is being overseen by Dr Rich Neil and Dr Karianne Backx at Cardiff Metropolitan University and Prof Andy Smith at Cardiff University.

What happens following the survey?

Following the analysis of the results we will be asking some people to take part in interviews which will explore staff's experiences of the support services in more detail. We will also be rerunning the wellbeing survey later in the year.

Further information

If you would like further information about the research, please contact Helen McFarlane (hemcfarlane@cardiffmet.ac.uk). You may also contact Dr Rich Neil who is supervising the project (rneil@cardiffmet.ac.uk).

Who can I contact for help?

If there are **issues at work** which you believe are having a negative effect on your wellbeing, you may wish to discuss these with your line manager or a Senior Manager. For confidential advice and counselling, you can contact the [organisation's] Employee Assistance Programme on [phone] or by emailing [email address]

If you have any **concerns about your health and wellbeing,** please contact your GP if you believe you are unwell. You can get general advice on health from NHS Direct on 0845 46 47. Your line manager can refer you to Occupational Health if you have a health condition which is affecting your work.

Consent statement included at the start of the survey:

Please click on the link below to indicate that you agree with the following statements and begin the survey

I have read the above information

I understand that my participation in the survey is voluntary

I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act

I agree to take part

Appendix 12: Support Survey Questionnaire

Demographic information	
Staff number	[free text box]
Gender	[Drop down box] Male/female
Age	[free text box]
Area of work	[Drop down box] Drivers/Vehicles/Drivers Medical/Support
Team number/name	[free text box]
Job grade	[Drop down box] AA/ AO/ EO/ HEO/ SEO/ Grade 7/ Grade 6
Do you work full- or part-time?	[Drop-down box] Full-time/Part-time
Highest level of education	[Drop down box] No qualifications/ GCSEor O Level grade D-G, Entry or level 1 vocational qualification (e.g., NVQ, BTEC) or equivalent/ GCSE or O level grade A-C, vocational level 2 (e.g., NVQ, BTEC) or equivalent/ A level, vocational level 3 (e.g., NVQ, BTEC) or equivalent/ HND, degree or vocational equivalent/ Postgraduate study, higher degree or professional equivalent
Length of service	_____ years	_____months

Questionnaire	
Are you aware of the Occupational Health Service?	[Drop down box] Yes/No
If yes, please indicate your views on the Occupational Health service. Tick all that apply.	[Tick box] I know what kind of support this service offers/ I know how to access this service/ I would use this service if needed in future/ I would not use this service even if I needed the type of support it offers/ I have used this service previously and it was useful/ I have used this service previously and it was not useful
Are you aware of the Employee Assistance Programme [Company name]?	[Drop down box] Yes/No

Please indicate your views on the Employee Assistance Programme [Company name]. Tick all that apply.	[Tick box] I know what kind of support this service offers/ I know how to access this service/ I would use this service if needed in future/ I would not use this service even if I needed the type of support it offers/ I have used this service previously and it was useful/ I have used this service previously and it was not useful
Are you aware of the stress assessment process?	[Drop down box] Yes/No
Please indicate your views on the stress assessment process. Tick all that apply.	[Tick box] I know what kind of support this service offers/ I know how to access this service/ I would use this service if needed in future/ I would not use this service even if I needed the type of support it offers/ I have used this service previously and it was useful/ I have used this service previously and it was not useful
Are you aware of the Expert Patient Programme/Looking After Me Programme?	[Drop down box] Yes/No
Please indicate your views on the Expert Patient Programme/Looking After Me Programme. Tick all that apply.	[Tick box] I know what kind of support this service offers/ I know how to access this service/ I would use this service if needed in future/ I would not use this service even if I needed the type of support it offers/ I have used this service previously and it was useful/ I have used this service previously and it was not useful
Do you use the gym which is avaiable at the main site?	Yes, regularly/ Yes, occasionally/ No
If no, what prevents you from using the gym? (tick all that apply)	I am not interested in using a gym/ It is difficult to access/ It is too expensive/ Lack of time/ Poor facilities or equipment/ Other (please state) [free text box]
How often do you buy food from the canteen?	Daily or most days/ Once or twice a week/ Two or three times a month/ Once a month/ Less than once a month/ Never
How easy is it to make healthy choices	Very easy/ Easy/ Okay/ Difficult/ Very difficult/ Don't know

when buying food from the canteen?	
How good are the healthier options from the canteen?	Very good/ Good/ Okay/ Poor/ Very poor/ Don't know
Are there any barriers which might prevent you from accessing any of the available services/resources?	[free text box]
How good overall is the support for health and wellbeing that the [organisation] offer staff?	Very good/ Good/ Okay/ Poor/ Very poor/ Don't know
What additional support for health and wellbeing (if any) would you like the [organisation]/ contact centre to offer?	[free text box]
Do you have any other comments on the support for health and wellbeing at the contact centre?	[free text box]